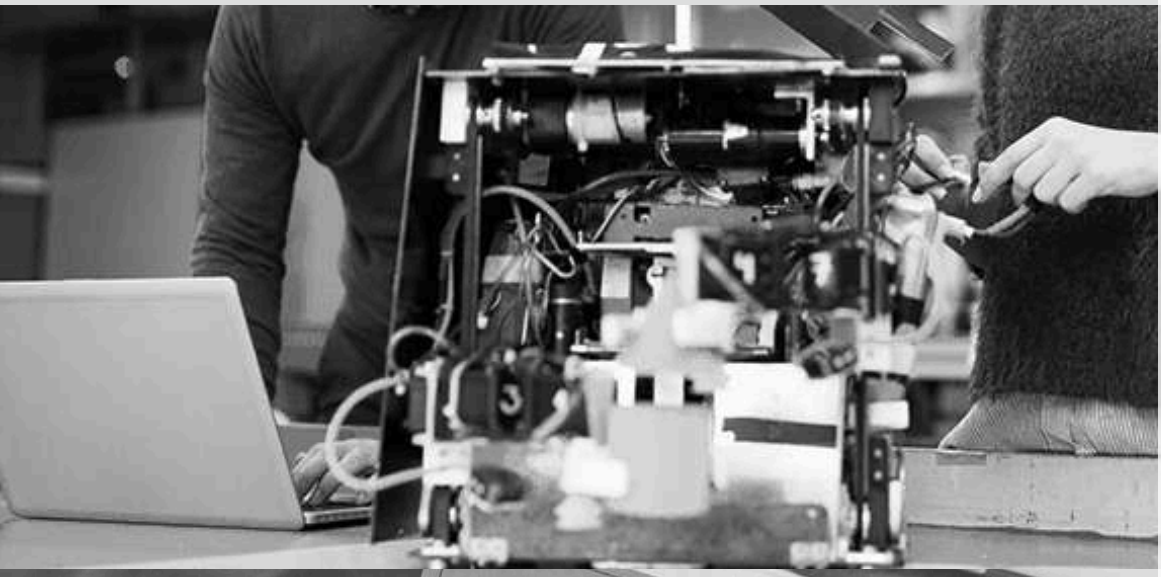
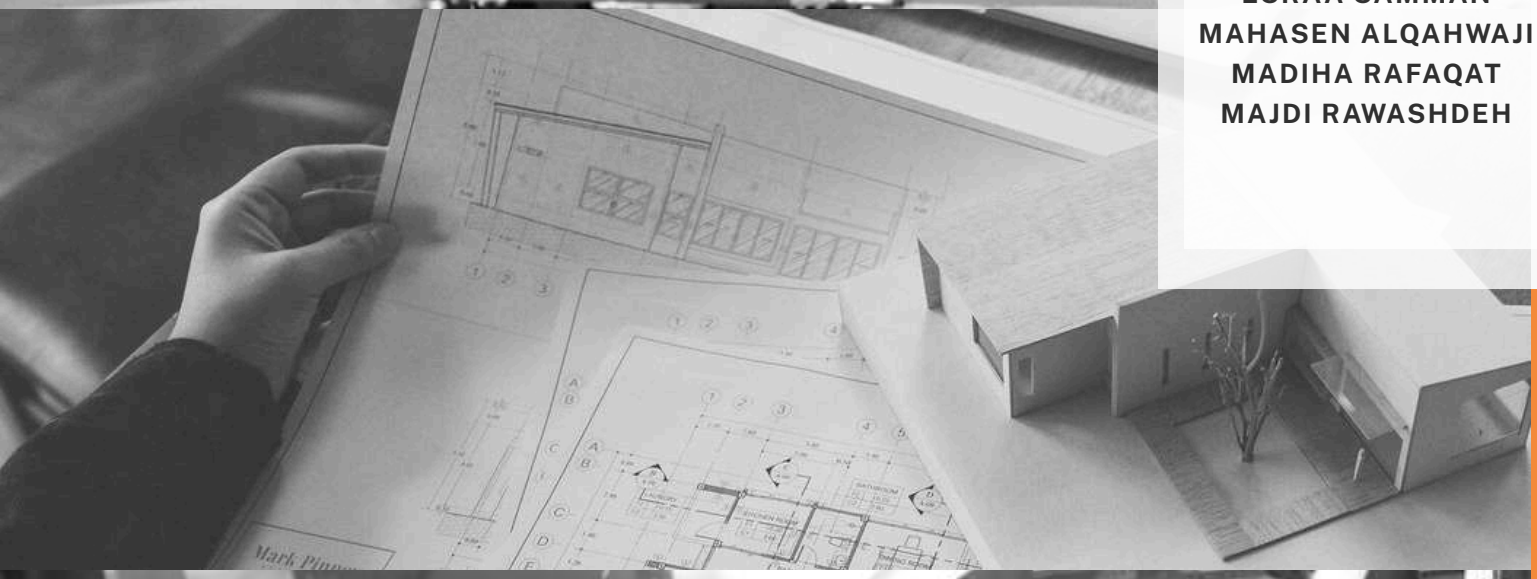
2025

COE PERSPECTIVES

جامعة اليمامة
Al Yamamah University





COLLEGE OF ENGINEERING

ISSUE 1

DONE BY:
ESRAA SAMMAN
MAHASEN ALQAHWAJI
MADIHA RAFAQAT
MAJDI RAWASHDEH

TABLE OF

C O N T E N T S

ABOUT US

COLLEGE OF ENGINEERING

College of Engineering (CoE) offers a bachelor degrees in engineering and architecture with major options, in the area of Architecture, Software Engineering Network Engineering & Security, and Industrial Engineering.

MISSION

To provide an outstanding education and innovative scientific research to enhance the field of Engineering and Architecture in the region

VISION

To be an educational icon for Engineering and Architecture in KSA and neighboring countries.

PROGRAM INFORMATION

The Architecture Program at YU is designed to graduate architects with comprehensive knowledge, problem-solving skills, and innovative abilities to create solutions that are sensitive to human needs and local cultural distinctiveness. The department's mission is to empower the next generation to shape a future marked by positive social and economic progress. To achieve this, the Department of Architecture engages students in acquiring artistic, scientific, cultural, and technological knowledge. This education aims to develop critical thinking, analytical abilities, and technical skills necessary for synthesizing sustainable and aesthetically exceptional architectural solutions. The department aims to be one of the best architectural programs in the Kingdom, achieving and sustaining both national and international recognition. The program is taught in English and spans five years.

PROGRAM INFORMATION

The Bachelor of Science in Network Engineering and Security (BNES) at Al Yamamah University is an ABET-accredited program that meets the standards of the Saudi Ministry of Education and Saudi Council of Engineers. It uniquely combines both areas of 'Computer Networks' and 'Network Security', offering students a competitive edge in the job market. The curriculum covers cutting-edge topics in both fields, including data communications, enterprise networking, IoT, cloud computing, cybersecurity, digital forensics, and ethical hacking. This comprehensive approach ensures graduates are well-equipped with the latest knowledge and tools used in the industry, making them highly marketable in the rapidly evolving field of network engineering and security. Graduates can pursue roles such as System Administrator, Enterprise Network Architect, Wireless Network Engineer, Security Officer, Forensic Scientist, Cloud Administrator, or Software Developer, among many others. The program's dual focus on networks and security ensures students are well-prepared for the diverse and evolving demands of the IT industry.

