

The American University in Cairo

EURECA Conference 2024

The 18th Annual Conference for Excellence in Undergraduate Research, Entrepreneurship and Creative Achievement

Conference Dates: February 25 - February 28, 2024

Conference Overview & Presentation Abstracts

EURECA Conference Overview

EURECA is The American University in Cairo's (AUC) annual gathering of undergraduate students who share with an academic, multidisciplinary audience their best scholarly and innovative research and creative work. Students showcase and celebrate their original work, sharpening critical thinking, creative inquiry, and expression skills (written, oral, and visual) and engaging in interdisciplinary dialogue. Undergraduates from all disciplines, from the first year to capstone, are invited to attend. EURECA Conference is organized under the larger institutional celebration of research: The AUC Research and Creativity Convention (RCC).

EURECA includes student presentations from the following tracks:

- **Research Excellence Across the Disciplines (READ):** This is an opportunity for students enrolled in different majors to present their best discipline-based research work. Presentations that employ critical analysis, a sound research process, and logical presentation are welcome.
- **Community-Based Learning (CBL)/Civic Engagement:** This is an opportunity for students from different majors enrolled in a CBL course or in an outside community-based project with a faculty mentor to present their best civic engagement research projects that include working with an identified local community to address a need or problem. The project must have a local community partner (e.g. an NGO, local school, a local business) to define the problem and to assess different methods of intervention to address the problem; employ local, available, and sustainable materials and resources to address the problem; and offer research/innovation output as a service to the community. Presentations that employ critical analysis, a sound research process and logical presentation are welcome.
- **First-Year Research Experience (FYRE):** These are oral presentations by first-year students who have completed research-based projects in any 1000-level or freshman research program. FYRE encourages and celebrates freshman students' inquiry-based learning and research.
- **English Language Instruction (ELI) Explorers:** The presenters in this session are AUC students enrolled in the pre-credit language instruction courses offered by the Department of English Language Instruction. ELI Explorers' presentations underline the University's commitment to teach research skills and ignite a passion for research the minute a student steps into campus.
- **Creatopia:** This is a celebration of multiple creative activities. Students present their work and share the creative process's experiences and the thematic and theoretical basis of their work.

- **Undergraduate Entrepreneurship Expo:** This is a showcase of innovative student startup ideas across the disciplines.
- **Architectural Design Show:** The Architectural Design show is an opportunity to share students' innovations in design solutions and spatial innovations.
- **Undergraduate Poster Session:** This session invites undergraduate students to present their research and other forms of project work that demonstrate critical analysis and sound arguments using posters. Academic posters are a common medium of presentation which engage a "walking" audience through text and attractive visuals. The idea should be complete and self-explanatory so that a viewer would understand the poster, even in the absence of a presenter.

A special thanks to members of the 2024 EURECA Conference Organizing Committee:

- Alyssa Young, Instructor, Department of English Language Instruction/Department of Rhetoric and Composition
- Amal Hamdy, Assistant Professor, Department of Architecture, Architectural Design Show Track
- Amira Abdullah, Instructor, Department of English Language Instruction/Department of Rhetoric and Composition
- Ayah Amin, Instructor, Department of Rhetoric and Composition
- Ehab Elshimi, Instructor, Department of Rhetoric and Composition/Department of English Language Instruction, Conference Chair
- Elizabeth Arrigoni, Senior Instructor, Department of English Language Instruction
- Erika Lewko, Instructor, Department of English Language Instruction/Department of Rhetoric and Composition
- Heba Fathelbab, Senior Instructor, Department of Rhetoric and Composition
- Hoda Grant, Senior Instructor, Department of Rhetoric and Composition
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- Melanie Carter, Senior Instructor, Department of Rhetoric and Composition
- Michael Gibson, Senior Instructor, Department of Rhetoric and Composition
- Michael Reimer, Professor, Department of History, History Day
- Mohamed Darwish, Assistant Professor, Department of Construction Engineering
- Nagwa Kassabgy, Senior Instructor II, Department of English Language Instruction
- Nancy Georgy, Senior Administrative Affairs Assistant, Office of the Dean of Undergraduate Studies

- Rania Siam, Professor, Department of Biology
- Sophie Farag, Senior Instructor II, Department of English Language Instruction, ELI Explorers Track
- Susanne Rizzo, Senior Instructor II, Department of English Language Instruction
- Yasmine Salah El-Din, Senior Instructor II, Department of English Language Instruction

Click [here](#) for the conference schedule overview.

To find an abstract, click on ctrl f and type in the name of the presenter(s).

Sunday, February 25

FYRE – CVC P019

Time: Sunday, 25/Feb/2024: 10:00am - 12:00pm

Location: CVC P019

Writing in Business

Shaden Hesham Hamoury

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This paper presents research on how cultural differences shape how people communicate and write in business in Far Eastern, English-speaking, and Arabic-speaking countries. Interviews and secondary research were used to find an answer to this question. Previous studies focused on either writing or business, but we are trying to integrate them into this study. The key findings of this study reveal some differences in business communication between Far Eastern, English, and Middle Eastern cultures on levels of formality, writer/reader orientation, and organization, which can slightly affect business flow.

The GERD as a Threat to Egypt's Regional Power

Jasmine Mahmoud Metwalli

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For my research paper concerning the geopolitical impact of the Grand Ethiopian Renaissance Dam on Egypt's regional power, I looked into the view that Egypt's political dominance lies within its sovereignty over its two major waterways, namely the Nile River and the Red Sea. I want to highlight the key role of the Nile as a vital artery lending sustenance to Egyptians and also the strategic importance of the Red Sea's Suez Canal as a crucial asset to Egyptian economy and global maritime trade. Taking note of the significance of these two waterways, I want to shed light on the extent of harm that any threats to these vital assets will inflict on Egypt's geopolitical influence in the region. The Grand Ethiopian Renaissance Dam poses a threat to Egypt's political dominance in Africa as it would fall victim to a shift in regional power dynamics due to Ethiopia's newly attained political leverage over Nile Basin countries. I also want to bring attention to the threat that faces the Suez Canal as speculations of an alternative canal project by Israel have been increasingly widespread following the events of October 7, 2023. My paper explores previous Israeli interest in Egypt's waterways and also digs into the Ben Gurion Canal project that, if executed, would mark the cessation of Egypt's long dominating power in the region through its control of the Suez Canal, a critical passageway for international trade. Is there a relation between plans of replacing the Suez Canal and operations of filling the Grand Ethiopian Renaissance Dam? Rising suspicions of Israeli involvement in the construction and filling of the dam have led to theories of a coordinated effort to destabilize Egypt. I intend to build a connection between the stakeholders involved as mediators in the dam, the US and UAE to be precise, and how they are the same parties that would benefit from the establishment of the Ben Gurion Canal. I intend to delve deeper into whether the scheduled intervals of filling the dam and Israel's proposition of replacing the Suez Canal are interconnected geopolitical maneuvers aiming to diminish Egypt's regional power. If so, what would be the implications of such a multi-party scheme on the future of Egyptian power?

Addressing Challenges Posed by Staphylococcus aureus and Escherichia coli: Insights into Pathogenicity, Antibiotic Resistance, and Alternative Therapies

Menna Tallah Nasr Mohamed, Asmaa Hamed Attia, Arwa Khaled Alfiqui

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Staphylococcus aureus (*S. aureus*) and Escherichia coli (*E. coli*) are two significant bacterial pathogens with distinct characteristics and disease-causing abilities. *S. aureus*, a Gram-positive bacterium, poses a global health threat, causing severe illnesses such as sepsis, pneumonia, and potentially fatal skin infections. It colonizes the skin and mucous membranes, often leading to bloodstream infections. This bacterium exhibits unique spreading motility and forms dendrite-like structures called "comets." Furthermore, *S. aureus* has developed resistance to antibiotics, including methicillin, amplifying the challenge of treating infections. Alternative therapies, such as anti-virulence approaches and bacteriophages, are being explored to combat *S. aureus* infections by targeting specific mechanisms and reducing virulence. On the other hand, *E. coli*, a versatile bacterium commonly found in various environments and the gut microbiota, can cause infections ranging from urinary tract infections (UTIs) to meningitis and gastroenteritis. Treatment for *E. coli* infections primarily involves oral rehydration and, in severe cases, the use of antibiotics. However, the emergence of multidrug-resistant strains has limited treatment options. To address these challenges, alternative treatments like substances preventing bacterial adhesion, vaccines, and bacteriophages are being investigated. *E. coli* serves as a valuable model organism in laboratory research due to its ease of handling and ability to grow under diverse conditions. This project aims to study a specific bacterial strain by performing different experiments including the determination of the selective and differential media, bacterial metabolism, and microbial growth curves. Focusing on some aspects of this bacterium including the health issues caused by it, its optimum growth conditions, its selective media, its treatments and resistance, the alternative treatments, and its biofilm. In conclusion, both *S. aureus* and *E. coli* present significant challenges in terms of infectious diseases and antibiotic resistance. Exploring alternative therapeutic approaches and studying their growth and behavior in the laboratory are crucial steps toward combating these pathogens effectively and improving public health outcomes.

Stem Cells in Myocardial Regeneration

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The main focus of this research is to study the application of induced pluripotent stem cells (iPSCs) in the field of disease modeling, drug screening, and cell therapy for illnesses related to the cardiovascular system. Induced pluripotent stem cells (iPSCs) are derived from the somatic cells of patients and keep the genetic characteristics of the original donor cells, also acting as a valuable genetic model for investigating various diseases. The recent development of gene editing technologies, notably CRISPR/Cas9, has improved the ability to perform accurate comparisons between patient-specific induced pluripotent stem cell (iPSC)-derived cells and genetically modified cells or wild-type cells with disease-causing mutations. The process of inducing the differentiation of induced pluripotent stem cells (iPSCs) into cardiomyocytes involves the activation of distinct signaling pathways, including BMP, activin A/Nodal, and Wnt signaling. Various approaches are utilized for the purification of cardiomyocytes for induced pluripotent stem cells (iPSCs). The utilization of flow cytometry involving distinct surface markers, such as SIRPA, VCAM1, and CORIN, allows the separation and purification of heart cells. Using synthetic RNA molecules that specifically target microRNAs facilitates selectively excluding and purifying heart cells, relying on their distinct microRNA expression profiles. Furthermore, the application of metabolic selection methods using a medium of glucose and containing lactate has the ability to selectively remove non-cardiomyocytes, leading to an enhanced level of purity. Induced pluripotent stem cells (iPSCs) and cardiomyocytes produced from iPSCs offer significant utility in disease modeling, drug screening, and cell therapy for heart diseases. Additional investigation is required in order to optimize the purifying methods, improve the engraftment process, and minimize ventricular arrhythmias associated with grafting, with the ultimate goal of achieving effective clinical use.

Harnessing Atmospheric Electricity for Sustainable Energy Generation

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Electricity from the atmosphere represents a promising avenue for sustainable power generation, offering an alternative to conventional energy sources. This research explores the potential of tapping into atmospheric electricity as a clean and renewable energy solution. The atmospheric electrical phenomenon, such as lightning, electrostatic charge, and atmospheric potential gradient, provides a unique opportunity to capture and convert this ambient energy into usable electrical power. This study reviews the existing literature on atmospheric electricity, including the mechanisms behind its generation and the challenges associated with harnessing it. Various technologies for harvesting atmospheric electricity, such as high-altitude platforms, ground-based systems, and airborne devices, are discussed, along with their advantages and limitations. Additionally, advancements in materials science and energy conversion technologies that contribute to enhancing the efficiency of atmospheric electricity harvesting are examined. Furthermore, the environmental and economic implications of utilizing atmospheric electricity as a renewable energy source are considered. The potential applications of atmospheric electricity range from powering remote areas and disaster-stricken regions to serving as a supplementary energy source for existing power grids. The research also addresses concerns related to the impact of large-scale atmospheric electricity extraction on the Earth's atmospheric conditions. The findings of this research aim to contribute to the growing body of knowledge on alternative energy sources and inspire innovation in the quest for cleaner and more environmentally friendly power generation solutions.

The Impact of Methane Gas

Ahmed Essam Mohamed¹, Mohamed Khaled Mohamed¹, Yousef Mohamed Ewies¹, Omnia Ahmed Gad², Ahmed Khairy Abdel-Mobdy¹, Andrew Gamal Morris³

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Climate change is a growing problem worldwide, and increasing greenhouse gas emissions are one of the main drivers of this change. Among these gasses, methane and carbon dioxide are the primary contributors. This paper addresses the question of which gas has a greater impact on climate change: carbon dioxide or methane? Methane is over 28 times more effective at trapping heat in the atmosphere compared to carbon dioxide, due to its molecular structure. Although methane accounts for only about 1% of greenhouse gas emissions, it may contribute to a greater degree of warming than carbon dioxide in the coming years. To mitigate methane emissions, it is crucial to identify their sources. Methane primarily emanates from fossil fuel production, waste management, and livestock farming. In this presentation, the focus is on reducing methane emissions from livestock. Marine algae, particularly *Asparagopsis taxiformis*, has proven to be an effective dietary supplement for livestock, reducing methane emissions by up to 80%. Additionally, this type of seaweed can improve animal health and enhance milk and meat productivity, they can produce and encapsulate coated methane analogues like bromoform and dibromochloromethane within specific gland cells as a natural defense mechanism. Studies demonstrate the multiple benefits of using marine algae as a livestock dietary supplement, including improved animal health and increased milk and meat production. If this supplement becomes widespread globally, it can significantly reduce climate change by 2030. Research indicates that methane gas has a significant impact on climate change. While carbon dioxide constitutes a larger proportion of greenhouse gas emissions, methane is more effective at trapping heat in the atmosphere. Therefore, it is vital to focus on reducing methane emissions from various sources, and utilizing seaweed supplements for livestock presents a promising solution to achieve this goal.

Advancing Energy Efficiency in Large-scale ML Models: An In-depth Literature Survey

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The escalating energy requirements of large-scale machine learning (ML) models have become a critical issue, requiring a sustainable approach to ML development. This comprehensive literature survey delves into various methodologies proposed for enhancing the energy efficiency of these models. We meticulously compiled and analyzed studies from diverse sources, focusing on two principal areas: algorithmic enhancements and hardware-oriented optimizations. The algorithmic aspect includes innovative techniques such as efficient network design, model compression, and lightweight training procedures aimed at reducing the computational burden of ML models. On the hardware front, we explore advancements in energy-efficient processing units and specialized circuit designs optimized for ML tasks. Our survey offers a balanced evaluation of these methods, weighing their efficiency gains against potential impacts on model accuracy and performance. We also identify prevailing challenges and potential avenues for future research, highlighting the need for integrated solutions that combine software with hardware advancements. This work aims to guide the ML community towards more energy efficient practices, promoting an environmentally sustainable path for AI.

The Lack of Water Sustainability in Egypt

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Egypt has been facing a looming issue of water scarcity for a very long time. It is evident that Egypt is suffering from water scarcity because of the challenges the citizens have to face and the water availability for the industries. Egypt is very dependent on the Nile River, which makes Egypt vulnerable since there are many factors that put the Nile River at risk. Some of these factors are overpopulation, the Great Ethiopian Renaissance Dam, irrigation methods, and climate change. All of these factors contribute to the lack of water sustainability in Egypt and they affect many aspects of the economy, such as the population, agriculture, and food security. Fortunately, other countries have been implementing solutions to mitigate water scarcity issues, and many have been successful. Some of these solutions are Singapore's NEWater project, Saudi Arabia's futuristic desalination plants, China's population control regulations, and the United States' Safe Drinking Water Act. In addition, the recommendation of genetically engineering crops to save freshwater since agriculture consumes most of Egypt's freshwater supply. This paper aims to comprehensively cover the water crisis in Egypt and find the most suitable solution that is tailored to Egypt's needs.

READ – CVC P020

Time: Sunday, 25/Feb/2024: 10:00am - 11:35am

Location: CVC P020

Eco-Friendly Mid-rise Construction: A Comparative Study of WPC Infused SIPs and Reinforced Concrete for Sustainable Design, Evaluating Carbon Emissions, Cost, and Life Cycle Performance

Mohamed Elnakeb, Mohamed Atef, Mohamed Ashmawy, Marina Moawad, Ehab Abdelhamid, Marwan Shawki, Mohamed Darwish, May Haggag, Donia Eldwib, Khaled Nassar, Maram Saady, Safwan Khedr, Minas Girguis, Elkhayam Dorra, Mohamed Abouzeid

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The global construction industry's role in carbon emissions and global warming underscores the need for innovative strategies addressing environmental sustainability. This is particularly critical in Egypt, where challenges such as waste disposal, poverty, and inadequate housing require unique solutions. The study takes a multi-disciplinary approach, exploring non-conventional building materials that incorporate waste to reduce carbon emissions and provide sustainable housing for underdeveloped communities. It also investigates eco-friendly pavement alternatives utilizing waste materials. The paper, initially, evaluates four structural alternatives for safety, carbon emissions, cost, and thermal conductance: (1) a cement masonry parabolic vault with waste granite slurry, (2) Structural Insulated Panels (SIPs) with wood plastic composites (WPC) using recycled High-Density Polyethylene (HDPE) and waste Musky wood, (3) SIPs for roof and walls, and (4) traditional reinforced concrete. Material properties, production procedures, and testing of WPC boards reveal promising results, with thermal conductance studies identifying Extruded Polystyrene (XPS) as an efficient insulating foam. For SIP assembly, it is determined that adhesives like sodium silicate and polyvinyl acetate have minimal impact on strength, necessitating stiffeners in the cross-section to enhance its serviceability performance. Interaction diagrams, SIP connections, and modifications to the SIP design are explored. Furthermore, as for the sustainable asphalt pavement, the Superpave method-based mix design is utilized instead of the typical Marshall method. Performance tests on the asphalt are conducted such as the Indirect Tensile Test (IDT). Moreover, Cost estimates, carbon emissions, and thermal conductance are analyzed for each alternative. The third alternative proves the most expensive at 6150 EGP/m², while the first is the cheapest at 1730.28 EGP/m². Carbon emissions and thermal conductance range significantly from one alternative to another, in which, the third alternative emerges as the most insulating with a 95% decrease in conductance and the most sustainable of only 66.83 kgCO₂e/m² emissions. After choosing the third alternative, a 5-story SIP Mid-Rise structure is designed to evaluate a real-life application for such an alternative. The results show a 56% reduction in life-cycle cost and an 86% decrease in carbon emissions

compared to conventional reinforced concrete. A similar analysis conducted on the Super-Pave-designed waste-infused asphalt reveals a 54% decrease in life-cycle cost and an 84% decrease in carbon emissions. Expanding the analysis to develop a community with integrated buildings and roads, the community sees a 48% reduction in life-cycle cost and a 59% decrease in carbon emissions. This comprehensive investigation offers a promising blueprint for sustainable construction practices, benefiting underdeveloped communities in Egypt and worldwide economically and environmentally.