PROGRAM INFORMATION

The Software Engineering program at Al Yamamah University is an ABET-accredited program that meets the standards of the Saudi Ministry of Education and Saudi Council of Engineers. It equips students with comprehensive skills to analyze, design, verify, validate, implement, apply, and maintain software systems. Students will learn advanced concepts in relevant topics in computer science and supporting disciplines to complex software systems; and the ability to work in one or more significant application domains like Software development, Software maintenance and support, Web design, etc. The program's competitive advantage lies in its ability to adapt to new market needs on a local and international scale. Graduates will be well-positioned in the labor market, able to secure roles as Web Engineers, Software User Interface designers, Software trainers, software consultants, etc.

PROGRAM INFORMATION

“The Industrial Engineering (IE) program focuses on optimizing systems and processes for enhanced efficiency, productivity, and quality across industries. Students develop a blend of engineering, business, and management skills to analyze and design integrated systems. With its interdisciplinary approach, the program offers a competitive edge by merging technical expertise with problem-solving and project management abilities. Graduates acquire proficiency in operations research, production planning, supply chain management, and process enhancement. This specialization equips students with sought-after skills to drive operational excellence, cost reductions, and organizational competitiveness, making IE graduates valuable assets in sectors like manufacturing, healthcare, logistics, consulting, and technology that prioritize process optimization and efficiency for success.”

SPOTLIGHT ON DR.HESSAH ALSALAMAH

Dr. Hessah Alsalamah is the Dean of the College of Engineering and Architecture, and the Acting Dean for the College of Computer and Information Sciences at Al Yamamah University. She is the Chair of both Colleges' Council, a member of the Dean Council, and Al Yamamah University Council. Dr. Hessah is also a faculty member in the College of Computer and Information Sciences and Consultant of King Abdullah's Institute for Research and Consulting Studies at King Saud University.

Dr. Alsalamah obtained a PhD in Computer Science and an MSc in 2005 in the same field from the School of Computer Science and Informatics at Cardiff University, Cardiff, UK. During her PhD studies, she managed to secure an honorary researcher position at Velindre Cancer Center at Velindre NHS Trust in the United Kingdom.

Before joining Al Yamamah University, Dr. Alsalamah was the former Vice Dean of the College of Computer and Information Sciences at King Saud University

Upon joining Al Yamamah University, Dr. Alsalamah led different initiative successfully. She introduced an industrial advisory board for the college and is currently leading it. She managed to initiate and activate collaboration agreements with distinguished national and international academic and non-academic institutes in both the private and public sectors; including IBM, the Saudi Telecom Company, George Maison University, University of Central Florida, and the Saudi Council of Engineers. She also served as a member of the organizing committee and the head of the scientific committee of Al Yamamah University's Engineering Forum.

DEAN'S WORD

DR. HESSAH ALSALAMAH

Committed to Academic Excellence and Innovation

Our College has come a long way since its establishment in 2014. Today, the College of Engineering and Architecture is comprised of three departments: Department of Architecture, Department of Computer Engineering and the recently established Department of Industrial Engineering. These departments offer four accredited B.Sc. programs: Architecture, Network Engineering and Security, Software Engineering, and Industrial Engineering Our curricula for all programs combine a strong theoretical background with hands-on experience in excellent labs and most importantly, we emphasize close interaction with the outstanding faculty to create an atmosphere truly conducive to learning.

The College is also very active in offering short courses, workshops and seminars, which provide ample avenues to disseminate engineering knowledge to the local, regional and international community. Furthermore, the College organizes international conferences in various engineering fields, which attracts international researchers and provides them with a conducive environment in which knowledge, research findings can be shared, and new ideas can be discussed, hence promoting and strengthening a knowledge-based society.

SPOTLIGHT ON
DR.DALIA ABDELFATTAH

Dr. Dalia Abdelfattah is an architect and researcher in urban affairs. Dalia is an assistant professor and a researcher in UN-HABITAT Programme of Planners for Climate Action. Currently, working as the vice dean of the college of engineering and a faculty in the architecture department in Al Yamamah University. In 2018, she obtained her PhD from Cairo University, Egypt, about how to motivate local community to participate in conservation programs. MSc in Architecture, awarded in 2011 "Quantitative Analysis for Urban Qualities of Conserved Areas, studying cases: Old Cairo, Egypt, Old city, Istanbul". Her area of interest is in community design in Middle East and Northern Africa Region (MENA) with special focus on urban conservation, adaptation of multi-disciplinary approaches from environmental psychology. She has a number of scientific studies published in international journals and conference proceedings.

Before joining Al Yamamah University, Dr. Dalia Abdel Fattah was a Visiting Lecturer at the Department of Architectural Engineering, Arab Academy for Science, Technology and Maritime Transport. In addition to the Architecture Engineering Technology (AET program) Faculty of Engineering, Cairo University.

She has about 12 years of experience in teaching, practice, and public services that includes projects in the area of architecture design, urban planning, urban design, landscape design, community development, and urban conservation.

VICE DEAN'S WORD

DR. DALIA ABDELFATAH

Committed to Academic Excellence and Innovation

Under the visionary leadership of Al Yamamah University, the College of Engineering continues to thrive across its three distinguished departments: Computer Engineering, Industrial Engineering, and Architecture. Our unwavering commitment to academic excellence drives innovation, creativity, and technical expertise, inspiring students to become leaders in their respective fields.

By cultivating a dynamic and inclusive learning environment, we empower future engineers and architects to develop sustainable, impactful, and forward-thinking solutions. The College of Engineering's strategic guidance ensures that our programs remain at the forefront of engineering education, blending cutting-edge theory with practical application.

Our First annual magazine serves as a prestigious platform to showcase the remarkable achievements of our students and Faculty Members research publications and funded projects. The outcomes, spanning computer engineering, industrial engineering, and architecture, reflect a vibrant spectrum of innovative ideas and intellectual rigor. Each work represents a journey of discovery, bridging theoretical foundations with real-world challenges.

Our supportive work environment enables both faculty and students to reach new heights of professional and academic success. The outcomes of our students embody the passion, ingenuity, and dedication that define Al Yamamah University's vision for engineering excellence.

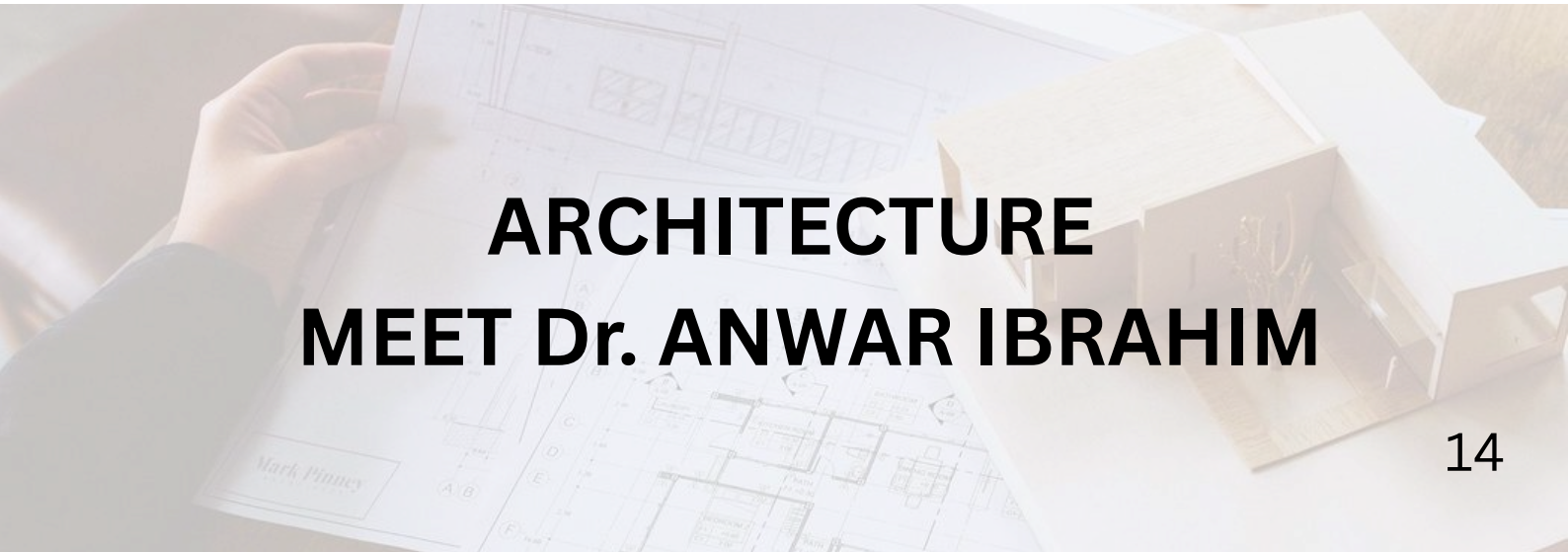
COLLEGE OF ENGINEERING'S CHAIRPERSONS

ARCHITECTURE
Dr. ANWAR IBRAHIM

COMPUTER ENGINEERING
DR.ADEEL BAIG

INDUSTIAL ENGINEERING
DR. NAVEED AHMED

Dr. Anwar Ibrahim is Associate Professor of architecture. He obtained his undergraduate (1996) and Master's (1999) degrees in Architecture Engineering from Jordan University of Science and Technology (JUST). In 2008, he moved to the USA and started his Ph.D studies in Architecture history and theory from the State University New York at Binghamton and earned his degree in 2015. After that, he returned back to Jordan to work as Assistant Professor at the College of Architecture and Design/Department of Architecture (JUST) before he was promoted to Associate Professor in 2021. The list of courses he taught includes design for various levels and history of architecture for undergrad students and Theory and Criticism and human behavior in architecture for graduate level. He also supervised a large number of graduating projects and Master's degree theses. From 2018 to 2022, Dr. Ibrahim served as the Chairman of the Department of Architecture and as a Vice Dean from 2020-2022. During his appointment as a Chairperson, Dr. Ibrahim was successfully able to lead his department in the process of achieving the American NAAB's International Certificate (ICert.). As part of his social responsibility and international partnership, Dr. Ibrahim worked as a project coordinator for The Jordanian Action for the Development of Enterprises (JADE), a European Union sponsored project from 2017-2020. He assisted in organizing a large number of hackathons and national exhibitions that aimed at promoting the culture of creativity and entrepreneurship among the youth. Dr. Ibrahim is also an active researcher and published in high-rank pair-reviewed indexed journals. His research interest includes architectural theory and criticism, human behavior in the built environment, occupant behavior and thermal comfort, perception of architectural form, sustainable architecture aesthetics, and architecture and design education.



ARCHITECTURE
MEET Dr. ANWAR IBRAHIM

ARCHITECTURE CHAIRMAN WORD

DR. ANWAR IBRAHIM

As the new Head of the Architecture Department at Al Yamamah University, I'm pleased to share our annual magazine. It captures the lively energy and hard work in our department. I'm proud of our talented students and dedicated faculty, whose achievements shine in the work we've highlighted.

Over the past year, we've had many activities that enriched our learning environment. Students participated in hands-on workshops, visited significant building projects and construction sites, and learned from distinguished guest speakers. We also formed connections with other architecture departments, which helped us learn and collaborate better. On the other hand, our faculty members showed great dedication through their ongoing research and publications, significantly contributing to the field. Their work in research and student mentorship creates a vibrant and stimulating place to learn.

Looking ahead, we're focused on strengthening this strong foundation. We aim to keep improving our curriculum, offer more hands-on learning opportunities, build stronger ties with the industry, and support our faculty academic pursuits. I'm excited about our department's future and the progress we'll make together, shaping tomorrow's leaders in architecture.

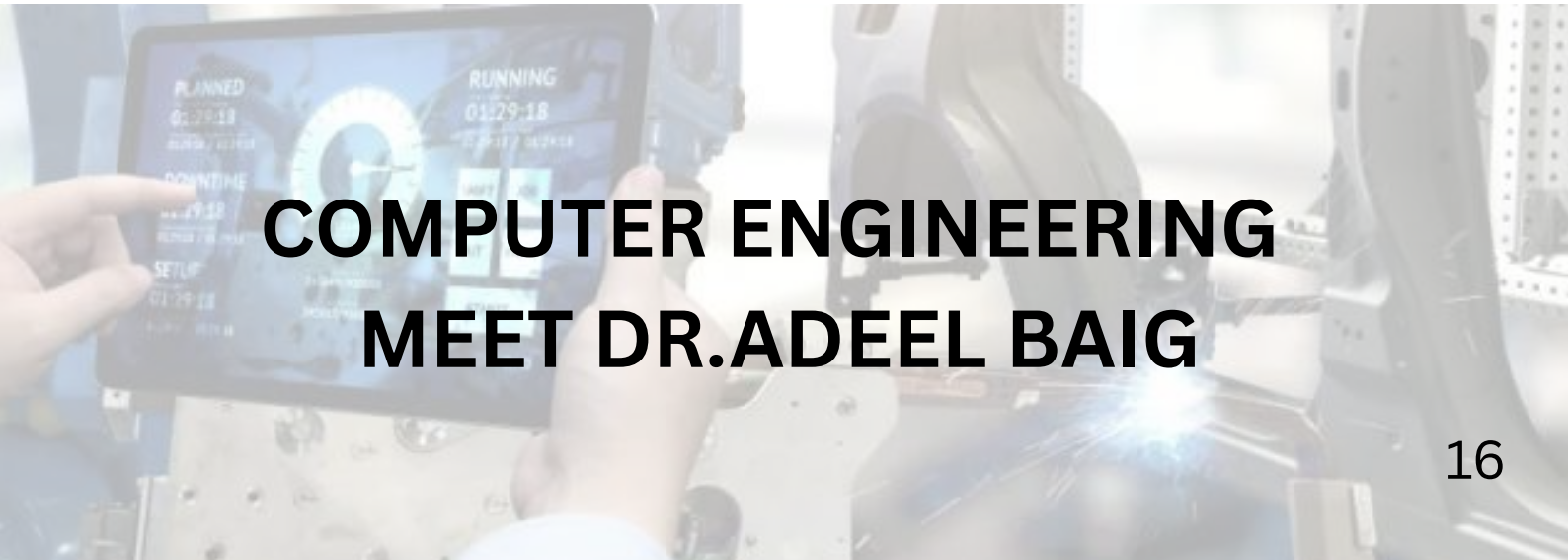
Dr. Adeel Baig is currently an Assistant Professor at College of Engineering at Al-Yamamah University (YU).