Exploring Unconventional Structural Alternatives Incorporating Waste and Recycled Materials for Low-cost and Low Carbon Emissions Housing

Mohamed Elnakeb, Marina Moawad, Mohamed Ashamwy, Marwan Shawki, Mohamed Atef, Ehab Abdelhamid, Mohamed Darwish, May Haggag, Donia Eldwib, Khaled Nassar, Maram Saudy, Safwan Khedr, Minas Girguis, Elkhayam Dorra, Mohamed Abouzeid

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Reinforced concrete skeleton is the most commonly used structural system for construction worldwide. However, it is not the most eco-friendly alternative; therefore, finding innovative green alternatives is a necessity amidst the climate change effects the world is currently facing. In addition, construction costs are increasing, making it challenging to fund projects for low-income housing. Accordingly, four building alternatives were examined for constructing a single-story building of a small room to determine the most eco-friendly and cost-effective construction materials. Alternative 1 is cement bricks masonry parabolic vault, alternative 2 is cement masonry units for walls and structurally insulated panels (SIPs) for roof, alternative 3 is SIPs for the walls and the roof, and alternative 4 is the typical reinforced concrete skeleton with cement bricks for masonry. Each alternative was investigated for its structural integrity and soundness, carbon emissions per unit area, estimated construction cost and building envelope conductance. It was determined that alternative 3 is the most environmentally friendly as it only emits 66.29 kgCO₂e/m², while alternative 1 was the least, emitting 753.49 kgCO₂e/m². However, alternative 1 was shown to have the least construction cost of 1730.78 EGP/m², while alternative 3 has the highest cost of 6150 EGP/m². Finally, in terms of thermal conductance, alternative 1 had the highest of 12.35 W/K.m² while alternative 3 had the lowest of only 0.59 W/K.m².

Towards Sustainable Communities: Incorporating Wood Plastic Composites in Structural Insulated Panels

Mohamed Elnakeb, Marwan Shawki, Mohamed Ashamwy, Marina Moawad, Mohamed Atef, Ehab Abdelhamid, Mohamed Darwish, May Haggag, Donia Eldwib, Khaled Nassar, Maram Saudy, Safwan Khedr, Minas Girguis, Elkhayam Dorra, Mohamed Abouzeid

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Globally, the construction industry contributes to 33% of greenhouse gas emissions and 40% of global energy consumption; as such, it is essential to find greener construction alternatives to reduce the amount of such emissions and alleviate their adverse impacts. Structural Insulated Panels (SIPs) have repeatedly proved to be a greener option in building construction due to their excellent thermal performance which leads to a major reduction in energy consumption. Consequently, this work focuses on producing robust-load-bearing SIPs that utilize waste materials without sacrificing the superior thermal performance. The SIPs investigated in this study are an assembly of Wood Plastic Composites (WPC) representing the facings, insulating foam which represents the core, and adhesives for bonding the composite. The WPC is produced using two different methodologies; the first utilizes thermal pressing, where 60% by weight of the composite is waste wood chippings and 40% is Polypropylene, whereas the second method utilizes extrusion, where 65% is sawdust from Musky wood waste, 32% recycled high-density polyethylene retrieved from plastic bottles, and 3% Maleic Anhydride acting as a coupling agent. Mechanical tests were conducted on the WPC including flexural strength, compressive strength, bending modulus, and water absorption. As for the insulating materials, two options were investigated: Expanded Polystyrene and Extruded Polystyrene, both of which were tested for different densities to determine their thermal conductivity. Moreover, two adhesives were utilized for the SIPs assembly which are Polyvinyl Acetate and Sodium Silicate. Mechanical tests were also conducted on the entire panel including compressive strength, and core shear strength. Carbon emissions and thermal conductivity of the produced SIPs will be compared to conventional reinforced concrete to quantify the relative sustainability of the proposed panels. The results showed high strengths for the WPC with about 37 MPa flexural strength, 28 MPa compressive strength and a bending modulus of 4766 MPa, the Water absorption for the tested WPC was 1.30%. It was also determined that both adhesives utilized herein did not influence the compressive strength of the composite, and the load applied was mainly distributed on the effective WPC area.

Investigation on Crumb Rubber (CR) and Low-density Polyethylene Modified Asphalt Concrete Pavement Design, Performance, and Carbon Footprint

Mohamed Atef, Ehab Abdelhamid, Mohamed Ashamwy, Marina Moawad, Mohamed Elnakeb, Marwan Shawki, Mohamed Darwish, May Haggag, Donia Eldwib, Khaled Nassar, Maram Saudy, Safwan Khedr, Minas Girguis, Elkhayam Dorra, Mohamed Abouzeid

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Presently, increased concerns should be directed towards the environmental consequences of rising carbon emissions as well as the persistent environmental impact of non-biodegradable waste materials. Notably, as greater demand arises for asphalt-paved concrete roads due to exponential infrastructural development, carbon emissions intensify since the production and the construction process are notable contributors to greenhouse gas emissions. Additionally, non-biodegradable waste materials such as

Low-Density Polyethylene (LDPE) and Crumb Rubber (CR), have become more prevalent in landfills due to the increased dependence on plastic bags and the constantly rising demand for rubber tire-dependent vehicles. This research aims to study the integration of these waste materials in asphalt concrete with focus on reducing the carbon emissions whilst reducing the costs. Firstly, CR and LDPE were used to modify a neat asphalt binder of PG64-22. Performance grades of 7%CR and 5%LDPE, of asphalt weight, modified asphalt blends were determined to be PG70-22 and PG76-28, respectively. Employing the Superpave mix design method, both the 7%CR and the 5%LDPE modified asphalt binders were used to design hot mix asphalt (HMA) mixes using two aggregate structures; one represented a wearing surface layer (WS) while the other represented a treated base (TB) layer. Both asphalt mixes were characterized in reference to the control mix using neat (unmodified) asphalt binder. Based on the performance of the modified mixes, different pavement cross sections were proposed. Three different modified pavement cross sections were investigated; CR modified WS on top of CR modified TB, LDPE modified WS on top of LDPE modified TB, and CR modified WS on top of untreated base (UTB), in reference to the control cross section unmodified asphalt WS on top of UTB. This research found that LDPE modified base as well as LDPE modified wearing surface have superior performances in comparison to the other alternatives as assessed by the indirect tensile strength (IDT) and moisture susceptibility tests. Environmental assessment due to implementing the different proposed pavement cross sections were studied in terms of their carbon footprints and yielded that the usage of waste such as CR and LDPE reduce their Life cycle carbon emissions by 83.78%. Additionally, the anticipated cost savings were calculated for the different pavement cross-sections, yielding that the life cycle costs decreased by 54% over a 40-year analysis period.

READ – CVC P022

Time: Sunday, 25/Feb/2024: 10:00am - 11:25am

Location: CVC P022

Exploring the Gastrointestinal Effects of Caffeine in the Stomach and Small Intestine

Mohamed Ashraf Mohamed Abdelghaffar¹, Mona Taher Maged¹, Marina Hanein Aziz²

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This research deals with the Complex interaction between caffeine consumption and gastrointestinal physiology, focusing on the stomach and small intestine. Using a multidisciplinary approach, we conducted a comprehensive investigation to clarify the nuanced effects of caffeine on gastric dynamics and small intestinal motility. Utilizing physiological monitoring, our study revealed dose-dependent alterations in gastric acid secretion and enhanced small intestine peristalsis in response to caffeine intake. Furthermore, we explored the molecular mechanisms underpinning these effects, uncovering potential signaling pathways involved in caffeine's impact on gastrointestinal function. The results contribute valuable insights into the complex interactions between caffeine and the digestive system, shedding light on potential effects for gastrointestinal health and providing a foundation for further research in this field. This research not only enhances our understanding of caffeine's influence on the gut but also underscores the importance of considering individual differences in response to caffeine for personalized dietary recommendations.

Multi-functional Green Modified Graphene Oxide for Enhanced Tissue Engineering Applications

Jannah Mohamed Al-Sayed, Ahmed Ezz-Eldine Ali, Ziad Mohamed Shafik, Salwa Magdy Ahmed, Mahmoud Nabil Yaqoub, Mennatallah Fouad Ahmed, Sandy Mohamed Ali, Nader Hassan Ahmed

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Reduced graphene oxide (rGO) possesses exceptional properties, including high surface area, mechanical strength, and biocompatibility, making it a promising biomaterial for tissue engineering. This study explores the potential of rGO scaffolds in multifunctional tissue engineering applications, focusing on bone, cardiac, and neural regeneration. To enhance the efficacy of rGO scaffolds, a green modification approach utilizing a plant extract is employed, ensuring an environmentally responsible modification strategy. Various cell types, such as (hMSCs, or Human Osteosarcoma MG-63 for bone tissue engineering. PC12 rat pheochromocytoma, Neuro-2a mouse neuroblastoma, or Primary Neuronal Cells are all used for neuro-tissue engineering, HL-1 a mouse cardiac muscle or HEK293T (Human Embryonic Kidney 293T) are used at the level of molecular studies) serving as scaffold cells examples. The objective of this research is to advance the application of rGO in tissue engineering by evaluating its effectiveness as a versatile scaffold for regeneration and proposing a sustainable surface modification technique to improve tissue compatibility. By modifying rGO with a plant extract, we enhance the performance of rGO scaffolds, augmenting their biocompatibility and mechanical properties. The findings of this study have the potential to enhance current tissue engineering approaches by providing a more efficient and sustainable biomaterial. Moreover, this research sets the stage for the development of rGO-based systems for multifunctional tissue engineering applications, offering an environmentally friendly alternative to conventional modification methods. By combining the promising properties of rGO with eco-friendly surface modification strategies, this study paves the way for the advancement of advanced tissue engineering materials.

Intelligence Between Education, Gender and IQ Score

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The following paper investigates the relationship between intelligence, education, gender, and IQ score. The paper starts with how different kinds of intelligence affect the understanding of the students' other content; then it moves to discuss gender, as students are whether men or women; hence, the paper outlines how biological difference affects preference, resulting in dominant kinds of intelligence. Thus, it affects the understanding of the content. Moreover, the paper discusses how IQ scores are only sometimes accurate and that there are a lot of factors that affect them. In addition, IQ scores might not measure all kinds of intelligence, which results in low scores for people who have different kinds of intelligence other than the ones the test measures, which results in people thinking that those people are not smart enough or do not have the same chances or intelligence like those who have high IQ scores. In the end, the paper discusses how education can increase IQ scores, especially for children; however, it is still being determined whether it improves intelligence or only IQ scores. The paper concludes that the educational system needs to be changed to include more learning styles for different kinds of intelligence, and that can be achieved practically if schools include different types of activities and group work to trigger more than one kind of intelligence simultaneously.

CT chest CAD System to Classify Between Pneumonia and Normal Scans Using Deep Learning

Fatma Said Elsharkawy, Muhamed Salah Sharf, Shaimaa Kamel Shaheen, Bassant Rabie Farag, Laila Khaled Elhosny, Biatriss Benyamin Boshra, Eman Abdelazeem Abdelazeem, Mohamed Abdelhamid Abdelrahim, Samah Elshafiey Eltantawy. PHD

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Artificial Intelligence has revolutionized medicine generally and radiology specifically. Using AI, CAD "computer aided diagnostic" can make a difference in the radiology sector in healthcare. It serves as a second eye for the radiologist, specifically with a larger number of scans and a smaller number of experienced radiologists. This paper aims to make a CT CAD Chest system that can differentiate between pneumonia and normal scans and can be implemented into Picture Archiving and Communication System (PACS) workflow and gain trust of medical staff. To achieve this, we considered all the real-world scenarios to bridge the gaps between CAD in research and usage in radiology centers, specifically, in Egypt. First, we collected CT scans from a local radiology center and international database for pneumonia to ensure data diversity. Throughout this paper, we used 60 total CT scans: 30 normal and 30 pneumonias to avoid data bias. Secondly, the data were preprocessed using four main steps: resampling, lung segmentation, resizing, and normalization. Thirdly, the data were annotated and confirmed by a medical consultant. Throughout the five experimental scenarios, we used both deep learning and machine learning algorithms to make the CAD system take in one scan (series of 2d images) and detect whether it's "normal" or "pneumonia." The best experiment was found to use a pretrained convolutional neural network model on CT images. Then, using our dataset, composed of 1435 pneumonia and 1435 normal images, the model was modified by adding three trainable and three dropout layers. To enable the model to be implemented into PACS workflow, the model takes a whole scan then passes through each image giving it a label whether normal "0" or pneumonia "1". Because pneumonia doesn't appear through all images in the scan, the ratio of 0's and 1's was taken, and a threshold of this ratio was determined to label the whole scan. Additionally, the model returns the image that has label of 1 if pneumonia is detected to make it self-explanatory. The model achieves accuracy of 97%, recall of 0.97 for normal and 0.96 for pneumonia, and precision of 0.96 for normal and 0.98 for pneumonia. In future work, the study aims to enhance the CAD system interpretability by enabling it to identify precise areas within each image in a scan where pneumonia is present. Furthermore, the upcoming stages will include all disease detection from CT imaging.

Focused Feature Extraction for Driver Drowsiness Detection Using an Attention-enhanced Resnet Model

Dr Moustafa Youssef, Rawan Sameh Hamad, Nada Atia

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In the context of increasing road safety concerns, particularly in Egypt, our paper addresses the critical issue of driver drowsiness, a significant contributor to road accidents worldwide. With alarming statistics from the World Health Organization citing human error, chiefly drowsiness, as the cause for a majority of road accidents in Egypt, there is a compelling need for an effective drowsiness detection system. This research introduces a novel, vision-based driver drowsiness detection system leveraging a multi-dimensional approach with a Residual Neural Network (ResNet) architecture and attention layers. This system aims to accurately identify drowsiness by analyzing key facial features. The paper further delves into the challenges, methodologies, and significant accuracy enhancements brought about by this innovative approach. This work contributes to the realm of intelligent transportation systems, aiming to reduce accidents caused by driver fatigue and enhance overall road safety and public health.

FYRE – CVC P019

Time: Sunday, 25/Feb/2024: 1:00pm - 2:30pm

Location: CVC P019

The Depiction of Female Characters in Disney and its Influence on the Public

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The depiction of female characters in Disney films has undergone a significant transformation throughout the decades, reflecting societal shifts and changing perceptions of gender roles. Since many young girls tend to idolize and align with fictional female characters, ensuring a healthy portrayal of women in animated films is crucial. This paper aims to discuss the depiction of female characters in Disney movies within certain frames and their impact on the general public through a case analysis of literature reviews. It underscores the dynamic interplay between societal change and cinematic narratives, particularly in Disney. The findings of the research indicate that the negative portrayal of Disney female characters happens through three possible frames; the damsel in distress complex, the physical appearance of female characters, and the representation of villainous female characters. The study investigates the representation of the stereotypical tropes attributed to the early female protagonists showing their heavy reliance on men and obedient attitudes. Moreover, the paper explores the evolutions of female characters' representation in Disney animations, spanning from the classic princesses era to the contemporary era marked by more diverse and empowered female protagonists. The research also delves into Disney's approach to female characters emphasizing the implicit notions related to their physical appearances, body types, and beauty standards. It then finally transitions to the physical appearance of the villainous female characters outlining the correlation between the bad and the ugly. By analyzing the insinuations of the gender representations in Disney movies, the paper considers the ongoing discussion on whether Disney has addressed the complexities of women's identity or if there is still room for improvement. As Disney remains a large media conglomerate that has the ability to influence people immensely, the implications of women extend to more than entertainment, shaping perceptions and attitudes. This study contributes to a larger field of research that sheds light on ongoing discussions on the nuanced complexities of women's identity in animated cinemas and underscores the need for a positive, more empowering portrayal of women in media.

Scouts: Together for a Better Future

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This research sheds light on the fact that the scouts movement plays an essential role in shaping the lives of young people by improving their academic performance and leadership skills. It will also help with building a sense of social responsibility and open vast opportunities to adolescents. Scouts is an educational youth movement that includes around 57 million young people in over 200 countries. Scouting is a combination of education, fun, leadership, and adventure activities that will inspire young people to be active citizens in their society as well as to create a more sustainable world. This topic is important because it will raise awareness about this civic movement and hopefully encourage parents to sign their children up for it. I will reflect on my experience with scouts, which will increase the curiosity in readers' minds, providing a glimpse into the volunteering world.