He received his Bachelor of Engineering (BE) degree from NED University of Engineering (Pakistan), his Master of Engineering and Science (M.Eng.Sc) and Ph.D. degrees in Computer Science and Engineering, from The University Of New South Wales (UNSW), Australia. Before joining YU, he held several positions in research and teaching, including; as an Assistant Professor in the School of Electrical Engineering and Computer Sciences (SEECS) at National University of Sciences and Technology (NUST) from 2008-2014, with National ICT Australia (NICTA) from 2004-2007, where he participated in a research team working on technologies for providing communication and information access on public transports, and with UNSW as a Lecturer in 2003. Between 2000 and 2002, he served as a Research Student in the Network Research Laboratory (NRL) at UNSW.

Dr. Adeel Baig is a senior member of the IEEE (SM'14) and ACM (SM'16), and member of PEC, and ISOC. Some of his selected publications and open source contribution can be found at his Publication page.

His areas of expertise include the following categories: (but not limited to)

1. IoT Architectures and Protocols
2. IoT and Cloud Security
3. Software-defined networking (SDN)
4. Protocols for networks with highly dynamic topologies (e.g. MANET, VANET)
5. Protocols for networks with limited energy, memory, and computation power resources
6. IPv6 transition and implementation strategies



COMPUTER ENGINEERING MEET DR.ADEEL BAIG

COMPUTER ENGINEERING CHAIRMAN WORD

DR.ADEEL BAIG

As Chair of the Computer Engineering Department, I am pleased to present this year's edition of our annual magazine. This publication reflects the energy, dedication, and achievements of our community. From high-impact faculty research to student-led initiatives, it highlights the innovation and excellence that define our department's journey. The department currently offers two academic programs: Network Engineering and Security and Software Engineering, both designed to equip students with future-ready skills.

Over the past year, our faculty have made remarkable strides. Their work was published in top-tier journals and presented at leading international conferences. Their contributions were further amplified by securing significant grants from the Research, Development, and Innovation Authority (RDIA) for pioneering projects. We also strengthened industry ties by partnering with IBM, Oracle, Cisco, and Red Hat, leading to the integration of globally recognized certification programs into our curriculum—helping bridge academic learning with industry expectations.

Our students continue to thrive as innovators and leaders. In collaboration with the Google Developer Student Club, they organized technical sessions on advanced topics including Generative AI, Blockchain, Big Data Analytics, and IoT Security. These sessions provided students with practical insights from experts who are shaping the future of technology. Beyond campus, our students proudly represented the university at global platforms such as the LEAP Tech Conference and the Black Hat MEA Cybersecurity Event, engaging directly with industry leaders. Their competitive spirit was also evident in regional contests such as the PWC Empowerthon and Zayed University's Undergraduate Research Competition.

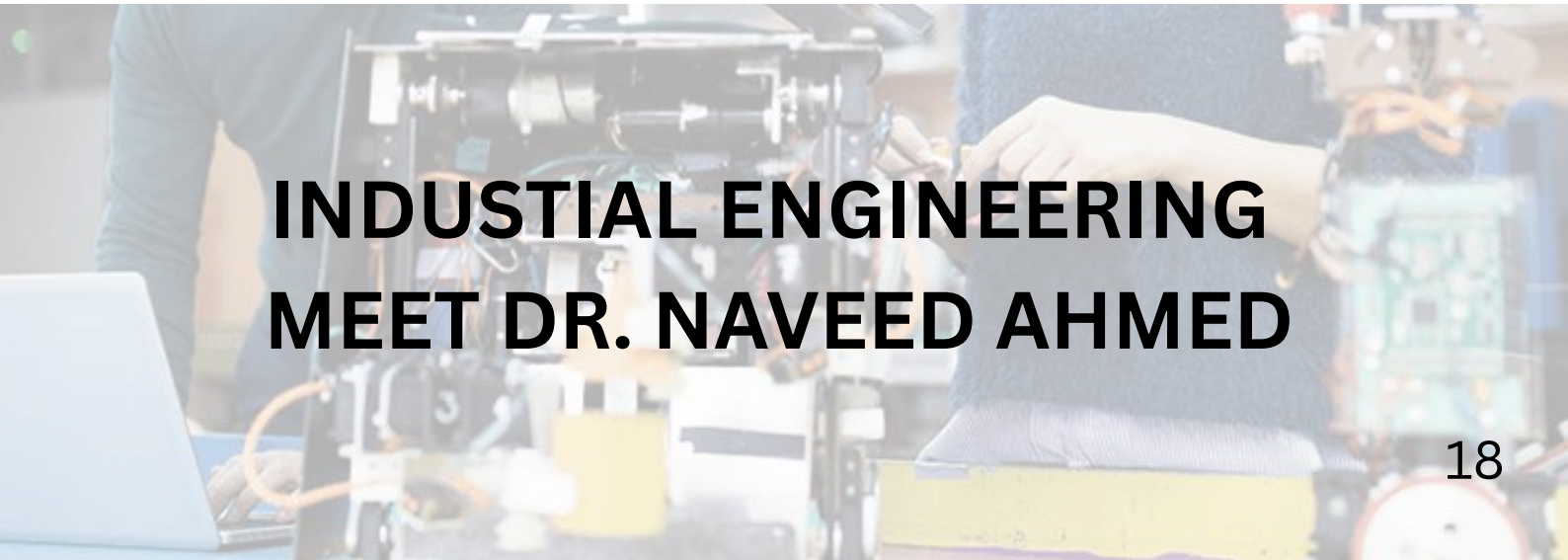
As we move forward, we aim to build on these accomplishments and ensure our programs remain at the forefront of academic and technological advancement. I encourage our students to seize every opportunity for growth, and I thank our faculty, alumni, and partners for their continued support in shaping a future where technology serves as a force for innovation and impact.

Naveed Ahmed received BSc an MSc degrees in Industrial and Manufacturing Engineering from University of Engineering and Technology (UET), Lahore – Pakistan. He joined the same university as a Lecturer in 2007. Dr. Naveed Ahmed received PhD degree from King Saud University, Saudi Arabia, in 2016 and received King Saud University Award for Scientific Excellence in 2017. Currently, Dr. Naveed is an Assistant Professor and Chairman of Industrial Engineering Department of Alyamamah University, Kingdom of Saudi Arabia. He has been an active member of reviewers committees of Higher Education Commission (HEC) of Pakistan and numerous international journals including Journal of Manufacturing Processes, Applied Surface Sciences, Rapid Prototyping and Laser & Optics Technology.

Dr. Naveed has published one international book, one book chapter, and more than 45 impact factor papers in several areas of manufacturing engineering such as micro-machining, laser processing, and additive manufacturing. Dr. Naveed Ahmed has supervised several thesis at undergraduate and graduate level.

Research Interests

- Water/fluid Immersed Laser Processing
- Synthesis of Micro/Nano-particles
- Biomedical Implants (Fabrication and Machining)
- Micro-manufacturing (Micro-heat exchangers, Micro-molding; Micro-channels)
- Non-conventional Manufacturing Processes
- Electron Beam Melting
- Ultrasonic Milling/Grinding
- Micro/Nano Scale Surface Modifications
- Materials Engineering



INDUSTIAL ENGINEERING MEET DR. NAVEED AHMED

INDUSTRIAL ENGINEERING CHAIRMAN WORD

DR. NAVEED AHMED

The Industrial Engineering (IE) is a discipline specializing in design, operation management, and analysis of integrated systems. The IE department was established in 2018 and have well-equipped labs. It is a 4-years program covering knowledge units for the specialty of industrial engineering sciences according to the requirements of NCAAA and the Education and Training Evaluation Commission of Saudi Arabia. The program aims to graduate industrial engineers and provide them with needful expertise to keep pace with the rapid development of industry in the Kingdom and cover the needs of the labor market in accordance with Saudi Vision 2030. The department also arranges several industry visits every year to expand students' exposure.