Writing in Business: A Comparative Evaluation Between Direct Data Presentation and Narrative Storytelling

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This research aimed to explore how the direct presentation of data and performance metrics in annual reports may be less or more effective than narrative storytelling in influencing investor perceptions. Annual reports were selected as the media for analysis of investor perceptions as they are a pre-scripted annual communication with shareholders including content over which companies have near-complete editorial control; thus it was presumed to be the medium that most accurately reflects a company's reporting purposes. After selecting, analyzing, classifying, and comparatively evaluating annual shareholder reports with different writing styles, the results of the study indicated that direct data presentation was, to a great extent, more likely to attract financially literate investors who would not need extensive narrative delineations and were specially optimized by businesses of smaller sizes which recognize the higher risk they pose to investors. Factors such as company size and the extent of the use of narrative-style writing also played a role in the performance of companies following the release of the annual report. The research holds benefits for corporate communication professionals as well as finance or business students seeking to optimize their report writing strategies, such that the findings may assist writers in tailoring their communication approaches to specific stakeholders, ultimately fostering greater transparency and shaping readers' interpretations to align with the author's purpose.

Unintentional Injuries Among Adolescents: Understanding the Nature of Unintentional Injuries, Their Types, Risk Factors, and the Perceptions of College Students in Egypt

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Unintentional injuries are a primary cause of death in children and teenagers worldwide. Lack of knowledge and awareness of the severity and types of unintentional injuries among undergraduate students in Egypt hampers the possibility of preventing those injuries and reducing their risks. An online survey of 70 undergraduate students from three universities in Egypt sought to measure their perceptions regarding the severity, prevalence, and types of unintentional injuries among children less than 18 years old. Approximately 76% of the participants have never heard of the term unintentional injuries. Although 65% of the sample have witnessed such injuries in their lives, only 30% of them believed that unintentional injuries are very common in children. Shortage of time and accessibility of universities were the main obstacles that limited the sample size. These results can be used in the future to find possible solutions to reduce or prevent unintentional injuries.

Factors Affecting the Resilience of Unhealthy Relationship Dynamics from Childhood into Adulthood

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This study aims to investigate the effects of parental abuse and self-verification on the levels of emotional abuse in intimate relationships in adulthood within an Egyptian context. The study includes a total of 40 students from Egyptian private universities ages 18 to 24. Participants completed a self-report questionnaire via Qualtrics which explores three primary subtopics; namely, parental abuse, self-verification and emotional abuse in intimate relationships. Linear regression models are utilized for data analysis to explore correlations between study variables. Results indicate that there is a significant positive correlation between parental abuse in childhood and adult emotional abuse from a significant other. Meanwhile, there is no significant relationship between self-verification and emotional abuse in adulthood. Limitations and implications of the findings are discussed.

Sudan

Malak Ahmed Talaat

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The immediate effects of the civil war and GERD on the health of Sudanese children are explored in this research. These children deal with challenging circumstances like violence, homelessness, and unstable environments. Each of these problems has an impact on their wellbeing in a particular manner. The research examines the correlation between GERD, the civil war and physical and emotional health impacts, concluding that comprehensive efforts for the mental and physical health of Sudanese children are crucial for preventing further tragedies in their life. Water shortages and agricultural disturbances are made worse by GERD, which increases the risk of severe hunger and disease. In the meantime, a civil war harms children's psychological well-being over time by shocking them with tragedies that are deeply ingrained in their hearts and brains. Regarding GERD management, solutions are critical to preserving Sudanese populations' access to clean water. Programmes, counseling, and psychotherapy are all necessary to assist children manage stress and trauma in order to improve their health. Information in the form of campaigns regarding hygiene, good nutrition, and mental health should be given to families. This research emphasizes how important these complex issues are. It highlights that in order to ensure the safety of Sudan's children for a better future, humanitarian aid must be given and immediate steps must be taken towards achieving peace, stability, and long-term solutions.

READ – CVC P020

Time: Sunday, 25/Feb/2024: 1:00pm - 2:00pm

Location: CVC P020

The Cinephile's Manual for Reading or Even Crafting Film Critique

Farah Hassan Elshenawy

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This paper investigated the overlaps and distinctions between academic film criticism and journalistic film criticism - rather known as film reviews -. Answering said research allows cinephiles to understand which form of film critique best caters to their needs as well as gain an understanding of how to write their own. Previous research centered around defining each form/ genre of critique introducing where it can be found and highlighting their writer, disregarding the conventions of each genre and how they appeal to different audiences for different purposes. To execute this research and add valuable insights to the industry, one article from each genre of criticism was extracted and analyzed to understand its conventions and formatting. The articles chosen critiqued the same films - Barbie and Oppenheimer- to exclude any extraneous variables during this investigation. Later, results from each article were compared to one another. Additionally, an interview was held with an experienced film critic to add more semantic knowledge and

understanding to the research. Differences and similarities regarding elements such as tonality, criteria used for film evaluation, impact on society, and formatting were revealed by comparing both sets of data/results. Lastly, these findings were compared and supported by evidence of existing secondary research to aid the argument presented.

Reforming Energy Subsidies in Egypt

Hana Gad

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This research paper delves into the historical evolution and contemporary challenges of energy subsidies in Egypt, a matter of paramount importance in the context of the country's economic, environmental, and social dynamics, and sheds light on their impact on fiscal stability, resource allocation, and environmental sustainability. The study contextualizes the issue by tracing the roots of subsidies back to the early 1900s, exploring shifts in policy and geopolitical influences. It assesses the multifaceted impacts of subsidy reforms, addressing challenges faced during implementation, including public resistance, political considerations, and external economic factors. Drawing on the successful cases of Iran and Morocco, the research proposes strategic measures to mitigate negative consequences, such as redirecting subsidies to renewable energy and developing reliable and accessible alternatives. The success of Egypt's energy subsidy reforms hinges on the prioritization of meticulous planning, transparent implementation, and a commitment to addressing societal concerns and environmental sustainability during this transformative period. Redirecting subsidies toward renewable energy, developing a reliable public transportation network, and addressing the root causes of subsidy cuts and indebtedness emerge as crucial measures.

Impact of Institutionally Created State of War on Israeli Society

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In 2022, Israeli defense expenditures and defense budget was the highest receiver of Israeli funding. Knowing the reason for Israel's increased focus on military spending is important, as it will lead us to understand more about the Israeli state of war and its impact on Israeli society. Therefore, the increased Israeli focus on military and the subsequent war state should be analyzed. I am sure this has been covered by others - the research is relevant because it's a continuation of this. For this reason, this research aims to explore how Israel creates a national state of war and determine the effects of this national state of war on Israeli society. To achieve this end, this research includes primary content analysis of media depictions of the Israeli government, Mossad, and Defense forces. This entails content analysis of best-selling films about these sectors. Also, several famous Israeli songs and newspaper headlines from the most circulated Israeli newspapers are analyzed. Moreover, Israeli government, Defense Forces, and Mossad posts on Twitter, the most used social media platform among journalists and politicians alike, are examined. Content analysis of these sources is supplemented with secondary research in the form of academic journals, books, and reports. Analysis of both sources of research has revealed that Israel uses its various institutions, such as education, government, military, and religion to influence the Israeli public. Thus, this leads to the conclusion that Israel is constantly trying to create a state of war using its institutions, maintaining the Israeli political status quo. Knowing this should help Israelis take control of their political and democratic scene, preventing the status quo, and, eventually, securing their national stability. Thus, this research falls under the category of similar ongoing research of the nation-wide Israeli state of war and its implications in Israeli society and life.

READ – CVC P022

Time: Sunday, 25/Feb/2024: 1:00pm - 1:45pm

Location: CVC P022

The Rhythm & Poetry of a Pharaoh

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This study aims to compensate for the supposed lack of linguistic comparison between modern-day American and Egyptian rap songs. Rap originated in New York City, more specifically, in the South Bronx in the 1970s. In Egypt, however, the first rap movement began around the early 2000s on the hands of the rap group known as, MTM. Modern-day rap in both the U.S.A and Egypt includes the type of rap known as trap. Furthermore, multiple approaches, such as using word clouds, critical discourse analysis, and the analysis of word formation processes on slang words, could be employed to analyze both American and Egyptian rap songs. After having chosen two modern American rap songs ("Jocelyn Flores" and "The Way Life Goes") and two modern Egyptian rap songs ("Amal 2" and "El Hob Fein"), one from each country having the same or a similar theme to one from the other country, each song was individually analyzed and then compared to its foreign counterpart. The songs were analyzed in the following ways: briefly explaining what they discuss—this served as a justification of the similar themes of the songs of comparison more than it did an analysis, identifying and counting the figurative language used, counting the double entendres used, analyzing the word formation processes used on slang words, and generating word clouds. The results demonstrate that the songs of comparison linguistically differ more than they compare. However, it was realized that many of the methods of analysis used to analyze the songs were not particularly effective in fulfilling the purpose behind the research question: beginning to understand the degree to which modern Egyptian rap songs are influenced by modern American rap songs.

Depression, Shame, Social Media, and Diet Culture Impacting Harmful Eating Behaviors

Malak Ismail Selim, Malak Mohammed Abbas, Awatef Hamed Gouda

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Harmful eating behaviors, characterized by eating patterns with potential physical, emotional, or social harm, have become a prevalent issue across demographics. The increase in harmful eating behaviors is fueled in part by societal factors, cultural shifts, and the prevalence of social media that often perpetuates unrealistic body standards. The rise in harmful eating behaviors holds a significant risk factor for the development of eating disorders raising concerns about the potential long-term consequences for individuals' well-being. In light of this, this study aimed to assess the impact of the factors of social media, diet culture, shame, and depression on harmful eating behaviors, particularly within the context of Egypt. The study included 149 participants with 37 males and 112 females from various age groups. The data was collected from a questionnaire of 58 questions in 5 sections, with each section assessing one of the factors. The correlation analysis indicated that there is a significant impact between shame, depression, social media, diet culture and harmful eating behaviors. Two linear regression tests were conducted. The first multiple linear regression ($F(4, 138) = 28.133, p < 0.001, R^2 = 44.9\%$) indicated that shame ($\text{Beta} = 0.674, p < 0.001$) and depression ($\text{Beta} = -0.218, p = 0.005$) were significant predictors in the of harmful eating behavior. The second linear regression ($F(2, 145) = 56.267, p < 0.001, R^2 = 43.7\%$) result showed that depressed people experience less harmful eating behaviors if shame is not in play ($\text{Beta} = -0.194, p = 0.008$). The results highlight the importance of shame and depression above the other variables and highlight a complex relationship between the variables studied.

Prediction of Epileptic Seizures Using Machine Learning

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Epilepsy affects an estimated 50 million individuals worldwide, significantly impacting their quality of life. This neurological disorder is characterized by recurrent seizures varying in severity, from mild loss of awareness to life-threatening status epilepticus, a prolonged seizure that requires emergency medical attention due to its significant risk on the patient's life. To address this challenge, our research focuses on developing predictive machine learning models that allow detection before seizure onset to mitigate the seizure's potential devastating consequences. By providing accurate classifications, our approach aims to enhance patient care and quality of life. Our work contributes to the ongoing effort to improve epilepsy management and empower patients with better treatment options.

Monday, February 26

READ – CVC P019

Time: Monday, 26/Feb/2024: 10:00am - 12:00pm Location: CVC P019

Testing the Effects of Different Languages of Music on Learning and Memory in Bilinguals

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Researchers have long debated the effects of music on learning and memory. This study aims to test the effects of music in different languages and speeds on visual and reading task completion, specifically in regards to bilinguals. An experiment was conducted using 30 participants that ranged from 20 to 30 years of age and were all of similar educational backgrounds. They were split into three groups that had to complete two tasks: one being a visual/problem solving task and the other being a reading/memory retrieval task. Participants in the first group had to listen to one medium paced and one fast paced Arabic song while completing the two tasks, one song would accompany each of the two tasks. The second group had the same conditions of the first group with the main difference being that the songs were in Russian and the third group completed the tasks while not listening to any music. The study managed to support one of the four hypotheses it aimed to test. Results supported the first hypothesis that participants who listened to music while performing comprehension tasks would perform poorly. Based on the results, the second hypothesis that music would help with visual tasks was rejected, instead showing significant results of the opposite. The third hypothesis that music in an incomprehensible language would make it easier to focus on the tasks was also rejected. Lastly, The fourth hypothesis which suggested that faster music would make task completion quicker was rejected, also showing significant results of the opposite. In conclusion, the results showed many significant findings that music is detrimental to cognitive processes in learning and memory regardless of language and pace, contrary to popular belief.

Perceptions Toward Low-cost Nature-based Solutions to Lessen the Environmental Impact of Developing Nations' Industrial Activities

Marwan Tarek Madkour

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Mitigation of climate change requires several technological approaches. To ensure the sustainability of the proposed solutions, infrastructures designed to solve environmental problems need to be both affordable and based on nature. The low cost of these infrastructures is necessary to persuade developing nations with scarce economic resources to adopt these nature-based solutions (NbS). While the literature is rich with research data covering the implementation of nature-based projects in developed nations, limited information is available on green projects implemented in developing countries. To cover this gap, primary research was conducted through a series of interviews and a survey designed to obtain insights from a random sample of citizens of a developing nation. The experts agreed that something needed to be done to combat climate change but disagreed on how this could be implemented and financed. The majority of the survey respondents strongly felt that NbS would be beneficial to our region. However, the split in the experts' opinions is also mirrored by a split in the responses to the survey. Some believed that food and water should take precedence over clean energy and better air quality, while others believed otherwise. While some believed the government should take a larger role in funding green technologies, others preferred that the private sector carry out this responsibility. Some believed that large corporations should carry out the responsibility of cleaning up the environment, while others believed that it is the government's role. However, all participants agreed that NbS represents a golden opportunity for young entrepreneurs to start up their own business ventures, realize their career goals, and save the world in the process.

Zero Liquid Discharge Desalination Plant with Minimum Cost

Hossam Hassan Issa, Kyrillos Shafek Youssef, Fatma Alaa Eldeen Kassem, Marlin Fouad Mikhael

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Water Desalination is one of the most crucial areas in Egypt due to the fresh water scarcity that Egypt is going through. That's why the government is investing in the field to produce more fresh water to feed the coastal areas on the Mediterranean sea and the red sea like Alexandria, Marsa Matrouh, and Sharm Elsheikh. Water Desalination process consumes tons of watts of energy that's why it is costly. In addition to that, the waste that is produced from the process is hazardous to the sea due to the high concentration of dissolved solids and salts in the water. High salt concentration can cause damage to aquatic life, coral reefs, and reduce the quality of water. The paper will discuss how to reduce the energy consumption and save the environment at the same time by the modification of an electro-chemical application called electro-dialysis that is based on separating the ions depending on its size, speed, mobility, and valence of the water ions, generating a zero liquid discharge Desalination plant with minimum cost.

Towards a Resilient Community: Flash Flood Resilient Structures in Dry Environments

Ghaidaa Abdelhameed, Ahmed Ahmed, Ali El Karanfeli, Marwan El Khazndar, Wessam Hanafy, Youssef Shalaby, Ahmed El Gendy, Ezzeldin Sayed-Ahmed, May Haggag, Mohamed Nagib Abou-Zeid
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Flash floods in dry and semi-dry environments represent a substantial hazard due to their abrupt initiation and considerable magnitude flooding was one of the most common natural disasters in 2022, affecting 55 million people. In an era marked by increasing environmental uncertainty, such as the effects of climate change and the unpredictability of urbanization trends, the construction industry faces unprecedented challenges that could be alleviated if the notion of resilience is well practiced. In that context, resilience refers to the ability of a system to bounce back to a pre-existing state after a disaster happens. As such, a resilient structure can withstand and adequately recover from adverse events in a timely manner. The significance of resilience within the realm of construction and its relationship to flooding cannot be overstated. This calls for developing strategies for designing and constructing buildings that can withstand floods and recover quickly, minimizing damage and protecting flood-prone communities. This work represents a new approach to systematically address building resilience against flash flooding. Subsequently, the primary goal of this work is to investigate and propose innovative materials and structural systems that enhance the resilience of buildings against flash floods. Subsequently, regions were identified and categorized into dry and wet regions. Moreover, data was collected and used to evaluate currently used building structure systems, materials, and construction methods. Following such investigation, various methods for flood-proofing were proposed, namely, dry proofing, which entails the prevention of water from entering the building completely, and wet proofing, which not only withstands flash flood but also works in harmony with it by mitigating, storing, and reusing the flash flood water. As such, different innovative materials and structural systems were experimentally and numerically tested to quantify their resilience to flash floods and compare their performance to that of conventional buildings. This work is expected to improve quality of life, reduce property and life losses, and promote sustainable development in vulnerable communities.

The Potential of Novel Antibacterial Compounds from a Hyper-saline Environment

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Due to overuse and exposure of bacteria to antibiotics and drugs, many bacterial species are now resistant to the currently prescribed antimicrobials. This study will attempt to discover novel antibacterial compounds from a fosmid library that was constructed from an extreme environment. This environment is the Solar Lake's sediment, located on the edge of the Red Sea in Sinai, Taba, Egypt. It is a saline desert lake, known to have a diverse and novel bacterial community. The antibacterial properties of clones from the fosmid library will be assessed against *Staphylococcus epidermidis* (Gram-positive), *Enterobacter aerogenes* (Gram-negative), and *Bacillus Cc6* (marine bacillus). Additionally, two multidrug-resistant strains including *Actinobacter*, and MRSA (Methicillin-resistant *Staphylococcus aureus*) will be assessed. The MDR and MRSA were obtained from hospitalized patients in Egypt. The preliminary screening will entail a modified version of an overlay assay against *Bacillus Cc6* (marine bacillus) and promising fosmid clones should display clear zones. These will be selected for further testing against all five strains. The clones which display antibacterial properties will be sequenced and analyzed for the gene of interest. This research will allow us to discover novel antibacterial compounds that can be used in pharmaceuticals.

Digit Span in Bilingual Students

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Short Term Memory is a stage of memory that holds a specific amount of information for a short duration of time. With bilinguals showing enhanced cognitive functions, several studies focus specifically on short-term memory in bilinguals. On another note, digit span tests are the most used measure in measuring short-term memory which is a test that measures the number of items held in the STM since this number can vary among people. This paper aims to test language differences in bilinguals within short-term memory. The main question is "Which language holds a larger digit span in English-Arabic-speaking bilinguals?". The research was conducted on English-Arabic-speaking bilinguals at the American University in Cairo. Results showed that there were no significant differences between both languages and digit spans of the participants. Future research should focus on increasing both sample size and number of trials in order to better ensure the reliability of the results.

Dissociative Identity Disorder: A Neuroanatomical Perspective

Yusra Ahmed Kilany

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Dissociative disorders are a group of disorders characterized by experiencing disconnections between thoughts, memories, and surroundings. The most known of them is Dissociative Identity Disorder (DID) in which someone has two or more identities that take control of the person's behavior. There are various symptoms under DID such as depersonalization, derealization, memory gaps, and flat affect. Although the main cause of it is known, which is being exposed to severe trauma, the etiopathology of DID is not that clear. Therefore, this literature review attempts to answer the question "What are the neuroanatomical underpinnings of DID" by

combining previous research focusing on the neuroanatomical differences found within DID patients. Findings include volume and size differences within certain structures such as the limbic system, frontal lobe, and parietal lobe. Future research is still needed in order to provide a more comprehensive etiopathological pattern of DID.

READ – CVC P020

Time: Monday, 26/Feb/2024: 10:00am - 11:15am Location: CVC P020

Algeria and Tunisia similar contexts different Islamisms

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Islamism, or “the political ideology that advocates for control of the state in order to impose an Islamic order under sharia law.”, is a fundamentalist movement that has managed to become the face of the religion of Islam in international discourse, while undermining the existence of its more moderate forms since its appearance in a better organized version developed by Hassan Al-banna and the Muslim Brotherhood in Egypt. While most muslim-majority countries in the 20th century were building themselves after colonialism based on nationalist principles; many muslims saw it as a treason to the original precepts of Islam and wanted to exert the rule of Shari’a through bringing the Muslim world back to the Caliphate. Islamist movements had to adapt to the new world order and political systems of the different countries in which they existed. They managed to successfully establish their political rule in some countries such as Saudi Arabia, but were less lucky when it came to other countries such as Tunisia, and to a lesser extent, Algeria. Tunisia and Algeria are great examples of how, even in countries that have very similar geo-political contexts, Islamists movements can have very different political outcomes. While Tunisia managed to keep the Islamists at bay by stripping them off every prerogative during the Bourguiba and Ben ali era, the Algerian government found it more challenging to control the Islamist ideology as Islam was seen as a liberation symbol from the French colonizer. This is believed to be related to many factors, and mainly the historical background of the country in question, its politics after independence, and the ideological influences different parts of the society are subject to. And so, in order to shed more light on the subject and understand the development of Islamist movements, a comparative study between Tunisia and Algeria is presented in this paper in order to answer the question on how did Islamist movements in these two countries have different political outcomes, while they belong to be similar historical and geo-political contexts.

Morocco’s African identity

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This paper aims to examine how young Moroccans perceive their African identity through the lenses of their ethnicity as Arabs and Amazigh. The paper argues that the colonial legacy and the building of the nation-state of Morocco affected how these identities emerged and had been imagined. The methodology adopted for the study was in-depth interviews with two groups; each group recognized itself as either Arab or Amazigh Moroccans in the city of Marrakech. The literature review relied on the discussion of historical events, such as colonialism and state reform. The findings suggest that Moroccans’ understanding of their African identity is still conditioned and limited due to the colonial legacy and the construction of the homogeneous nation-state. The findings also indicated that despite the state’s progressive political agenda to present Morocco as an African country, Moroccans’ understanding of race and racism is still a huge obstacle to overcome.

Smartphone Addiction & Sleep Quality: A Multi-central Cross-sectional Study Among Egyptian University Students for Better Well-being

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Smartphone addiction poses a prevalent public health concern among university students globally. This cross-sectional study investigates the potential impact of smartphone addiction on sleep quality among Egyptian undergraduate students. Our study, comprising a sample size of 385 undergraduate students across various Egyptian universities, aims to assess the prevalence of smartphone addiction. Employing clustered sampling for representative strata, we analyze the correlation between smartphone addiction and sleep disturbances using the Smartphone Addiction Scale Short Version (SAS-SV) and Sleep Quality Index (PSQI). We define strata based on universities and disciplines using clustered sampling, ensuring representation from diverse segments of the undergraduate population. Furthermore, we employ random sampling within clusters to facilitate participant selection systematically. Our preliminary findings reveal a statistically significant increase in the PSQI global score among students with smartphone addiction ($P = 0.05$). Detailed figures and charts, visually representing the study’s outcomes, will be showcased in the presentation. This study underscores the high prevalence of smartphone addiction among Egyptian university students. Additionally, it emphasizes the importance of screening and implementing preventive measures to address smartphone addiction. Such interventions aim to enhance students’ sleep quality and overall well-being. The utilization of clustered sampling enhances the sample’s representativeness, thereby contributing to the validity and generalizability of the study’s outcomes.

Tackling the challenges of United Nations SDG 9, “Industry, Innovation, and Infrastructure”: Focus on Egyptian industry

Jasmine H Bekeat, Mariam Gad, Abdelrahman Mamdouh, Gihan El fiky, Aisha Ali
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The study aims to tackle the question, “How can the challenges within Egypt concerning United Nations Sustainable Development Goal 9 (SDG 9) titled 'Industry, Innovation, and Infrastructure' be tackled with a focus on Egyptian Industry?” This is a significant area to examine since Egypt has shown minimal improvement within this sector despite the high focus on infrastructure within the past decade. While SDG 9 looks at issues concerning infrastructure, innovation, and industry, the Egyptian economy would potentially benefit most from the focus on industry. This is mainly because each challenge identified within the three aspects has been traced back to the Egyptian industry. However, there are several issues in the industry sector in Egypt that have not been managed sufficiently as of yet. Within the industry itself, there are financial and nonfinancial challenges that must be overcome. The non-financial challenges include the lack of intellectual property rights and vocational training as well as skill mismatches, high levels of bureaucracy, and outdated customs. From a broader perspective, there are financial challenges such as the lack of foreign reserves and low investor confidence since the devaluation of the Egyptian pound. Likewise, the infrastructure within Egypt has shown great inequalities between urban and rural areas. While some initiatives have aimed to address these, there still remain gaps between geographical locations. Additionally, a lack of focus on innovation as well as a lack of links between companies and educational institutions has weakened this sector within Egypt. The focus on industry could potentially look into the aforementioned challenges. The research question will be investigated through a comprehensive study of the current business climate in Egypt, followed by the identification of gaps within industry and potential policy solutions. Moreover, interviewing high-level business owners focused on local production within the Egyptian industry will help identify the main challenges in the Egyptian industry as well as potential solutions for each challenge within SDG 9. Overall, the key outcome will be to see the theoretical effects that focusing on the industrial sector in Egypt will have on the country's progress towards achieving SDG 9.

Youth Bulge in the MENA Region

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The phenomenon of Youth Bulge is a genuinely vital concern to discover and study when it comes to states' development and economic policies, especially in the MENA region. Youth bulge develops when young people comprise a relatively large share of the whole population. In fact, there are inevitable factors that induce such a circumstance that are significant to look at and examine; also these factors eventually have impacts and tensions on the economic status that will entirely require effective and practical solutions and procedures that work reasonably for the MENA region. All these aspects have to be taken into consideration in order to get the full picture of the occurrence of Youth Bulge and to know if Youth Bulge is a demographic reward or a curse. There are multiple elements that lead to high growth in the youth population; however, there are primary social and economic stimulants that result in having a large percentage of young people in the entire population such as the fertility rates, infant mortality rates, health conditions, and education, particularly for women. From the perspective of health, there is one theory that believes the fact of having exponential increase in fertility rates is due to inferior and inadequate health and there are multiple examinations that endorse the idea that high infant mortality rates increase fertility as people want children who will survive on average people tend to have more kids to make up for infant deaths and thus population tends to increase further. All these causes eventually generate problematic outcomes. One of the fundamental harmful impacts is youth unemployment that emerged from having a Youth Bulge, especially in the Middle East and North Africa. Youth unemployment places high social and economic pressures, especially in less developed countries and developing countries as if young people have the ability to join the labor market, unfortunately, there are inadequate capacities to meet the supply of awaited job seekers. Policymakers are the ones who determine whether Youth bulge can be an asset or a limitation to economic development depending on how policymakers address the phenomenon by giving suitable and effective methods or they fail to do so.

READ – CVC P022

Time: Monday, 26/Feb/2024: 10:00am - 12:00pm Location: CVC P022

Utilizing Pure Pursuit Controllers and Bezier Curves for Autonomous Vehicle Navigation in Dense Traffic Environments

Mohamed Hazem Ali
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Autonomous vehicles have the potential to replace driver-operated vehicles as a safer and more effective mode of transportation, thereby reducing fatalities and disabling injuries. Current autonomous vehicle motion planners commonly follow trajectories without precise real-time adjustment, leading to vehicle movements that may be inaccurately responsive to a dynamic environment. A pathfinder, a Pure Pursuit algorithm that effectively tracks a given path by following a smooth Bezier Curve, has been developed to

address this issue. The vehicle can realign onto target tracks in real-time, accommodating errors and slippage in a constantly changing environment by using Pure Pursuit as the mechanism of path tracking. PathFinder calculates a point on a created Bezier Curve using Newton's Method in Calculus. The generated Bezier Curve is determined by four control points. PathFinder will then use the most effective inverse kinematics for the operating vehicle to reach the calculated point.

Using Mangrove and Chlorella Algae for Developing an Efficient Desalination Technique for Agricultural Water Uses

Omar Ali Abdelhafiz Morsi¹, Mosaab Gamal Kamel Abdelaleem²

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No water, No life, No blue, No green. Water and life are two faces of the same coin. Water scarcity is one of the significant issues that face humanity as it affects 40 % of the world, especially Egypt. In the next few years, Egypt will suffer from this problem. Egypt faces this problem because water is used inefficiently and overpopulation. Our project depends on a mangrove plant that desalinates about 90-95% of the salts and on algae called chlorella that absorbs about 5-7% of the salts in the water from the first stage and gives the water nutrition that makes water suitable for agriculture uses. After testing our prototype, we found that the efficiency is 98% in an average time of 32.7min. Its pH is 7.3. Its TDS is 1100ppm, which is an excellent result indicating that our prototype meets the design requirements and can desalinate water suitable for agricultural uses.

Microplastics' Adverse Health Effects on Fish and Humans

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The SDG'S 14th goal aims to reduce the levels of plastics in the ocean. Egypt is one of the main contributors to this type of pollution. Concerns are raised about the number of microplastics in the Mediterranean and Red seas. This study intends to examine the health consequences imposed by microplastics on fish and people who unintentionally consume them. This paper was conducted using a case-study analysis methodology, which involved combining and analyzing data from numerous articles. Fish are impacted in many ways, including decreased feeding intensity, decreased repeatability, genetic mutations, neurotoxicity, oxidative, DNA, and tissue damage. In contrast, three potential health impacts in humans have been identified: alteration of the metabolic system, the transmission of the pathogen Vibrio Cholerae, and neurotoxicity. These results highlight the significance of the issue for Egypt, which calls for the implementation of solutions similar to those used by other regions, nations, and organizations to protect and sustain the environment and marine life. These solutions include creating wastewater treatment facilities, prohibiting the use of microbeads in the cosmetics industry, recycling plastics, and increasing public awareness and education.

Language Disorders' Impact on Communication and Relationships

Noor Mohamed AbdelAzem

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Speech and communication impairments and disorders have negative effects on both the individuals who experience them and the people around them. People with speech or communication impairments may have difficulty communicating and may not even be aware of their problems, the causes, or some treatment options, which include psychological and pharmacological interventions. Meanwhile, those around them may not know how to communicate with them or understand the nature and impact of their conditions, leading to relationship loss and psychological issues. The literature review shows that speech and communication disorders can be caused by various factors with some neuro-linguistic branches such as syntax and semantics being connected with them. Since such disorders can significantly impact interpersonal communication, social interactions, relationships, academic performance, and employment can be affected. For this research, purposive and snowball sampling methods were used with participants aged 12 to 30 years old in Egypt with the survey results showing that more than half of the participants were not familiar with the disorders, and only a few of them knew how to communicate with people who have them, emphasizing the need for increased education and understanding.

Nanotechnology and IoT Solutions for Diabetes Management: A Novel and Comfortable Method for Continuous Glucose Monitoring

Kamel Yasser¹, Hana Mohamed², Danah Mohamed³, Jana Amir⁴, Mariam Atteya⁵

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Diabetes is a group of diseases that affect how the body regulates blood glucose. Diabetes can lead to excess sugar in the blood, which can cause serious health problems. After various surveys we concluded that diabetes patients' most frequent complaints were the trouble of always puncturing the skin to measure blood glucose and/or inject insulin, joined by frequently forgetting to take measurements and medication. As well as the issue of insulin storage requirements and lastly the discomfort resulting from the pump's dimensions and brittleness. Experimental techniques were applied and with the help of college professors, we were able to reach methods to solve these issues. Our research concluded that working at nanoscale to apply the molecular fusion principle as well as modifying the pump's materials and size were the best to eliminate discomfort from the machine and skin puncturing.

Applying the concept of IoT greatly reduced complications caused by forgetfulness. Thus, we were able to help reduce the adverse health problems due to diabetes and make it less frightening to children, less tiring to pregnant women and elders. Our methods align with the current Continuous glucose monitoring concepts, but noninvasive and more user friendly.

The Arabian-less Identity of Dune (2021)

Ismaiel Sherif Sabet

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Hollywood has a tendency to misrepresent certain minority groups, one of which happens to be Arabs. An in-depth analysis of Arabian representation in mainstream Hollywood cinema has been conducted by many researchers, for instance, the great Jack Shaheen in his book *Reel Bad Arabs*. Yet more recently, Hollywood has changed its trajectory for the most part and now seeks to represent Arabs, in addition to other communities, in a positive fashion. However, sometimes not representing someone who should be represented is just as bad as negatively representing them. This happens to be the case in Denis Villeneuve's epic *Dune* (2021), based on the novel *Dune* by Frank Herbert. The novel is very deeply inspired by Arabian history, mythology, and geography which is apparent in the book's characters and plot beats. Yet most of the Arabian identity of the novel is nowhere to be seen in the film. This begs a very important question, one that needs to be explored: did Hollywood actually improve and change its ways? Is this just a minor setback, or will this be the norm moving forward?

Legal Courts in Egypt and the Reduced Ethnic and Religious Representation

Salma Ahmed Badreldin Mohamed

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This paper analyzes the contributions of the Egyptian constitution in reducing representation of minorities, specifically religious minorities such as Coptic Christians, amongst the Egyptian population. Articles of the 2014 constitution have outlined the rights and freedoms of recognized religious groups in the expression of their religion, and the concurrent laws passed on that basis. This, however, has highlighted the significant misrepresentation that has been embedded in the legislative system that is primarily based on both Shariah law and Napoleon code. This has translated to the establishment and passing of discriminatory laws, such as those which have emphasized restrictions and regulations on church buildings, as well as subjugating minorities to misrepresentative resolutions to personal matters, such as marriage. Consequently, an exploration of introducing a federal-decentralized system is proposed, as opposed to the existing unitary-centralized system. While a federal system may introduce drawbacks to the existing authoritarian regime, it may allow for governorates with a more concentrated minority population to implement appropriate and inclusive laws. This may, however, be a contradictory prescription as the wider aspect of misrepresentation will only be tackled and addressed in specific governorates, as opposed to introducing nation-wide reform in legislative representation.

Theory of Relativity

Moharam Mohamed

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The research focuses on another perspective of the theory of relativity for professor Albert Einstein starting with its emergence and concluding with its incredible results discussing the philosophical part of the theory in a mathematical vision. The research also provides another understanding of the mathematical proofs of the theory of relativity depending on the mathematical logic of Einstein's intellectual experiments, especially his ideas about the space - time universe that changed our whole understanding of our visible universe physics. The research is mainly based on the Classical principles including "momentum conservation , Newton's second and Third Law , Energy principle" besides the Results of Michelson - Morley experiment that emphasized that the speed of light is constant for all observers at all inertial frames.

READ – CVC P019

Time: Monday, 26/Feb/2024: 1:00pm - 2:00pm

Location: CVC P019

Effect of Novel Narine Probiotics on Cancerous and Non-cancerous Cell Lines

Hager Hisham El Khatib

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Probiotics are the "good bacteria" that exist in the gut microbiota of the host organism. It improves the general health of its host by enhancing the growth of the good bacteria and suppressing the growth of the pathogenic bacteria. This study will characterize the cytotoxic properties of novel probiotics. The probiotics under investigation originated from a marine environment in Wadi El Natrun, El Beheira Governorate. Previous studies had isolated these novel probiotics and extraction of a polysaccharide compound known as Levan was performed (Abdelsamad et al., unpublished results). The microbial Levan is an important polysaccharide that helps with the ability of bacteria to form biofilms. To further characterize these novel Levan compounds, the cytotoxicity effects will be tested on both cancerous and non-cancerous cell lines using diverse assays including MTT assay, and DAPI staining of treated

mammalian cells. The cancerous and non-cancerous cell lines that will be used are the MCF7 breast cancer and HSF fibroblast cell lines, respectively. The idea is to obtain a holistic view of the Levan product and its ability to selectively prevent the growth of cancerous cells.