Before graduation, students complete a capstone design project to solve a real case problem. Different companies host our projects such as STC, Alfanar, and Alkhorayef group of industries etc. Our graduates help devising solutions to the problems which are safer, efficient and sustainable. As a reflection, IE graduates are employed in various top-notch national and international companies and organizations including SABIC, STC, PwC, Riyadh Airports, EXPRO, Halliburton, and the similar.

We have a qualified, competent, and experienced faculty tailoring the graduates to fulfill the dynamic needs of the industry. In addition to teaching, the faculty regularly publish their research. The faculty engage students as well in their research activities and students' work is being published in international conferences and journals.

The IE department strongly believes in continuous improvement. We have industrial advisory board wherein the program is reviewed regularly. We keep on updating the curricula and its other constituents as and when needed to meet the dynamic requirements of the market.

Standardized methods of teaching, learning, experimental work and assessments are well in-place and the program meets the quality standards of the profession. It is an honor to share that the IE program has been receiving the international recognition and is ABET accredited.

ARCHITECTURE DEPARTMENT

EVENTS

Celebrating Creativity and Achievement: Highlights from the Architecture Department

EXTERNAL ACTIVITY

visit to Naila Art Gallery

SEMINARS / SPEAKERS

City Humanization award

SEMINARS / SPEAKERS

introduction to Production design

FIELD TRIP

ARCH111 Students Explore Tuwaiq Sculpture Symposium

FIELD TRIP

ARCH204 Visit to Misk City

EXTERNAL ACTIVITY

National Heritage Initiative

FIELD TRIP

A trip to Tadawul Tower

WORKSHOP

3D Printer and Laser cutter workshop

WORKSHOP

Basic design full day workshop

EDUCATIONAL TRIP

Jeddah, KSA

EDUCATIONAL TRIP

Abha, KSA

STUDENT ACHEIVMENT

Deans list

STUDENT ACHEIVMENT

Prince Abdulaziz bin Ayaf Award for Urban Design

FACULTY WORKSHOP

Branding of Urban Spaces.

FACULTY WORKSHOP

Innovative Teaching Strategies

Architecture Department Events

Art Meets Architecture: A Creative Start to the new academic year 2024-2025

To launch the new academic year on a creative note, the Architecture Department at Al Yamamah University organized a cultural visit to Naila Art Gallery and the Misk Art Exhibition during the first week of the semester. The trip aimed to energize students and ignite their creativity as they began their design studios and coursework.

In addition to exploring a wide range of contemporary artworks and installations, students had the valuable opportunity to engage in conversations with exhibiting artists, gaining insight into their creative processes, concepts, and techniques.

Architecture Department Events

جامعة اليمامة
Al Yamamah University

الورشة

Introduction to
Production Design

3 Day Workshop

Meme Wahba

COO AL-WARSHAH ART PRODUCTION
PRODUCTION DESIGNER

Workshop Content

- What is production design?
- Production Designer vs Art Director
- Hollywood top production designers
- Considerations for creating a scene
- Production designer's working procedures
- Collaboration with other professionals
- Advertisement design group project

12:00 PM - 3:00 PM

November 17 ,14 ,7

Tuwaiq Building

Architecture Department Events

3Days Workshop on Production Design

The Architecture Department at Al Yamamah University recently held a specialized workshop focused on production design, offering students an in-depth look at the creative and technical aspects of designing for visual media.

The workshop explored key topics such as the role of the production designer, scene composition, collaboration with creative teams, and the distinction between production designers and art directors. Participants also engaged in a group project centered on advertisement design, applying their knowledge in a hands-on setting.

Architecture Department Events

ARCH111 Students Explore the Tuwaiq Sculpture Symposium

As part of the Riyadh Art Program, students from the ARCH111 Basic Design Studio 2 course at the Architecture Department embarked on an inspiring trip to the Tuwaiq Sculpture event.

The visit offered students an enriching opportunity to witness live sculpting demonstrations, explore a variety of materials, and gain firsthand insight into the intricate design and creative processes behind monumental sculptures.

Highlighting the experience was a hands-on gypsum carving workshop, where students actively engaged in the art of sculpture, developing their understanding of form, texture, and materiality.

This educational and inspiring event successfully bridged the worlds of art, design, and creativity, leaving a lasting impact on the next generation of architects.

Architecture Department Events

ARCH111 Students Explore the Tuwaiq Sculpture Symposium

Architecture Department Events

ARCH204 Visit to Misk City

As part of the Building Construction course this semester, architecture students had the opportunity to visit Misk City, one of Riyadh's major ongoing development projects. The course, which focuses on the fundamentals of construction—including site preparation, excavation, foundations, columns, beams, slabs, reinforced concrete, precast elements, and steel structures—was greatly enriched by this hands-on experience.

The visit offered students valuable real-world insights into modern construction practices, allowing them to observe firsthand the techniques and structural systems they have been studying in the classroom. By bridging theoretical knowledge with practical application, the site visit deepened their understanding of the complexities and innovations shaping contemporary construction.

Misk City provided an ideal setting for students to witness large-scale building operations, reinforcing their academic learning and inspiring their future professional practice.

Architecture Department Events

ARCH204 Visit to Misk City

Architecture Department Events

Alyamamah University proudly joins the prestigious History National Laboratory Competition, presenting an innovative architectural model that captures Saudi Arabia's journey through time.

The design features panels of steel adorned with abstracted symbols and images, showcasing the past, present, and future:

- The Past: Represented through traditional motifs reflecting Saudi heritage.
- The Present: Highlighted by modern patterns and vibrant imagery symbolizing progress.
- The Future: Expressed through futuristic shapes and designs inspired by NEOM.

This immersive project connects viewers to Saudi Arabia's rich history and visionary future, aligning with the goals of Vision 2030

Architecture Department Events

Architecture Department Events

Architecture Department Participates in National Heritage Initiative

Students from the Architecture Department at the College of Engineering recently participated in the Heritage Gateway initiative, following an invitation from the Saudi Heritage Commission.

The event, organized as part of the commission's ongoing efforts to promote cultural awareness, featured a series of workshops and presentations led by heritage experts. These sessions introduced students to the commission's core missions and activities, emphasizing the critical role of heritage preservation in reinforcing national identity.

Through this immersive experience, students gained a deeper understanding of the intersection between architecture and cultural heritage, enriching their academic journey with insights into the responsibility of architects in safeguarding and enhancing both cultural and architectural legacies.

Architecture Department Events

A trip to Explore High-Rise Design at Tadawul Tower

The Architecture Department at Al Yamamah University conducted a field visit to Tadawul Tower in the King Abdullah Financial District.