Variations in the Verbal Fluency Test

Monique Kamel, Retaj Kandil, Malak El Rayes, Farida Wahba

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The current verbal fluency test examines the differences between consonants and vowels as initial letters through participants' performance - which was measured as the number of words participants were able to list in 1 minute. This process assesses executive abilities, lexical retrieval and lexical production - through their ability to list as many words as possible within the aforementioned time limit. The first null hypothesis provided states that there is no significant correlation between the scores on the two tests. The second null hypothesis states that there is no significant difference between the means of the two tests. This study included 11 participants between the ages of 17-25 - the majority of whom were female participants, attended at the American University of Cairo (AUC) and majored in several different fields. Following the administration of the tests, Pearson's correlation and the 2-sample paired t-test were utilized regarding the number of words listed in both of the aforementioned categories. These findings imply that there is a strong correlation and significance between the participants' performances. And that participants scored significantly higher in the consonant category. Therefore, both null hypotheses may readily be rejected. This study further suggests that academia and proficiency in other languages may also be implicated; however, it has several limitations - including that the size and demographic distribution of the sample was not representative.

The Shame of Being a Woman: Exploring the Complex Interplay of Gender, Shame, and Culture

Malak Ahmed Mekky

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This literature review examines the pervasive issue of shame linked to womanhood across diverse cultures. I review Sherry B. Ortner's article "Is Female to Male as Nature Is to Culture?", Emily Martin's "The Egg and the Sperm", Lila Abu-Lughod's chapter on "Identity in Relationship", and Michael Stewart's "The Shame of the Body". Despite cultural differences, recurring themes of separation, biological determinism and associating womanhood with nature underline the global challenge women face. This review calls for critical reflection on cultural narratives and gender norms, advocating women's empowerment and challenging deep-rooted cultural beliefs perpetuating the shame associated with being a woman.

MiR-29b-3p as an Early Biomarker for Ovarian Cancer: Changes in the Expression Patterns Detected in Early and Late Cultured Cells

Mariam Hossam El Dine

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Ovarian cancer is one of the deadliest gynecological malignancies due to late detection and prognosis. Recent papers have highlighted the use of microRNAs as promising biomarkers for various cancers including ovarian cancer. Reduction in the expression levels of miR-29b-3p has been consistently seen in the literature in ovarian cancer tissue. This paper aims to study the expression levels of miR-29b-3p and its subsequent downstream targets in normal and cancerous ovarian human cell lines. MiR-29b-3p has been linked to a variety of biological processes, including cell proliferation, apoptosis, and migration, raising the possibility that it plays a role in cancer formation and progression. Some papers were able to identify the regulatory pathways that miR-29b-3p partakes in targeting genes associated with cycle regulation (CDK6, CCND2), apoptosis (MCL-1, BCL2), and epithelial-mesenchymal transition (VIM, ZEB2). This study combines in-vitro cell culturing, qPCR, and bioinformatics analysis techniques to establish miR-29b-3p as a reliable biomarker in routine clinical practice. The human cell line will be used to extract using miRNA extraction kits with designed primers screening for miR-29b-3p. In addition, testing the expression profile of miR-29b-3p as a standalone marker or combined with other markers which is not covered in other papers.

READ – CVC P020

Time: Monday, 26/Feb/2024: 1:00pm - 2:00pm

Location: CVC P020

Evaluating the Fatigue Resistance of Sustainable Modified Binder Blends

Ayman Shaif Saeed, Farida Yasser Elkaramany, Zeyad Waleed Mahmood, Abdallah Hossameldin Elshenawy, Maram Saady, Mohamed Abouzied, Minas Assaad

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Fatigue resistance is the ability of an asphalt mixture to resist the repeated traffic load under the surrounding environmental conditions without being fractured. The performance grades (PG) obtained from the Dynamic Shear Rheometer (DSR), along with the $G^*\sin(\delta)$ fatigue parameter, for the tested asphalt is only based on small strain rheology and do not consider the damage resistance. Accordingly, the Linear Amplitude Sweep (LAS) test is implemented to study the fatigue behavior of the tested asphalt binders considering the damage. This paper studies fatigue cracking resistance of various modified asphalt binders by comparing their different rheological properties. Based on this comparison, the most promising modified asphalt to resist fatigue cracking was specified. The samples tested in this research were sourced out from two main Egyptian asphalt binder sources. Each of which has six different eco-friendly additives, either waste and/or industrial byproducts: crumb rubber (CR), Low-Density Polyethylene (LDPE), CR and LDPE, Fiber-elastomer commercial modifier (Viatop), Fly Ash (FA), and silica fumes (SF). Along with these six blends, an unmodified control blend of each binder source is considered, making it a total of fourteen blends. Geopolymerization of FA and SF was conducted to produce two different geopolymer-modified asphalt blends. Based on the Viscoelastic Continuum Damage (VECD) analysis, the fatigue life criterion N_f , the number of load cycles to reach failure, was determined from LAS analysis. Master curves are obtained from the DSR machine to determine the dependency of the time and temperature to further analyze the rheological behavior of tested asphalt binders. Results show that CR+LDPE, then CR-modified asphalt blends are the most promising blends to resist fatigue cracking.

Digital Twin Simulation of Autonomous Drone Delivery Systems

Tamer Ahmed Osman Abdelfatah, Mostafa Mohamed Ibrahim, Ahmad Hany Mohamed, Mohammed Mahmoud Farag, Salma AlaaEIDin Zaghloul, Mariam Waleed Mohamed ElAwadly

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This project titled Digital Twin Simulation of an Autonomous Drone Delivery System focuses on addressing the challenge of securing meals during peak times at the American University in Cairo (AUC) campus. Our solution uses drones and digital twin technology to streamline food delivery. The concept of a digital twin involves a virtual representation of a physical product, allowing for real-time monitoring and optimization. The project aims to explore the application of this technology in the avionics sector, specifically for drone-based food delivery on the AUC campus. Our work includes building a quadcopter drone, programming it using the Robot Operating System (ROS), simulating its motion and control in a dashboard and simulator, and establishing communication between the physical drone and its virtual twin.

READ – CVC P022

Time: Monday, 26/Feb/2024: 1:00pm - 1:45pm

Location: CVC P022

Harnessing Aluminum-water Reaction for Hydrogen Production

Manar Gamal EL-laithey¹, Rasha Mohammed Hekal¹, Fahmi Hassan El Swaed¹, Pierre Raouf Louis¹, Alaa Gamal Gomaa², Mosaab Mohammed Ali³

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This research focuses on designing and constructing a device leveraging the aluminum-water reaction to generate hydrogen gas as a renewable source of energy. The proposed device comprises a reaction chamber, combining aluminum, sodium hydroxide (NaOH), and water. Through the facilitation of NaOH, the reaction between aluminum and water produces hydrogen gas. To efficiently capture and store the generated hydrogen gas then utilize the stored hydrogen for electricity generation through a hydrogen fuel cell system, the device also incorporates a gas collection setup. Safety measures, control systems, and monitoring features are integrated into the design to ensure safe operation. Optimization and testing are conducted to enhance the device's efficiency. The primary objective of this research is to develop a scalable device applicable for various purposes, including small-scale energy generation and portable hydrogen production. By exploring the potential of the aluminum-water reaction, this research contributes to the development of sustainable and clean energy solutions.

Potential of the Bacterial Community in *Millepora Alaicornis's* Coral Mucus as an Indicator of Bleaching Events

Moustafa Talaat Sherif

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As the planet continues to suffer from the impacts of climate change, underwater ecosystems act as huge carbon sinks that counteract said impacts. The coral reef is going through a largely irreversible, destructive process known as bleaching. Coral bleaching is the result of a rise in water temperatures forcing zooxanthellae to detach from their attached coral tissue. The final product of coral bleaching is a severely damaged coral community. The goal of this research is to examine the bacterial community of healthy and unhealthy (bleached) colonies of the fire coral species *Millepora alaicornis* in an effort to learn more about large-scale bleaching patterns and events. *Millepora alaicornis* is a hydrozoan, yet reef-building coral that acts as a valuable member of the coral community and that is understudied, particularly in the Red Sea. Fragments of the coral colonies will be sampled from Marsa Allam, Egypt and taken to the lab for DNA extraction. The 16S8F and 16S1492R primers will be used to amplify the 16s rRNA genes. The amplified genes will be isolated and sent for sequencing. Using different metagenomic techniques, the products of the sequencing process will then be used to investigate biologically significant differences between data gained from bleached corals and healthy corals.

The Values and Aspects of Video Games That Impact the User Experience the Most

Ziad Taher Khaireldin

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Video games are a significant, constantly growing media that has and will touch most people's lives, be it children, teenagers, or adults. However, for such an important structure that affects multiple age groups, its true effects on the user are neglected and often replaced with baseless stereotypes. As a result, a study was conducted on the influence that is not observed. With the help of the Theory of Constructivism (information isn't taken in passively, but through experience), it was obvious a video game's influence depends on the experience it offers the player. Thus, experiences that affect the user most seem to be the social, gameplay, and story aspect. In addition, personal knowledge and experience of a long-time gamer, who played various genres of video games and had exposure to the video game community, was used to further direct the research. As a result, Video games turned out to play a bigger role than commonly observed. It was concluded that the social environment of a multi-player video game can encourage and build teamwork and prosocial based skills. Also, by punishing and putting challenges for the player to overcome with every new level (the gameplay aspect), video games can force skills and concepts of adaptability into the player. Moreover, with the introduction of stories and characters in video games, players can grasp emotional inspirational values, causing them to form a sense of relatability and connection to a game.

Architecture Design Show – CVC Open Area

Time: Monday, 26/Feb/2024: 1:00pm - 2:00pm

Location: CVC area (outside area near CVC P022)

Vertical A: Movement Through Straight Lines

Yasmine Elmeadawy

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Vertical A: Re-imagining the Golden Square

Hagar Ibrahim

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Digital III: Cultivate to Innovate

Rita Gabriel

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Digital III: The Wellness Haven

Sara Amin

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Digital III: وصلة الكل

Jana Gaafar

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Thesis 2: Ezbet Abu Qarn Housing

Yola Elwy

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Urban Design: وراء كل ممر

Rita Gabriel, Jana Gaafar, Reem Mahmoud, Malak Elhalawany, Joulie Hourmoheb, Nadine Ibrahim

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Urban Design: Decarbonizing Downtown Cairo

Habiba Rizk, Yasmine ElMeadawy, Monica Magdy, Safy Allam, Suhaila Sallam, Yara Elsherkawy

The American University in Cairo, Egypt; amalhamdy@aucegypt.edu

Tuesday, February 27

FYRE – CVC P020

Time: Tuesday, 27/Feb/2024: 10:00am - 11:00am Location: CVC P020

Education Under Occupation

Carla Hossam Farah

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The right to education is considered one of the most important and sublime human rights, and it is a necessary and obligatory right for the individual to grow. However, this right has been stripped from the Palestinian people by the Israeli occupation. This research aims to investigate the educational challenges Palestinian students face as a result of the Israeli occupation. Moreover, it studies the impact of these obstacles on the Palestinian educational system. The study collected qualitative data through interviews with three Palestinian participants in which all the participants took their school education in Palestine. The sample used in this study was a non-random sample. The results obtained from this sample indicate that Palestinian students were exposed to a large number of hurdles imposed by the Israeli occupation, which hinders their ability to prosper and receive the education they deserve.

Unintentional Injuries Among Adolescents: Understanding the Nature of Unintentional Injuries, Their Types, Risk Factors, and the Perceptions of College Students in Egypt

Adham Samy Saad Mahmoud ElAsfar

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Unintentional injuries are a primary cause of death in children and teenagers worldwide. Lack of knowledge and awareness of the severity and types of unintentional injuries among undergraduate students in Egypt hampers the possibility of preventing those injuries and reducing their risks. An online survey of 70 undergraduate students from three universities in Egypt sought to measure their perceptions regarding the severity, prevalence, and types of unintentional injuries among children less than 18 years old. Approximately 76% of the participants have never heard of the term unintentional injuries. Although 65% of the sample have witnessed such injuries in their lives, only 30% of them believed that unintentional injuries are very common in children. Shortage of time and accessibility of universities were the main obstacles that limited the sample size. These results can be used in the future to find possible solutions to reduce or prevent unintentional injuries.

Utilizing Exosomes in the Treatment of Triple Negative Breast Cancer

Maha Ghaly Nagy Kilany¹, Menatullah Mohamed Madyan²

Ain Shams, Egypt; mahaghali34@gmail.com

This study addresses the therapeutic challenges associated with triple-negative breast cancer (TNBC) by exploring the potential of exosomes as a novel treatment approach. TNBC is a subtype of breast cancer that lacks expression of estrogen receptor, progesterone receptor, and human epidermal growth factor receptor 2, making it resistant to targeted therapies commonly used for other breast cancer subtypes. The purpose of this study is to evaluate the efficacy of exosomes in selectively targeting TNBC cells and delivering therapeutic agents. Exosomes, small extracellular vesicles secreted by various cells, offer several advantages in TNBC treatment. They can be engineered to carry therapeutic cargo (including chemotherapeutic agents mixed with natural compounds containing high anti-oxidants that have anti-cancer effects to increase cytoprotective impact on normal cells), small interfering RNAs, or targeted therapies. The objective is to assess the ability of exosomes to effectively deliver these therapeutic cargos to TNBC cells, potentially overcoming treatment resistance, improving patient responses, and increasing the cytoprotective ability for normal cells to decrease side effects of chemotherapies. The ultimate goal of this research is to contribute to the development of more effective treatment strategies for TNBC by harnessing the potential of exosomes as a targeted drug delivery system. By evaluating the efficacy of exosomes in delivering therapeutic agents to TNBC cells, this study aims to provide valuable insights into the use of exosomes in TNBC treatment. The findings from this research will inform further preclinical and clinical investigations, with the overarching goal of improving patient outcomes and revolutionizing the treatment of TNBC.

Harnessing Atmospheric Electricity for Sustainable Energy Generation

Bahaa Mohamed Aki¹, Kareem Ahmed Mahrous¹, Ahmed Kamel Tolba³, Eman Essam Abd Elhady²

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Electricity from the atmosphere represents a promising avenue for sustainable power generation, offering an alternative to conventional energy sources. This research explores the potential of tapping into atmospheric electricity as a clean and renewable energy solution. The atmospheric electrical phenomenon, such as lightning, electrostatic charge, and atmospheric potential gradient, provides a unique opportunity to capture and convert this ambient energy into usable electrical power. This study reviews the existing literature on atmospheric electricity, including the mechanisms behind its generation and the challenges associated with harnessing it. Various technologies for harvesting atmospheric electricity, such as high-altitude platforms, ground-based systems, and airborne devices, are discussed, along with their advantages and limitations. Additionally, advancements in materials science

and energy conversion technologies that contribute to enhancing the efficiency of atmospheric electricity harvesting are examined. Furthermore, the environmental and economic implications of utilizing atmospheric electricity as a renewable energy source are considered. The potential applications of atmospheric electricity range from powering remote areas and disaster-stricken regions to serving as a supplementary energy source for existing power grids. The research also addresses concerns related to the impact of large-scale atmospheric electricity extraction on the Earth's atmospheric conditions. In conclusion, this study underscores the significance of exploring atmospheric electricity as a sustainable energy resource and highlights the need for further research and development in this field. The findings aim to contribute to the growing body of knowledge on alternative energy sources and inspire innovation in the quest for cleaner and more environmentally friendly power generation solutions.

CBL/Civic Engagement – CVC P020

Time: Tuesday, 27/Feb/2024: 11:00am - 12:00pm Location: CVC P020

To What Extent Do Children's Trauma Develop from Their Mothers?

Tia Diab

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Even though there are various research papers about childhood trauma, many do not thoroughly investigate how parents can unknowingly contribute to their children's trauma. Furthermore, the current research is complex and requires specialists to fully comprehend it. As a result of this research gap, the researcher was determined to investigate how mothers' parenting styles and the trauma they experienced contribute to their children's trauma and how to deal with a child's Post-Traumatic Stress Disorder (PTSD) in Egypt. The researcher analyzes a survey of 14 responses from the Heya Masr organization and the researcher's own data collected through interviews with three mothers. The data revealed that mothers are unaware of simple terms such as personal space, bullying, harassment, abuse, and trauma. In addition, there is no space for their children to talk about sensitive topics such as sex education, death, and parental separation. Furthermore, physical abuse is acceptable, and equality between son and daughter is minimal. Regarding prevention and intervention, it was clear that mothers were unaware of how to deal with children if a problem arose. From the interviews, several stories revealed how mothers contribute to their child's trauma through physical abuse, hurtful expressions, divorce, and Female genital mutilation (FGM).

What Are the Effects of Immersion in Local Cultures on Undergraduate Yemeni Students' Personalities, Intercultural Competences, and Language Capabilities?

Ayman Shaif Saeed, Hossam El Din Attiah

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Despite the wide range of studies addressing the effects of cultural immersion on students in general, no study explores those effects on Yemeni students specifically. This research paper investigates the effects of immersion in local cultures on Yemeni students in three aspects: Yemeni students' intercultural competence levels, personality traits, and language capabilities. This research helps the academic community understand the scope of this issue. In this research, the researcher employs a mixed methodology of quantitative and qualitative approaches that are based on a survey of 27 male and female Yemenis studying in different Arab and non-Arab countries who answered 15 questions online. Additionally, four deliberately selected students from the 27 survey takers were interviewed, answering five detailed questions that enabled the researcher to explain some phenomena from the survey responses. The findings of the survey and the interviews show that Yemeni students abroad are positively impacted in all three of the aforementioned categories. This paper finds that certain factors may positively or negatively affect the study abroad experience, such as the gender of the student and whether they study in an Arab or a non-Arab country. It concludes that although Yemeni students come from a conservative community, they are affected by the cultures in which they live and study, and the overall effects of studying abroad on Yemeni students are positive.

Designing a Health Promotion Guidebook for Mother-Daughter Communication on Puberty

Zeina Shahine, Salma Elhabashi, Farida Elrefaie

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There are many published guides pertaining to women's and girls' sexual health. However, only a few of them consider the mother-daughter relationship as a valuable potential to spread awareness about this matter. Further, they are often done in a Western context or by Western institutions, not taking cultural sensitivity and community needs into account. This presentation reviews the process of designing a communication guide that acts as a tool to facilitate better mother/daughter communication when it comes to talking about sexual health. The guide targets mothers of girls around the age of puberty. It is specifically designed to facilitate discussions that can be uncomfortable during the time of puberty, yet are important to have. This presentation will review the steps of developing the guide from a community psychology approach, and how we tackled informational, cultural, linguistic, and practical issues. The guidebook is tailored to the Egyptian context as it mentions relevant topics while being culturally sensitive. It is based on existing scholarly literature along with a nationally-administered survey that assessed barriers to sexual health in Egypt. It focuses not only on providing information but also on providing guidance for communication and relationship-building skills. Some of the topics on women's sexual and reproductive health are still regarded as taboo, so we try to strike the balance between being

culturally sensitive while also challenging this enduring attitude of shame regarding women's health as it leads to further inequalities.

A Needs Assessment on Sexual Health Services Among Egyptian Women

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This project is an initiative targeting sexual health barriers among Egyptian women, with a primary focus on addressing sexism, stigma, and misinformation. The core objective is to assess women's knowledge, attitudes, and the multifaceted barriers hindering their access to sexual and gynecological healthcare. Drawing insights from a diverse survey of 1,107 women spanning various governorates in Egypt, the findings of this research serve as a foundation for offering practical recommendations. Additionally, the survey outcomes play a useful role in shaping the content and distribution strategy for a guidebook designed to facilitate open and informed communication between mothers and daughters regarding sexual and reproductive health. The study explores cultural nuances of sexual experiences, including touch, intercourse, and pregnancy. Private gynecology clinics dominate preferences, and gynecological care motivations center on menstrual and pregnancy concerns, providing insights for practitioners. Nearly 40% of participants face barriers in accessing sexual healthcare, categorized into stigma, permission, and accessibility clusters. Despite prevalent negative attitudes towards gynecological care, there's a strong preference for female doctors. Surprisingly, actual gynecological visits are more positive than initially feared. This presentation will review the process for developing, implementing, and analyzing the survey and will discuss how this research contributes nuanced insights into the landscape of sexual health of Egyptian women.

Creatopia: Visual Art Work – CVC P020

Time: Tuesday, 27/Feb/2024: 1:00pm - 2:15pm

Location: CVC P020

What We Are Made Of?

Halima Abubakar Aliyu

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In this collection, the artwork pieces investigate how experiences tend to shape our bodies, values, and identity. The artworks explore critical views of psychological and social issues relating to womanhood, eating, and consumption, as well as mental health. The methodology in each piece is consistent, displaying a process of experimentation with digital art. Digital gouache paint is used as a medium, while the effects of paintbrush strokes and textures are still maintained to exhibit a sense of touch. The subject matter, mainly figures, extends the artwork's invitation to the viewers to contemplate how experiences impact who they are within society and question their own identity. To question, "What factors shape my identity? Why do I eat what I eat? What influences my thoughts and emotions? And why?". Overall, the artworks, painted in monotone colors, function as mirrors for viewers, an opportunity for self-reflection.

Visual Representation on Therapy

Lina Ossama Kamel

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The video presents a visual representation demonstrating the benefits of therapy and the process of opening up. The visuals include a cup of water representing therapy or the therapist, a brush symbolizing the individual, and blue paint representing the various issues this individual may be encountering such as bullying, trauma, depression, grief, mental illness, insecurity, stress, breakup, etc. The video unfolds as the brush (individual) is covered in blue paint (issues). Subsequently, the brush, laden with paint, is immersed in the cup of water (therapy), gradually removing the blue. At first, it takes time to remove the paint (which shows how it's sometimes hard to open up) however after time it gets easier. After this process, the brush no longer has blue paint on it. Yet, there are still traces of the pain, indicating remnants of the past. However, these traces no longer significantly affect the way the individual functions. In this concluding part, the brush is placed on paper, and it is observed that no blue paint gets transferred. This powerful imagery emphasizes that while traces of the past may endure, they no longer impact the individual's current functioning and future well-being.

Creatopia: Literary Salon – CVC P020

Time: Tuesday, 27/Feb/2024: 1:00pm - 2:15pm Location: CVC P020

'Unwanted Guests in the 'So-Called Hotel'

Lina Ossama Kamel

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You can feel your heart beating faster, your breath becoming heavier, your eyes getting watery, and your thoughts racing. You know it's back; it has booked a reservation and is staying for a while; it could be just for a day, overnight, a day or two, a week, or longer. The guest's name often remains anonymous until their arrival. This guest is one of those who enter the "so-called" hotel as if they own the place, showing no regard for the staff or the owner. Instead, they issue orders and make demands that must be obeyed without question. This guest doesn't wait patiently in the lobby; they enter unannounced. Sometimes, you can sense their presence the moment they step into the lobby, making it easy to cancel their reservation at that point. However, at other times, you don't notice them until they turn the key and open the door. Outsiders and other hotel owners always gossip on why this owner can't put this guest on the blacklist and automatically cancel their reservation. "It's not a big deal," they state. But you know, sometimes it's easier to talk when you're not in the situation. This guest won't remain in the hotel forever, even if their behavior suggests otherwise. During their stay, it feels like you're stuck with this clingy guest forever. Yet, nothing is forever, and the guest will eventually depart. It might take some time, and maybe you'll seek advice from other experienced hotel owners on how to deal with them because no human is born knowing everything; we are always on a journey of constant learning. And eventually, this guest will leave. This story isn't about a guest at a hotel.

Creatopia: Short Film – CVC P020

Time: Tuesday, 27/Feb/2024: 1:00pm - 2:15pm Location: CVC P020

Not just a plastic bottle

Darin Hany Ibrahim

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A short film about the fishermen society and their families in AIQursaya Island and their contribution to sustainable development through collecting plastic from the Nile and benefiting from it through recycling and creating marvelous creations after being educated and trained thoroughly by the VeryNile Organization.

Seaside Stories

Reham Emam

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Seaside Stories is a short narrative film depicting a collection of stories across the seaside. The film is a silent narrative that looks into the lives of separate individuals who are united by the seaside.

History Panel 1 – Jewish/Zionist History, 1917-1948 – CVC P022

Time: Tuesday, 27/Feb/2024: 9:00am - 10:10am Location: CVC P022

Reactions to the Balfour Declaration

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This analysis of four primary sources explores differing viewpoints on the Balfour Declaration held by Jews and non-Jews. The Reform Advocate's interview with Ottoman Grand Vizier Talaat Pasha is criticized for its idealism and strategic omissions, despite the fact that it appears to favor Jewish interests during World War I. The American Jewish Committee's Second Source Minutes acknowledge the Balfour Declaration while walking a tightrope in favor of it and reaffirming their allegiance to the United States as their home nation. Although its lofty objectives are questioned, Isaac Wilkansky's article in B'nai B'rith Messenger positively sees the proclamation as a key to Palestine. In the meantime, a piece in The New Palestine highlights Arthur Balfour's idealized role as a defender of the Jewish cause and expresses gratitude for continued British support. Together, these sources present diverse Jewish and Non Jewish perspectives, reflecting optimism, caution, worry in the pursuit of Zionist aspirations in Palestine during this pivotal historical period.

US Jews' reactions to Nazism in the 1930s - Research project for Zionism and Modern Judaism

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This research focuses on the U.S. Jews' reactions to Nazism in the 1930s, particularly in the years immediately preceding Hitler's rise to power in 1933, so the sources that I located and analyzed range from 1933 to 1936, or the first 4 years of Hitler's government. I located 5 primary sources, 4 of these sources are newspaper articles (3 from the New York Times, and 1 from the American Jewish World) and the 5th source is a chapter from the American Jewish Committee's Yearbook that is a review of the year. The purpose of this research was to understand external reactions to the Nazis' oppression of Jews within the Third Reich. The topic is a particularly important one as, very understandably, much literature involving Jewish reactions to Nazism tends to focus on the reactions of European Jews and particularly German Jews. However, the thoughts and opinions on Jews outside of the Nazi sphere of influence are also important, especially as it helps us to understand the world stage when it comes to the years leading up to the Second World War. It also helps us to understand domestic reactions within the US and any pressure or lack of being placed upon the United States government and any action or lack of action taken by the government in response to domestic demands. The conclusions that I drew from my research was that moves were made by the U.S. Jews to try and help Reich Jews, and encourage the United States government and larger international organizations to intervene with the Nazi regime. However, as history shows us, these efforts were not successful on a large-scale, although efforts did provide some aid and help to Jews within the Third Reich during the 1930s.

Unveiling the Story of the Deir Yassin Massacre

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The year 1948 was a turning point for both the Arabs and the Jews in Palestine. It was a year marked by many attacks by Jewish militia on Palestinian Arab villages. Deir Yassin was one such Arab village that is today at the intersection of many conflicting narratives. While for most Israelis, it's "The massacre that never happened," for Palestinians and Arabs, the Deir Yassin massacre is a symbol of the Nakba, the catastrophe that led to the displacement of hundreds of thousands of Palestinians during the year 1948. In this study, the research focused on four distinct primary sources. The selection of the primary sources aimed to compare and contrast the voices of both parties involved, providing immediate reactions through newspaper articles and long-term reflections via oral testimonies. The first is a newspaper article from the Palestine Post, a Jewish newspaper, while the other is a newspaper article from Al-Difa, the Palestinian Newspaper. Both were published on the same day, two days after the attack on Deir Yassin and offer the immediate reaction and description of the event by both parties. To understand the long-term interpretation of the event, the study analyzed oral testimonies, one by Palestinian Arab residents of Deir Yassin and the other by Jewish fighters who carried out the attack. The narrative surrounding this incident is considered a pivotal moment in the Nakba of 1948, is entangled with complexities of conflicting perspectives, as the accounts from Palestinian Arabs contrast to those of Jewish parties. However, according to the analyzed historical primary sources, it is not a question of whether or not the massacre happened but rather how it took place and what its repercussions were.

Navigating Narratives: Israeli/Jewish Views on the Status of Jerusalem after 1948

Hana Gad

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This paper intricately explores Israeli and Jewish perspectives on Jerusalem's post-1948 status, examining emotional accounts, political discourse, international resolutions, and journalistic portrayals to unravel historical narratives. The study aims to understand how these narratives, laden with emotion and political weight, continue to influence contemporary foreign policies, especially in light of the ongoing situation in Gaza. The research methodology involves a detailed analysis of primary sources, dissecting arguments, identifying perspectives, and assessing the evolution of narratives over time. Beginning with Dorothy Ryftin's emotional firsthand account, the analysis traverses a Knesset discourse rejecting UN internationalization plans, a corresponding UN resolution, and Seth King's journalistic portrayal of the divided city. The findings reveal a consistent emphasis on Jerusalem as undivided under Israeli control, framed by historical ties and existential threats. Common flaws of the arguments include limited exploration of Arab viewpoints and the conflation of Israeli and global Jewish identity. A crucial aspect of this study is the clear comparison of past policies with the ongoing situation in Gaza, and how Israel has addressed the situation domestically and on the international stage. Analyzing the historical narratives in the context of current events provides a nuanced understanding of the complexities within the Jewish community and evolving attitudes towards the international arena. By elucidating the intricate history of Jerusalem, this research not only contributes to the understanding of the ongoing discourse but also sheds light on its significance in shaping contemporary foreign policies, particularly in the fraught situation in Gaza.

History Panel 2 – Israel and the Arabs after 1948 – CVC P022

Time: Tuesday, 27/Feb/2024: 10:15am - 11:15am Location: CVC P022

The Discourse surrounding German Reparation Payments to the State of Israel in 1952

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During my research on the reparation payments of West Germany to the Jewish community, and their role in the external funding of the state of Israel, I focused on three primary sources with the aim to give a comprehensive overview over the discourse regarding the negotiations which had preceded the agreement between Germany and Israel in 1952. To do so, I first analyzed a speech by the German chancellor Konrad Adenauer from September 1951 in which he lines out the attitude of the new German government towards the Jews and addresses the possibility of “Rückerstattungen” (reimbursements) to Israel which triggered the beginning of negotiations between the states in 1952. A main takeaway of this speech’s analysis are the hidden, underlying intentions of Adenauer, namely his attempt to restore Germany’s reputation and to accomplish its reintegration into “Western civilisation”. Second, I included a speech by Menachem Begin from January 1952 into my analysis, as an illustration of the complexity of the moral aspect of the negotiations and the diversity of opinions even on the Israeli side. Begin perceived German reparation payments not as a financial opportunity, but as equalling forgiveness of the Nazi’s crimes and therefore constituting a betrayal of the Jewish Holocaust victims. Lastly, a newspaper article published by The Sydney Jewish News in April 1952 was examined in order to include more objective insights into the development of negotiations between Germany and Israel in The Hague. The central question of the three sources, and therefore of the historical event itself, seems to be the question of whether negotiations and the payment of reparations from Germany to Israel is necessarily connected to some kind of moral redemption, a question to which all three authors present distinct answers and, more importantly, different interpretations of the answers’ implications. Furthermore, during a comparison of the positions, the direct influence of the author’s personal background onto their individual aims becomes clear, which are reflected in their different depiction of the events at hand. Overall, this research allowed not only for the drawing of a more or less comprehensive picture of the different perspectives present in the debate about the meaningfulness of German reparation payments to Israel. Furthermore, the comparative analysis of all three primary sources has revealed deep divisions within the Zionist movement and Israeli society at the time, but has also highlighted the interconnectedness of the questions of reparations with wider German foreign policy goals after the end of the second World War.

The Six-Day War: Israel's Relations with the Arabs and the Soviets

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This paper looks at the Six-Day War of 1967 with a specific focus on the relations between both Israel and the Soviet Union as well as between Israel and the Arab states primarily after the war. This paper analyzes primary sources related to the focused topic and then makes comparisons between them. The primary sources include: an article published on June 20, 1967 by the New York Times which looks at the 1967 speeches delivered by Aleksey Kosygin (the USSR Premier at the time) and Abba Eban (the Israeli Foreign Minister at the time) at the United Nations General Assembly (UNGA), an incomplete version of the aforementioned Abba Eban speech delivered at the UNGA published by the Washington Post also on June 20, 1967, a source published by the Times on July 25, 1967 which discusses Arab action to be taken against Israel and the Western States, Israel's stance towards the Arabs, and the state of the Arab-Israeli conflict in the UN (with reference to the USSR), and finally, a newspaper article originally written by the New York Times but was included in The American Jewish World which was published on September 8, 1967 and looks at the Khartoum Summit. In conclusion, after the war, Israeli-Soviet relations can be characterized as oppositional. Furthermore, regarding Israeli-Arab relations following the war, Israel desired normal relations with the Arabs, but the Arabs' stance towards Israel was divided. While some Arab states were completely against Israel, others, primarily—if not only—Egypt, had a calmer, but also a partially oppositional stance towards it.

Wishful Thinking: U.S. Newspaper Responses to Yitzhak Rabin's Assassination, 1995

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The 1995 assassination of Israeli Prime Minister Yitzhak Rabin is today and was at the time a topic of considerable international interest. Today, we know it as a “successful assassination” that derailed the peace-building efforts of the nineties, but this outcome was far from clear in the immediate aftermath. This paper provides an analysis of several articles from American newspapers, published within a week of the incident, that considered the future of Israeli politics after Rabin's death. In both internationally distributed secular publications like the New York Times and local Jewish papers like the Indiana Jewish Post & Opinion, significant issues emerge of oversimplification or even misrepresentation of Israeli politics and society at the time. Whether we interpret it as deliberate obfuscation by the authors or simply wishful thinking, these issues may shed some light on the general attitude among Americans following the incident.

History Panel 3 – Analyzing Exploration, the Slave-trade, and Colonialism in Africa and the Americas – CVC P022

Time: Tuesday, 27/Feb/2024: 11:45am - 12:45pm Location: CVC P022

Exploring for Profit: The Role of Trade and Capitalism in 16th-17th Century French and British Expeditions to North America

Martina Muawad

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This paper examines the role of trade and proto-capitalist mindset in motivating late 16th and 17th centuries' European exploration, focusing on French and British expeditions in the Americas. Although many expeditions during the time were made for other motives, like science and colonialism, I argue that because of the rise of proto-capitalism/mercantilism in the late 16th century and the idea of monopolizing resources, European monarchies invested heavily into exploration. I will specifically focus on two main expeditions that were supported by the English and French monarchies respectively, that of William Baffin's (1612 - 1622) and Robert Cavalier de La Salle (1669 – 1687). Both explorers were driven by dreams of commercial success that were endorsed by their countries. This paper also juxtaposes La Salle and Baffin in how the focus on trade and its economic benefits affected their personal drive, ideals, degree of loyalty, and the end results of their expeditions. The Americas, with their abundant resources and strategic significance, became a focal point of intense imperial rivalry between France and Britain, compelling both nations to invest heavily in explorations as they vied for territorial expansion, control of lucrative trade routes, and colonial dominance. This rivalry between Britain and France fueled their respective push for trade-driven expeditions, especially along the Ohio and Mississippi River, and caused the countries to invest more in explorations. Furthermore, because of personal ambitions and against the traditional idea of patriotic devotion, Baffin and La Salle and their men showed distinct patterns of attachment towards the monarchies that funded them. Baffin remained loyal, while La Salle exhibited utter disobedience. My work is supported by a thorough investigation of their diaries/memoirs along with Jean Cavalier de La Salle's brother's memoir. The presentation begins by giving contextual background on the Franco-British commercial rivalry, the rise of capitalism, the centrality of the Americas and the role of expeditions and how it shaped this new world order. Secondly I will delve into the underlying motivations of Baffin and La Salle's exploratory endeavors, specifically examining their individual aspirations, pursuit of personal gains, and the nuanced nature of their loyalty.