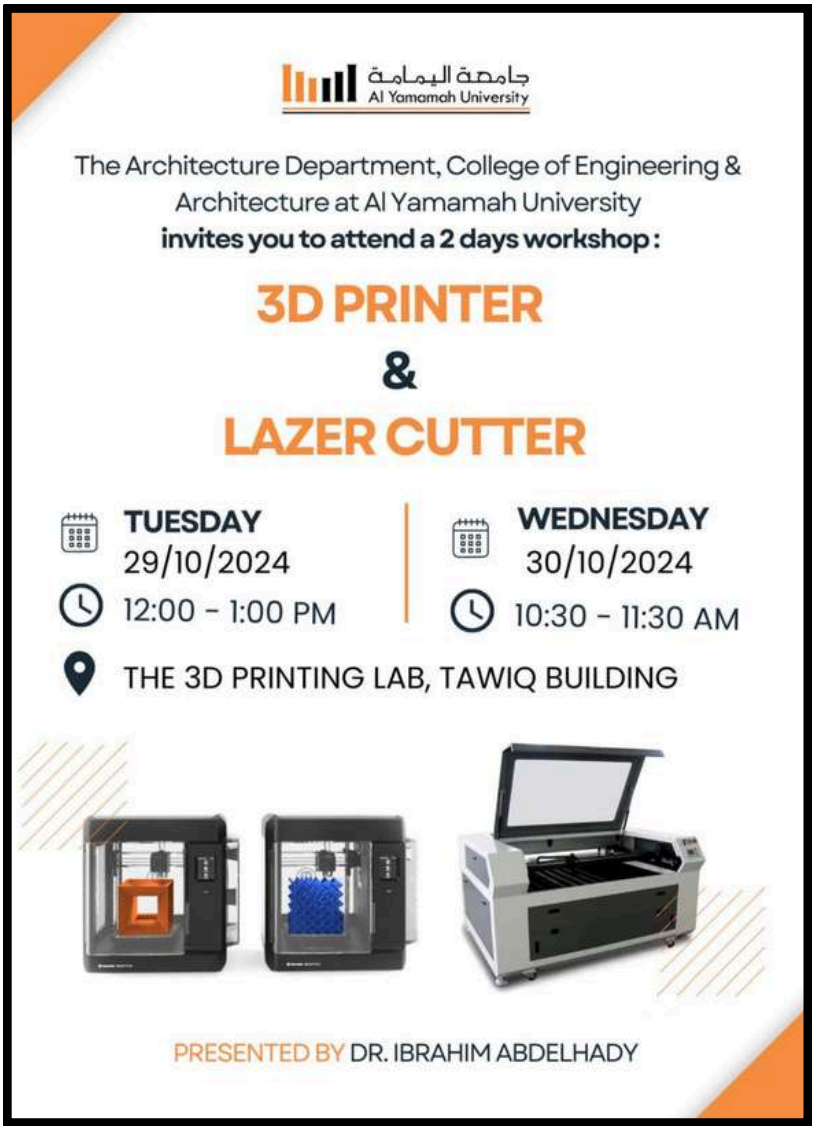
The visit provided students with a valuable opportunity to engage with one of Riyadh's most iconic contemporary structures. They explored the tower's architectural and engineering design details, gaining practical insights that complemented their academic studies.

By connecting theoretical learning with real-world observation, the experience enriched their understanding of high-rise design, advanced construction systems, and mixed-use urban development.

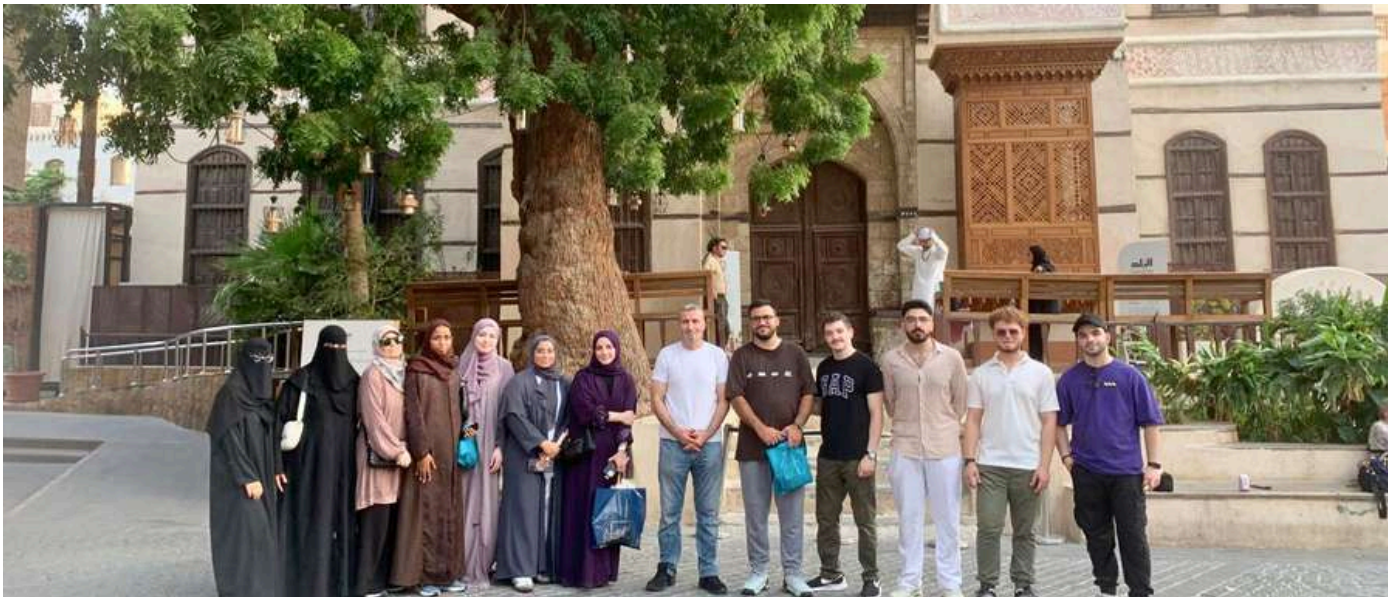
Architecture Department Events

The Architecture Department at Al Yamamah University held a two-day workshop on 3D printing and laser cutting, led by Dr. Ibrahim Abdelhady. Held at the 3D Printing Lab in Tawiq Building, the sessions introduced students to essential digital fabrication tools, enhancing their design skills through hands-on experience.

The event highlighted the department's commitment to integrating technology into architectural education and preparing students for future design challenges.



Architecture Department Events



Architecture Department Highlights Excellence with Educational Trip to Jeddah

The Architecture Department at Al Yamamah University organized a fully funded academic trip to Jeddah for students on the Dean's List, celebrating their outstanding achievements.

During the visit, students engaged in a workshop hosted by King Abdulaziz University, fostering academic exchange and exposure to new perspectives in architectural education. The group also attended the Jeddah Construct event, gaining valuable insights into the latest innovations in construction and design.

A key highlight of the trip was the exploration of Jeddah Al Balad, the city's historic district, where students experienced the rich architectural heritage and urban fabric that define this UNESCO World Heritage Site.

This trip reflects the department's commitment to rewarding academic excellence and enhancing student learning through real-world experiences.

Architecture Department Events

Architecture Department Trip to Abha

Students from the Architecture Department at Al Yamamah University recently took part in a design workshop focused on the local architecture of the Asir region. Organized in collaboration with King Khalid University's College of Architecture and Planning, the workshop was held at the Al-Faraa campus.

The workshop aimed to highlight the importance of incorporating local identity in modern design while considering environmental and heritage values. Discussions centered on traditional Asiri architecture, sustainable design principles, and integration with the natural landscape.

As part of the activities, students from both universities developed and presented design proposals inspired by Asiri architecture, combining traditional elements with contemporary concepts.

This workshop was a key component of the Architectural Design Studio 1 course, linked to the students' ongoing project located in the Jabal Al-Soudah area. The visit also included tours of historical sites such as the Abu Sarah Palaces and other heritage landmarks in the region.

Architecture Department Events

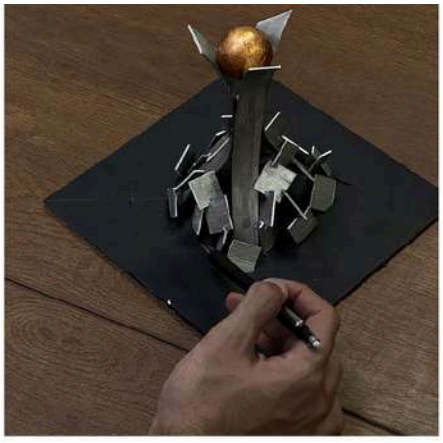
Architecture Department Events











Students of **ARCH111 Basic Design Studio 2** participated in a full-day hands-on workshop focused on constructing 1:1 scale models of architectural landmarks.
Working in teams, students collaborated to translate design concepts into physical structures, gaining practical experience in form, proportion, and spatial understanding. The activity not only reinforced key design principles but also fostered teamwork, problem-solving, and creativity.

Architecture Department Events

Architecture Department Events

We are Proud of our students outstanding achievements !

Architecture Department Events

باعـتـزاز وفـــخر

تهنئ جامعة اليمامة طالباتها المتميزات **سارة بطه ولطيفة السلامة** لفوزهـن في **جائـزة الأمير عبدالعزيز بن عياف لأنســنة المدن**، بعد تقديم مشروع ريادي يهدف إلى أنسنة مراكز الأحياء، متفوقات على أكثر من 200 مشاركة.

Al Yamamah University congratulates our distinguished students **Sara Bata** and **Lateefa Al-Salama** for winning Prince Abdulaziz bin Ayaf Award for Urban Design. They were recognized for presenting an innovative project aimed at enhancing the livability of city centers, standing out among more than 200 participants.

Congratulations

to the Graduating Class of 2025!

We proudly celebrate the achievements of our architecture graduates, who have demonstrated resilience, creativity, and dedication throughout their academic journey.

Architecture Department Events

Architecture Faculty Participate in Training on Urban Space Branding

As part of its ongoing commitment to academic and professional development, faculty members from the Department of Architecture attended a specialized training course titled “Branding of Urban Spaces.”
Organized in collaboration with the Local Administration Center, the course focused on strategies for enhancing the identity and experience of urban environments through design.







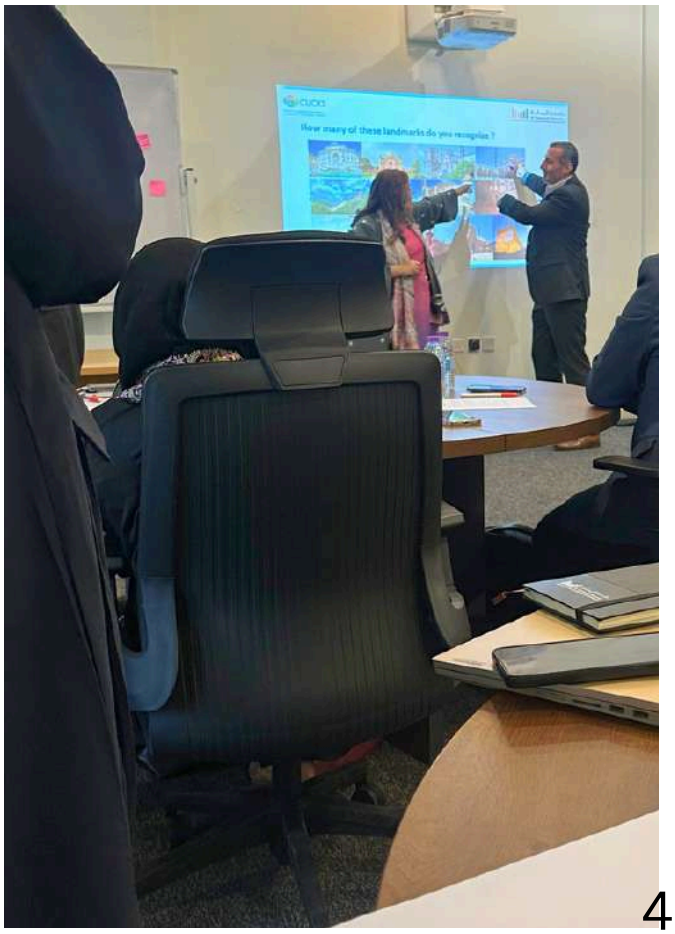

Faculty Development Workshop Explores Innovative Teaching Strategies

Faculty members from the Architecture Department at Al Yamamah University participated in a one-day faculty development workshop titled “Enhancing Student Engagement Through Innovative Teaching Strategies,” held as part of the university’s commitment to academic excellence.

Led by Dr. Narimane Hadj-Hamou, Founder and CEO of CLICKS, the workshop focused on integrating innovative pedagogies to create active, student-centered learning environments. Topics included experiential learning, team-based learning, and flipped classroom strategies aimed at boosting student motivation and engagement.

Participants engaged in a range of interactive activities such as role-plays, debates, concept mapping, and collaborative problem-solving, all aligned with learning outcomes. The workshop also emphasized the use of technology to enhance participation and interaction in various teaching contexts.

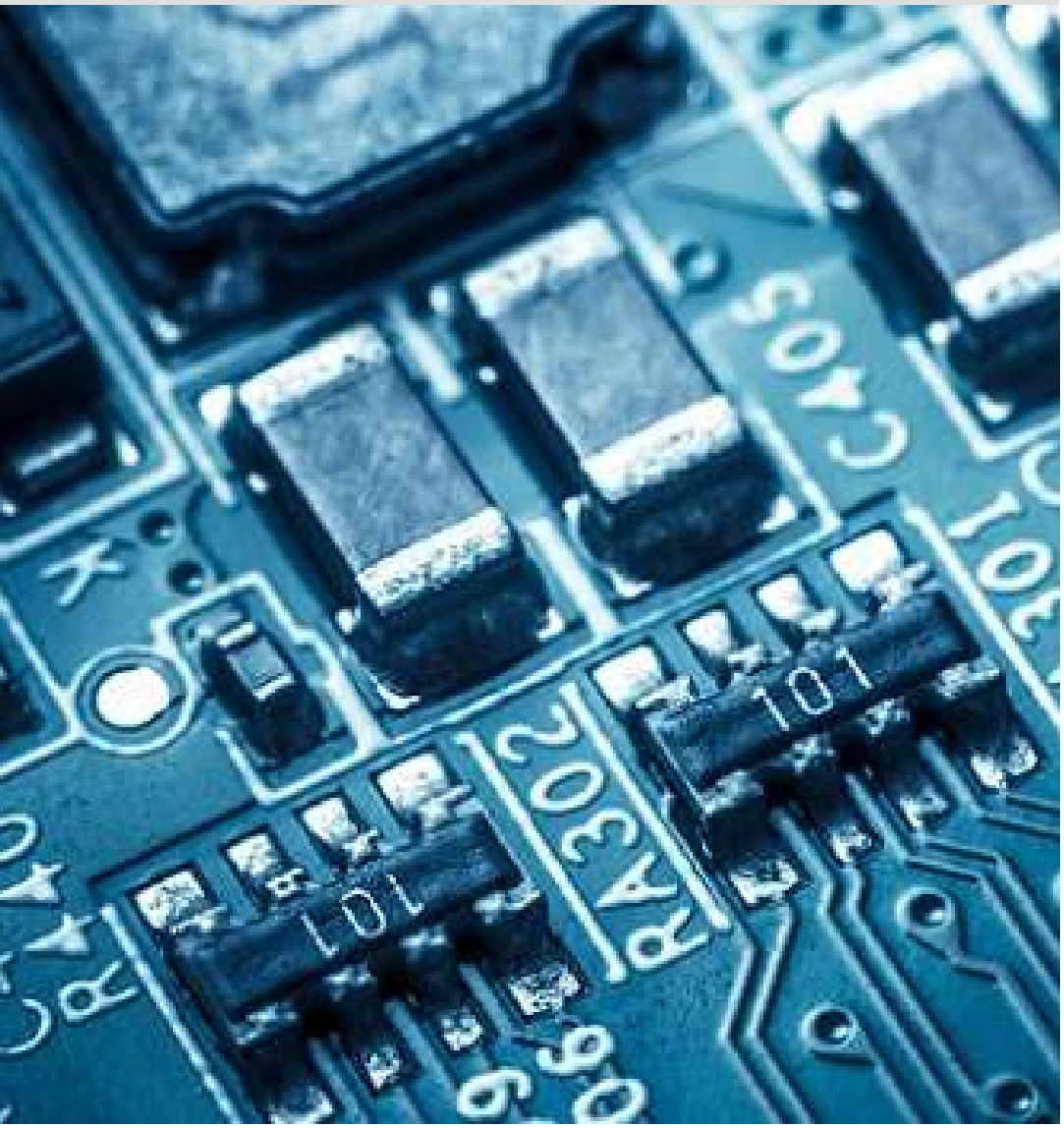
The participation of the Architecture faculty reflects the department’s dedication to continuous improvement and to adopting forward-thinking approaches in design education.