On “Benign” Slavery: An Exploration of the Violent Realities of the African and Arab Slave Trades

Jana Ahmed Bassem Kamal

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Through a survey of historical sources about the institution of slavery in Africa before and after the Arab conquests, this literature review argues that the African and Arab slave trades were complex, violent, institutionalized systems despite their divergence from the Western model of trans-Atlantic chattel slavery. This review challenges the popular, Eurocentric view of the African and Arabs slave trades as “benign” forms of slavery and paints a vivid picture of the capture, life, and manumission of slaves, highlighting the racialization and sexualization of slaves' bodies by these systems. It also traces the convergence of the African and Arab slave trades and the consequent rise of anti-Black racism among Arabs.

Like Oil in Water, the Livingstone Province in Zambia

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On October 24, 1964 “Moments before 12:01, a hush fell over the stadium in anticipation of the striking of the Union Jack. The lights went out and in the darkness, to the beat of muffled drums, the British flag was lowered for the last time” in former Northern Rhodesia, now independent Zambia. This was a moment of celebration for all 38,000 Zambians cheering “kwacha!” (meaning freedom) in Zambia's independence stadium, and to all those outside of the stadium as well. To understand Zambia's national identity today, its imperial and colonial history must be separately discussed. It was through the efforts of explorer and missionary David Livingstone and his party leaders and African explorers Abdullah Susi and James Chuma that the area around the Zambezi river became known to the British Empire, during Livingstone's long journey searching for the source of the Nile in 1885. During both of his Zambezi expeditions, Livingstone and his companions studied ethnography, cartography, and revealed to Europeans that the source of the Nile River was lake Mosi-O-Tunya meaning “the smoke that thunders.” Now, this lake is known by its new name, Lake Victoria, a name chosen by Livingstone upon his “rediscovery” of the lake. Livingstone was the “C” for Christianity in the colonial context, while “his successor Cecil Rhodes in the 1890s would bring the other 2 C's of Commerce and Civilisation.” Since Livingstone provides a pretext for the Scramble for Africa in 1885 and Rhodes' exploitation of resources, there must be an awareness of the division between them, and the division between imperialism and colonialism in order to understand the importance of the city of Livingstone in modern Zambia. The context of European exploration predating on ground colonialism is what allows for the malleability of the identity and representation of Livingstone, who was not exactly a conqueror such as Cecil Rhodes, but nor is he innocent in African history textbooks. This ambiguous context leads to the rise of many questions about modern day Zambia, and begins with a simple one: Why was Northern Rhodesia renamed to Zambia, while its former capital still

holds the name of Livingstone? And while searching for the answer, a new question arises, that will explain the first: To what extent did the city of Livingstone change after Zambian independence in 1964 for the purpose of national representation? Well, I argue that the city of Livingstone in its name and space is rooted in the imperial/colonial past, but it has also become the location for the renegotiation of Zambian national identity, a complex commemoration of an ambiguous past. The city Livingstone is like a drop of old oil in the body of water called Zambia, but it itself is a mixture of oil and water, imperial, colonial, and national identity, perpetually stirred so that each droplet of water shoulders a droplet of oil. Livingstone is where national history meets a colonial context. This will be shown through the observation of the complexity that surrounds reclaimed remnants of the imperial and colonial past, and through perceptions of ordinary and intellectual individuals on Livingstone, which is now a major tourist destination for Zambia.

History Panel 4 – Reflecting on Orientalism, Colonialism, and Pan-Africanism – CVC P022

Time: Tuesday, 27/Feb/2024: 12:55pm - 2:05pm

Location: CVC P022

Women in Orientalist Paintings: The Different Symbols Women Represented in Orientalist Paintings in the Late Nineteenth and Early Twentieth Centuries

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Art is one tool that indirectly affects people's thoughts and perceptions. Orientalist painting is a type of art that reflects some of the ideas the West has about Oriental societies. Understanding the different symbols in such paintings is one way to take further steps towards eradicating stereotypes about Oriental women. Research to date has mainly focused on the sexual representations of women in Orientalist paintings, and no due care has been given to the different symbols that the paintings include. This study investigates the different symbols of women in Orientalist paintings by conducting a content analysis on a specially collected dataset of paintings. Qualitative results suggest that there is a fair collection of paintings that illustrate Oriental women in various symbols other than sexual ones. The results also give an indication of the effects of the nationality, and gender of the artist on the type of illustrations made.

Revolutionizing African Thought: The Unified Legacy of Edward Blyden, Léopold Senghor and Steve Biko

Madalina Gilca

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This paper explores and compares the ideological paths of three influential figures in African Intellectual History: Edward Blyden, the founder of African nationalism and Pan-Africanism during the 19th century; Leopold Senghor, the most prominent Francophone African of the 20th century, known for his development of negritude; and Steve Biko, the founder of the Black Consciousness Movement in the 1970s. While celebrated for their extraordinary contributions, each figure's legacy is also marked by high controversy. Blyden initially championed the civilizing mission of African-Americans and Christianity in the African continent. He was also often inconsistent in his writings and his lived experience, advocating for Islam as the best religion for Africans yet refusing to convert to it. Senghor's negritude faced criticism for tying African identity to intuition, rhythm, and emotivity, with accusations of reverse racism. Biko, while seemingly less controversial, went as far as defining blackness as a mental attitude, making a difference between real blacks and non-whites. Despite their distinct historical periods and the differences in their methods, these three shared one goal - the empowerment and development of Africa and its people from within, not from external forces. Biko's critique of multiracial political organizations and of white liberals emphasized the need for black individuals to lead the fight against racism themselves, though they first needed Black Consciousness to become proper instruments. Blyden, evolving from Ethiopianism, advocated for national unity, independence, self-reliance and a synthesis of indigenized Christianity and Islam. Senghor envisioned a Negro-African federation, preserving indigenous institutions while adapting foreign techniques to the indigenous realities, repurposing the colonial elements. Additionally, they all engaged with Pan-Africanism. We will explore the main evolution of these personalities, their defining ideas as well as their legacy in African Intellectual history.

A Critical Analysis: Bruce Gilley's the Case for Colonialism

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Gilley argues in favor of colonialism by saying that it was essential to the advancement of universal values and improved living conditions for the colonized people. However, by highlighting the detrimental effects of colonialism, this abstract critically analyzes Gilley's stance. In exposing the systematic use of force and brutality throughout colonial rule, it highlights the collateral paid for the "civilizing mission" and criticizes Gilley's Eurocentric viewpoint. The case studies of South Africa, the Democratic Republic of the Congo, and Rwanda highlight the enduring problems and consequences of colonialism, such as exacerbated ethnic conflicts, economic exploitation, and Western support for repressive governments. The conclusion calls for tailor made economic and social strategies to address current issues and highlights the significance of nuanced analyses that take into account the various effects of colonial legacies.

Reassessing Gilley: Deconstructing Apologetic Notions of African Colonialism

Hana Gad

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This research critically examines Bruce Gilley's defense of African colonialism, with a focus on infrastructure, education, and governance. By delving into specific case studies, the paper reveals the intricate dynamics behind colonial initiatives, hinting at the imperialist motives that may challenge these conventional narratives. The analysis questions Gilley's assertion that colonial infrastructure primarily served Africans. Through examples like the Kenya-Uganda railway and African military branches, the study highlights the exploitative nature of these projects, emphasizing imperialist motives rather than altruistic intentions. The analysis also challenges Gilley's optimistic view of European education's impact on Africans. Exploring the consequences of missionary activities in the Congo and Rwanda, the study suggests that education was often a tool for cultural erasure and Western paternalism rather than genuine development. Furthermore, the study questions Gilley's perspective on European-established governance systems in Africa. By examining instances such as the ethnically segregated structures in Rwanda and Liberia, the research hints at the lasting consequences of colonial legacies on contemporary African governance. By providing a nuanced exploration of these aspects, this research contributes to ongoing discussions on decolonization and historical justice, urging a reconsideration of prevailing narratives surrounding African colonialism.

History Panel 5 – Interpreting, Explaining, and Resolving Interethnic Conflict – CVC P022

Time: Tuesday, 27/Feb/2024: 2:10pm - 3:00pm

Location: CVC P022

Economic Inequality and Civil War in Yugoslavia

Farah Swellam

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This paper primarily focuses on the political economy of Yugoslavia, first examining the political structures and economic conditions at the onset of the state post-WW2 and then delving more deeply into the impacts of different economic reforms in the following decades before the collapse of the country. The paper will assess the intended results of reforms throughout the 1950s, 60s, and 70s and how the reforms further entrenched inequality and created political and ethnic tensions between the north and the south of the country. This paper argues that the collapse of Yugoslavia was primarily due to economic inequality between republics entrenched by a weak central government and lack of oversight or interest in pursuing redistribution policies that would develop Yugoslavia's historically poorer regions at the behest of investing in the already developed northern republics.

Can Philosophy as a Way of Life Save the Middle East? Socrates and the Israeli–Palestinian Conflict

Ahmed Mohammed Badr

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This paper explains what philosophy should be like from the Socratic Tradition and examines the possibility of the existence of any possible True and Valuable philosophy in the Middle East, specifically the Israeli-Palestinian conflict. For that, I use The Apology of Socrates to discuss four critical points: 1. Audience. 2. What to Care about? 3. How to Care? 4. Why care about it? Finally, I switch my discussion to Palestine, where I use Carlos Fraenkel's book on teaching Plato in Palestine to discuss the possibility of Philosophy in Palestine, and I use Sari Nusseibeh as my prime example of a possible philosophical figure. The essay will mainly try to answer the following thesis question: "Can Socratic Philosophy as a way of life save the Middle East?"

Unintended Consequences: The Evolution of the Middle East and the Iraq War - A Critical Analysis of Geopolitical Shifts, Diplomatic Failures, and the Search for Stability

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The Middle East, historically a cradle of civilizations, has evolved into a region deepened in conflicts, dictatorships, and terrorist groups. This paper dives into the transformation of the Middle East from a region with rich historical contributions to the epicenter of global instability. Focusing on Iraq, ruled by Saddam Hussein's brutal dictatorship, the paper explores the geopolitical shifts that turned the country into a focal point for international concern. The paper traces the trajectory from the Gulf Wars to the 9/11 attacks, which prompted the United States to launch the "War on Terror" and invade Afghanistan. Dissatisfied with the results, the Bush administration turned its attention to Iraq under the pretext of eliminating weapons of mass destruction (WMDs). However, the lack of evidence for WMDs and flawed diplomatic strategies elevated tensions, fostering terrorism and anti-American sentiments in Iraq and the wider Middle East region. Examining the historical context of Iraq, from Ottoman rule to independence, the paper underscores the complex relationship between the U.S. and Iraq, marked by shifting alliances and geopolitical interests. The first Gulf War and subsequent economic sanctions set the stage for strained relations. Saddam's invasion of Kuwait led to international intervention, further souring U.S.-Iraq ties. The study scrutinizes America's transition from soft to hard power diplomacy with the

"War on Terror," emphasizing the flawed rationale behind invading Iraq as a response to 9/11. Questionable decisions, such as the disbandment of the Iraqi army and the lack of understanding of Iraq's social fabric, contributed to the rise of insurgency, civil war, and terrorism. Highlighting the inconsistent nature of American diplomacy in Iraq, the paper discusses the post-invasion period and the failure to establish a stable, democratic government. The paper acknowledges positive efforts, such as the coalition with Sunni tribes, yet emphasizes the repercussions of premature withdrawal, leading to a resurgence of terrorism and instability. Furthermore, the paper examines America's failure to deploy effective cultural soft powers, citing examples of contradictory portrayals in media and the negative impact on public perception. It also discusses the resurgence of anti-Americanism and challenges the effectiveness of cultural diplomacy in post-war Iraq. In conclusion, the Iraq war serves as a prominent example of the unintended consequences of deploying hard power in diplomatic conflicts. The study advocates for a nuanced understanding of geopolitical dynamics, a reassessment of unilateral superpower roles, and calls for international coalitions to prevent disastrous military interventions. Finally, it underscores the need for in-depth research to address the persistent instability in post-war Iraq.

History Panel 6 – Reforming Education in Egypt: History and Contemporary Challenges

Time: Tuesday, 27/Feb/2024: 14:55pm - 15:35pm Location: CVC P022

Pre-university Education in Egypt

Samaa Hossam Hussnien Abdelhamid

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Education has played a pivotal role in preparing the next generations for the job market by providing students with knowledge and skills. Although President Abdel-Fatah Al-Sisi declared in 2019 that the government established a national project to reform the educational system, Egypt ranks 133rd in the quality of education globally in 2022. The thesis examines how the Egyptian educational system operates from Nasser's to El-Sisi's regimes and the reasons for the low quality of education. It combines historical discourse with political analysis about the conditions of education, leading to a massive discussion of the current situation of the educational system. The thesis provides scholars interested in education and politics with a clear vision of education conditions in Egypt to understand why pre-university education in public schools does not improve. The thesis provides a scope of information using primary data, such as an analysis of educational textbooks, focus group, and in-depth interview, as well as secondary data using previous research by different scholars concerning the topic.

The Egyptian School Curriculum and Gender Roles

Amina Korachi

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Schools play a crucial role as secondary agents in the socialization process of students, facilitating the transmission of societal norms and values through teaching materials and what is commonly referred to as the 'hidden curriculum,' establishing unofficial norms, behaviors, and values, often perceived as more influential than the formalized curriculum. Nevertheless, the research dedicated to understanding the hidden curriculum, specifically within the Egyptian context, is conspicuously limited. Studies have indicated a strong correlation between changes in the educational system and socio-political transformations in Egypt. The existing literature consistently underscores the overlap between educational reforms and political shifts, emphasizing how alterations in the socio-political landscape are mirrored in the curriculum. These findings emphasize the interconnectedness between the educational system and broader societal changes. In this study, the focus of the research was the gender roles and hierarchies embedded in Egyptian school textbooks. Two national Egyptian school French language textbooks from two time periods (1947 and 2022) were analyzed and compared. The findings revealed a persistent gender disparity in terms of visibility, quality of representation, and centrality across both analyzed textbooks. While the more recent textbook demonstrated a modest improvement in addressing this gender disparity, it fell short of completely eliminating it. This study bridges the gap in the research on the hidden curriculum in Egyptian language teaching school books in regard to gender norms. Researching the development of gender disparities in the curriculum is fundamental for promoting gender equality, informing policy decisions, improving educational practices, and advancing the scholarly understanding of gender studies.

Wednesday, February 28

ELI Explorers – CVC P019

Time: Wednesday, 28/Feb/2024: 10:00am - 11:15am Location: CVC P019

Third Culture Kids

Ahd Alaa Mahmoud

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This presentation examines the unique challenges that third culture kids (TCKs) face both back home and while living overseas. TCKs struggle with concerns of identity, belonging and cultural adjustment since they spend their formative years in foreign cultures. They struggle with dissonance, reintegration issues and reverse culture shock when they get back home. Acknowledging and tackling these obstacles is essential to helping TCKs with their distinct experiences promoting cultural diversity and enabling more seamless transitions between various cultural contexts.

Stuttering: What It Is and the Main Causes and Treatment

Abdelhafidhelrafik Ait Tayeb

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In this research, I have explored the phenomenon of Stuttering that occurs among children and young adults with different levels. The presentation includes the main causes of stuttering, and it suggests some treatments for this phenomenon.

Sphinxpreneurs: Mapping Success for Egypt's Young Minds

Kevin Nabil Khalil

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EURECA 2024 is a conference opening the doors to all undergraduate students interested in showcasing their skills and perspectives in different areas like linguistics, economics and entrepreneurship, and architecture. There have been a lot of new young entrants looking for success in the business field in Egypt. As more focus is placed on startups and innovation, the struggle of these entrepreneurs to succeed in the face of diverse hurdles is increasingly imperative. This presentation focuses on the various complexities underpinning the likelihood of the success of youthful entrepreneurs in Egypt. This session provides an elaborate discussion of addressing financial barriers, societal stereotypes, investments, and the changing face of social entrepreneurship trends. The strategies encompassed in the improvement of financial access, demythologization of stereotypes, development of supportive investment frameworks, and utilization of the prevailing trend in entrepreneurship are examined in relation to their significance. This session is aimed at aspiring business persons and relevant players within the Egyptian business community to appreciate the specific terrain of entrepreneurship for the youth. At the end of the presentation, the participants will receive concrete advice to overcome obstacles and increase their chances of doing successful business in the dynamic entrepreneurship in Egypt.

Unveiling the Artistic Power in the 2011 Egyptian Revolution

Nicole Rami Fouad Sobhy Youssef

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EURECA is an opportunity for a freshman to explore more about her interests in art while exposing her work to others who share the same interests. Since the beginning of time, art has been a key element in human existence, from drawing their victories on walls and caves to singing their stories and lessons learned to the future generations. However, most Egyptians view art from the angle of merely being a tool of entertainment or luxury, or a hobby; moreover, they do not even consider art as a "profession." Despite this, it was actually the life changing spark for all Egyptians during the 2011 Revolution. Unfortunately, discovering the power of art is not easy as it needs deep analysis and critical thinking. That is why, most people do not really give that much of a value to art except the artists. Therefore, this presentation will discuss the evolution of art prior, during and after the revolution and how art has changed society.

How Can Academic Institutions Play a Role in Student Perception for Learning

Mohamed Ahmed Ibrahim, Maryam Fahmy

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This oral presentation delves into the pivotal role that academic institutions can play in shaping student perceptions of learning. The discussion explores the multifaceted impact of academic environments on students, considering factors such as teaching methodologies, institutional support, and learning resources. By examining these elements, the presenter aims to shed light on how academic institutions contribute to students' overall perception of the learning experience. The presentation underscores the importance of fostering positive learning environments and the potential implications for student engagement, motivation, and educational outcomes.

UG Entrepreneurship Expo – CVC P019

Time: Wednesday, 28/Feb/2024: 11:15am - 11:45am Location: CVC P019

Science Land

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Science Land is an innovative educational platform dedicated to transforming the learning experience for students in the MENA region. Our mission is to bridge the gap between traditional education and the skills needed for success in the modern world. Rooted in the belief that education should be interactive, practical, and inspiring, Science Land offers a diverse range of courses that go beyond rote memorization. Our platform is designed to cultivate critical thinking, creativity, and problem-solving skills among students. With a commitment to inclusivity and accessibility, Science Land provides a space where learners can engage with interactive lessons, collaborate on projects, and connect with mentors. Our courses cover a spectrum of subjects, from STEM fields to entrepreneurship, ensuring that students are well-equipped for the challenges and opportunities of the future. At Science Land, we envision a learning environment that transcends geographical boundaries. Our platform leverages technology to bring quality education to students wherever they are, fostering a community of lifelong learners who are not just consumers of knowledge but active contributors to their fields.

Using Rhodotorula Yeast as an Alternative Way to Water Treatment

Mohamed Ashraf Mohamed Ali, Salma Mohamed Darwish Abdelbary

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Plant oils have been used with Methanol to treat FIE but the cost of biodiesel produced with this method is currently more expensive than that of conventional diesel due to high cost (70-85%) which causes economical problems. Also, a great amount of these materials are burned causing environmental problems. So an alternative is found to solve all of these problems by using lignocellulosic materials. The present investigation of the concomitant strategy of FIE treatment and biorefinery approach showed a possible and eco-economic valuable idea for wastewater treatment. The investigation of the FIE treatment using the innate oleaginous yeast showed good efficiency in removing the contaminants. And the biomass obtained after the treatment showed an excellent lipid content (67.95%), acting as a valuable lipid source for biodiesel production. Oleaginous yeast could also accumulate lipids, more than 20% of the weight of the cell. The lipid accumulation in the yeast can be increased drastically by altering the mechanism of yeast growth. It is generally achieved using low-cost substrates like waste, metabolic flux, symbiotic cultures, genetic modifications and stress conditions (like nitrogen, phosphate and sulfate limitation). Finally yeast cells in the bioremediation of food industry wastewater. The study has four main objectives; isolation and identification of potential oleaginous innate yeast cells, bioremediation of FIE using isolated oleaginous yeast cells, bioprospecting of the remediating yeast cell for bio-lipid and finally, the transesterification of the extracted bio-lipid. Confirming the possibility of the *Rhodotorula mucilaginosa* SML strain for biodiesel production would add value to the circular economy of the food industry.

UG Entrepreneurship Expo – CVC P019

Time: Wednesday, 28/Feb/2024: 1:00pm - 1:30pm Location: CVC P019

AgriMecha: Cultivating Tomorrow's Harvest with Smart Hydroponics Integration

Sara Naser Elrefaey^{1,2,4}, Abdulrhman Sedky Elfeky^{1,3}, Mahmoud Elsaied Wageh^{1,2}, Mahmoud Gamal Ahmed^{1,2}

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Traditional agriculture poses significant challenges, including issues with water waste, quality, and quantity. In Egypt, the control systems for agriculture, especially hydroponics, remain limited, inflexible, and less advanced. AgriMecha, an AgriTech startup, specializes in IoT-driven control solutions for the agricultural industry, particularly focusing on Hydroponic systems. Our innovative approach addresses current industry challenges, aiming to provide smart integration, user-friendly interfaces, and cost-effectiveness. AgriMecha envisions transforming AgriTech by making advanced technology accessible, contributing to sustainable and efficient agricultural practices.

Egyptians' Perception of Owning Virtual Versions of Personal Achievements

Hashem Ashraf Afifi

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Despite the achievement framing business' popularity in the West, no one has ventured into the possibility of introducing it to the Egyptian market. The study acts as market research for a startup idea that will offer such service. The startup also intends to offer the option to generate replica 3D models of customers' personal achievements and/or memorabilia. This is considered to be the business' unique selling point. Creating a virtual version of certificates, diplomas, medals, trophies, etc. has not been explored before, which means information from previous research cannot be found to show consumers' willingness to opt in for this service. Consequently, not only will this study seek to determine if the business fills a gap in the market, it also aims to understand Egyptians' attitude towards the idea of owning intangible versions of their prized possessions. Hence, the research question posed is, "To what extent do Egyptians value virtual versions of their personal achievements?" An online survey was shared on social media platforms to reach a sample size from which conclusions could be drawn. The data gathered were then supported by Jagdish Sheth's theory on consumption values to determine how consumers benefit from the service.

UG Poster Session – CVC Open Area

Time: Wednesday, 28/Feb/2024: 1:00pm - 2:30pm Location: CVC area (outside area near CVC P022)

The Impact of Wildfires on Changing the Planet: Exploring Automated Solutions for Control

Reem Samy Omara¹, Khaled Abdelhamid Salama²

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Wildfires have surged at an alarming rate globally, inflicting widespread ecological, economic, and social repercussions. This scientific inquiry delves into the pervasive effects of wildfires in the United States, where an average of 7.4 million acres annually have succumbed to flames since 2020, and the Amazon, witnessing an unprecedented 103,000 fires in 2021 alone. As these forests harbor diverse species of animals and plants, the threat of wildfires looms ominously, risking the extinction of these invaluable ecosystems. To combat this pressing challenge, our research introduces a groundbreaking solution capable of instantaneously suppressing fires through an integrated system of electronics and innovative chemical materials. This system functions by swiftly restricting oxygen while generating water and nitrogen, thereby curtailing the spread of wildfires and minimizing their catastrophic impact on fragile biodiversity and communities. By emphasizing the critical significance of prompt and effective intervention, this study underscores the vital role of proactive and sustainable fire management strategies in preserving the delicate balance of forest ecosystems and safeguarding biodiversity worldwide.

UN Peacekeeping Missions Amidst the Changing African Landscape

Darin Hany Ibrahim

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This research study provides a comprehensive analysis of United Nations (UN) peacekeeping operations in Africa within the context of evolving security dynamics. It engages in a comprehensive exploration of relevant literature, encompassing the historical development of peacekeeping, the ongoing missions, withdrawal patterns from conflict-affected settings, and central to the research is an evaluation of the resilience and adaptability of these missions over time, with a focus on their adaptability to the dynamic nature of contemporary conflicts. Further, the study highlights the mission's adaptability as they respond to the ever-changing dynamics of conflict. Nevertheless, the research extends its purview to encompass the emergence of African-led Peace Support Operations (AU

PSOs) and their role in the African peace and security landscape. It critically assesses the efficacy of AU PSOs in addressing regional conflicts and their collaborative efforts with UN peacekeeping missions, with an aim to answer the most striking question of whether these two types of missions can coexist harmoniously, or if one is more likely to prevail. The study draws upon empirical data, expert interviews, and scholarly discourse to construct a nuanced understanding of the challenges and opportunities inherent in these missions. This research provides in-depth insights into the complex interplay of factors influencing the dynamic nature of peacekeeping efforts in the ever-changing African security context.

P2P "Pressure to power"

Hossam Khattab¹, Ali Dawood¹, Hagar Adel², Alaa Srour¹, Mariam Emad³, Mariam Abd Elmoneim⁴

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Facing the problem of running out of laptop batteries rapidly hinders completing work. It is hard to find sockets outdoors. Research has been done by Carnegie Mellon University to produce energy to charge the battery of a wireless keyboard using the piezoelectric effect. Our idea is to use the piezoelectric effect which converts the pressure done from typing presses on the keyboard into charges stored in a capacitor that will be put in the laptop to run the laptop when the primary battery runs out. Piezo materials, including crystals and ceramics, generate a voltage in response to an applied mechanical stress (pressure). When mechanical stress is applied to these crystals, electricity pulses are produced, and the voltage of these electrical charges is proportional to the stress done on the chip. We already have worked to reach a prototype to simulate our project to be on the real application scope. We reached the connection circuit and tested it successfully. We have charged a capacitor and made it charge a 1.5 AAA rechargeable battery and charged another capacitor to be sure that the charging process is going well.

Holographic Car Fairs

Shahd Iotfy Elshewe¹, Rewan Mostafa Mohamed², Habiba wessam Zahran³

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Conventional car fairs can be costly to organize and maintain, and they necessitate a substantial amount of space to exhibit a diverse range of vehicle models. This study introduces an innovative concept for car exhibitions, replacing traditional car fairs with a cost-efficient and engaging alternative. Utilizing a single equipped room, this approach employs holographic technology to display an unlimited number of car models in lifelike 3D, complemented by physical samples of car materials for a holistic sensory experience. By providing access to an extensive catalog of cars, customers can seamlessly locate and purchase their ideal vehicle. This model seeks to minimize losses incurred by seasonal fluctuations and regrettable model purchases at traditional car fairs, while fostering customer engagement and satisfaction.

IR Optimizer

Hassan R Shahien, Alaa S Elshobaki

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One of the most significant and colossal problems that Egypt is facing nowadays is the linking between the various ways in which electricity is consumed and the use of modern technology of communication for optimizing those ways. There is a surplus of power for quantities of electricity which are not properly employed in the right way in the system of lighting the tunnels and in the traffic systems in general. It represents 19% of the quantities of electricity consumed in "Suez Canal Tunnels", based on conducted research from the Egyptian ministry of electricity and renewable energy. By using and optimizing the technology of communication for the system of lighting inside the tunnels, we could make an efficient method for the power distribution. It prevents the consumption of electricity during the period of time when no objects are passing the segments of lanes inside the tunnel "as we have divided the tunnel into small segments for a better simulation". For each region inside the tunnel, there is an IR (Infrared) sensor for detecting the motion in the particular segments by sending electromagnetic radiations which have the responsibility of detection. Consequently, the data collected will be sent to the Arduino through the Bluetooth module with the aim of controlling and optimizing the lighting system that is represented in the LEDs in the prototype. The system is associated with an Android application which is responsible for the data collected through the trials & calculating the Kilowatts used based on the time tracking. The procedures are qualified for approaching a way that is optimized for the distribution of electricity.

Edible Insects a Revolutionary yet Traditional Food Source

Majdeldin Ehab Abdeljalil¹, Mahmoud Gamal Muhammed¹, Fatma Mahmoud Farouk¹, Heba Osama Abuelela²

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Insects have served as a crucial food source for numerous civilizations over centuries, offering significant health benefits and untapped potential. In this study, we delve into the exploration of edible insects and their diverse applications in modern cuisine. Specifically, we investigate the impact of an insect-based diet on individuals' microbiome composition, exploring potential benefits in terms of probiotics and other health-related aspects. Additionally, our research delves into the utilization of insects as supplements, considering their abundance in amino acids, vitamins, and fats. This abundance positions them as cost-effective and excellent candidates for supplement production. Furthermore, we explore the feasibility of incorporating insects into animal feed due to their

affordability and high nutritional value. Our study meticulously examines the criteria and rationale behind selecting specific insect species for each application. To enrich our exploration, we conduct social experiments within Eastern societies to gauge the acceptance of insects as a food source. We also consider the Islamic perspective on this matter, adding a cultural and religious dimension to the discourse. By addressing these diverse facets, our study aims to provide a comprehensive understanding of the potential and challenges associated with integrating insects into human diets and animal feed.

Mycorrhizal Fungi and Sustainable Development

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The relationship between plants and mycorrhizal fungi represents a crucial ecological interaction, playing a pivotal role in enhancing environmental health and fostering sustainable development. This comprehensive research explores the positive impact of mycorrhizal fungi on sustainable development by improving soil health and enhancing plant growth. The study delves into the interactions between mycorrhizal fungi and plant roots, investigating their effects on water and nutrient uptake. The findings underscore the significance of mycorrhizal symbiosis in promoting sustainable agricultural practices and environmental conservation. This research contributes valuable insights to the intersection of mycorrhizal biology and sustainable development, offering potential avenues for further exploration and application in diverse ecological contexts.

GP-2-C: A Sustainable Approach to Cooling

Mohamed Tarek Galal

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This study addresses the escalating energy demand required to power conventional cooling systems, leading to increased carbon emissions and substantial costs. Specifically, in regions like Egypt where scorching summers intensify the need for energy to operate air conditioners, the environmental impact and financial burden are exacerbated. Analysis reveals that traditional cooling methods significantly contribute to carbon emissions, producing around 4000 kg of CO₂ monthly when powered by fossil fuels. The prevailing high temperatures necessitate extensive air conditioner use, elevating both energy consumption and associated expenses. The proposed solution involves an environmentally conscious Air Conditioning system composed of three primary components. The first integrates an off-grid solar system to produce electricity for hydrogen generation. Subsequently, a green hydrogen system serves as energy storage, culminating in the third system—the efficient air conditioning mechanism. This initiative aligns with sustainable development goals, notably curbing CO₂ emissions and combating climate change. Inspired by Power-to-X technology, commonly employed in advancing green energy and sustainability, the approach involves utilizing solar-generated electricity to drive an electrolyzer, separating water into hydrogen and oxygen. This hydrogen is then stored and utilized to power the air conditioning unit. This innovative concept is targeted towards medium residential buildings and businesses situated in areas with high energy demands, particularly New Cairo City and similar locales characterized by high temperatures. The intended demographic encompasses those with an upper intermediate income (4M minimum annual income), prioritizing both environmental conservation and cost-effectiveness. While challenges lie ahead due to the incorporation of novel technologies, diligent research, development, and perseverance aim to address significant environmental challenges and foster sustainable solutions for the community.

Doctor plant: Revolutionizing Agriculture with Sustainable Technology

Mahmoud Nasser¹, Al Roumisaa Ebrahim³, Shahd Ramadan³, Sherif Elglaly², Abdullah Rabea²

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Over the last decades, the world's population has massively increased, leading to a rapid growth in global agriculture to meet its needs. This growth presents numerous challenges, including the identification and control of plant diseases that can cause significant crop loss. To address this issue, we have developed a mobile application that utilizes image processing and machine learning techniques to accurately determine plant diseases and provide relevant treatment recommendations. The mobile application has been designed with user-friendliness in mind, enabling farmers and plant enthusiasts to easily capture images of diseased plants using their smartphone cameras. This is achieved by employing a sophisticated algorithm that analyzes the uploaded images, extracting key features such as color variations, shape irregularities, and patterns indicative of different diseases. These features are then matched against an extensive database containing information on a wide range of plant diseases. Based on the identified disease, the application dynamically generates treatment recommendations using disease-specific information from scientific research papers and expert knowledge. These recommendations encompass a variety of strategies, including chemical treatments, cultural practices, and biological control methods. Additionally, the application provides guidance on preventive measures to reduce future disease occurrences and improve plant health. In conclusion, the mobile application presented in this project offers a valuable solution for both farmers and plant enthusiasts in accurately and conveniently detecting plant diseases. Its powerful disease identification capabilities, coupled with scientifically backed treatment recommendations, contribute to minimizing the impact of diseases on crop yields and maintaining overall plant health.

Experimental Investigation on Freezing Desalination Potential

Shahd Reda Elnaggar¹, Ahmed Sameh Atef², Mina Adel Maher³, George yaccoup Altaweel⁴, Esraa tarek Saad⁵

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Freezing desalination emerges as a promising and innovative technology in the field of water treatment. It addresses the global challenge of freshwater scarcity. This process leverages the principles of phase-change thermodynamics, specifically the phase transition from liquid to solid, to separate freshwater from saline solutions. The technique involves freezing the saline water and subsequently isolating the ice crystals which leaves behind concentrated brine. One of the primary advantages of freezing desalination is its energy efficiency compared to evaporation desalination methods, as it harnesses the latent heat released during the freezing process. This aspect makes it a sustainable and economically viable alternative for regions suffering from both challenges of water shortage and energy conservation. In recent years, the research and development in freezing desalination has focused on optimizing the freezing process, exploring suitable materials for the formation and extraction of ice crystals, and enhancing overall system efficiency. Hence, this study aims to investigate deeper on enhancing the system's overall efficiency through a state-of-the-art design that aims to decrease the water salinity utilizing commercially viable materials. The design includes a pre-cooler in order to expel the heat, a crystalizer to form ice which is also mixed with a percentage of brine. Hence, a washing step for the crystalized ice is required. Eventually, the design includes a collecting unit through which the ice melts.

Nano Chitosan Encapsulated with Essential Oil Act as Natural Safe Antibiotic Against MDR Bacteria

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The rise of multi-drug resistant bacteria, such as Acinetobacter and Methicillin-Resistant Staphylococcus aureus (MRSA), poses a significant challenge to traditional antibiotic treatments. In this study, we explored the efficacy of essential oils derived from cardamom, ginger, and thyme, encapsulated with nano chitosan using ionic gelation methods, against gram-negative Acinetobacter bacteria and methylene-resistant Staphylococcus aureus gram-positive bacteria. Our results demonstrate that nano chitosan serves as an effective carrier for delivering essential oils, especially in cases involving bacteria that produce biofilm. Comparative analyses revealed that essential oils loaded with chitosan exhibited heightened efficacy in suppressing biofilm formation compared to essential oils alone. Additionally, this encapsulation strategy showcased promising potential in treating lung cancer cells induced by Acinetobacter bacteria. The integration of essential oils, nano chitosan, and ionic gelation methods presents a promising avenue for combating multi-drug resistant bacteria and addressing the challenges posed by bacterial biofilms. The potential application in treating lung cancer cells further underscores the versatility and significance of this natural product-based approach in the realm of medical research and therapeutics.