COMPUTER ENGINEERING

EVENTS

Innovating for Excellence: Highlights from the Industrial Engineering Department



Computer Engineering Events

The 12th Undergraduate Research & Innocation Competition

Exciting News!

We're proud to share that our research project, "Design and Implementation of a Secure IoT Infrastructure using Zero Trust Architecture" (Research ID: 14416), has qualified for the final stage of the 12th Undergraduate Research & Innovation Competition!

The event will take place on Thursday, May 29th, 2025, at Abu Dhabi University, Khalifa City Campus.

The AI LLMs Revolution: Opportunities and Challenges

The AI LLMs Revolution: Opportunities and Challenges

Keynote Talk by Dr. Sarah Omar AlHumoud

Tuesday, April 29, 2025 at 12:30 PM Najd Auditorium

About the Speaker

Dr. Sarah Omar AlHumoud is a renowned expert in Artificial Intelligence with 22 years of professional experience, including 12 years in management and leadership roles. She has served as:

- Inaugural Head of AI Department at King Salman Arabic Academy
- Founder and Head of Arabic AI Center (ARAI)
- Associate Professor in Computing Science
- AI Consultant for government and private sector initiatives
- Author of 35+ research papers in AI and NLP

Speaker Highlights

- Led multiple AI projects with budgets exceeding 50+ million SAR
- Consultant for major government AI initiatives
- Advisor to over 400 startups in technology and AI
- Recipient of prestigious awards including:
  – MIT-Ibn Khaldun Fellowship
  – Misk 2030 Leaders Program
  – British Council UK Graduate Prize
- Regular keynote speaker at national and international AI conferences

Don’t miss this opportunity to learn from one of Saudi Arabia’s leading AI experts!

Open to All Students

Computer Engineering Events

INDUSTRIAL ENGINEERING

EVENTS

Innovating for Excellence: Highlights from the Industrial Engineering Department

ABET | Engineering Accreditation Commission

ABET Accreditation of BSc Program of Industrial Engineering

The Industrial Engineering Department is proudly accredited by ABET. This accreditation ensures that our program meets the global standards for technical education and prepares students for successful careers in industry and academia. ABET accreditation is a mark of excellence, reflecting our commitment to continuous improvement and high-quality education.

Alfanar Industry trip

As part of its ongoing commitment to academic excellence IE department arranged a visit to Alfanar Company in Riyadh. During the visit the students gained valuable insights into the company's advanced manufacturing operations. The visit included a detailed look at the automation systems, quality control procedures, and lean production techniques used in the facility.

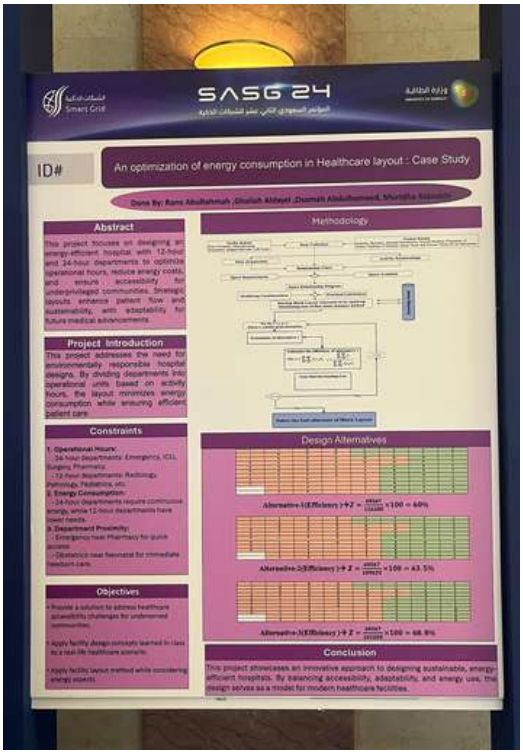
Visit to Al-Taiseer Group Talco Industrial Company

As part of its ongoing efforts to enhance educational opportunities for its students and bridge academic content with practical applications, the Department of Industrial Engineering organized an educational visit for a group of students to Al Taiseer Talco Industrial Company in Riyadh.

The visit aimed to familiarize students with modern industrial operations and the production mechanisms adopted by the company. It included a comprehensive tour of several factories within the facility. Company engineers provided detailed explanations of the production stages from receiving raw materials to preparing the final product, while emphasizing the importance of adhering to industrial standards and quality at every stage of the process

Saudia Arabia Smart Grid Conference

IE students Rana Aburahmah and Ghaliah Aldayel under the supervision of Dr. Murtadha and Dr. Osamah Presented a poster at the Saudi Arabia Smart Grid Conference 2024, titled *"An Optimization of Energy Consumption in Healthcare Layout: A Case Study."*



General Authority for Defense Development “Bridge 2” Forum

A delegation from Industrial Engineering, led by the Head of the Department, Dr. Naveed Ahmed, and faculty members Dr. Hesham Elkanani and Dr. Wadea Ameen, attended the second forum "Bridge 2" at the Hilton Hotel in Riyadh at the invitation of the General Authority for Defense Development. The forum was a review of the numerous initiatives presented by the General Authority for Defense Development in order to strengthen partnerships with universities and research centers to support the objectives of military industries. The forum also witnessed an intriguing presentation of the British experience, which focused on the role of the academic and industrial sectors in the British innovation system. Additionally, the French experience was presented, which focused on the role of innovation laboratories and graduate students in defense development.

Students Meeting on "Challenges for Industrial Engineers in the Workplace"

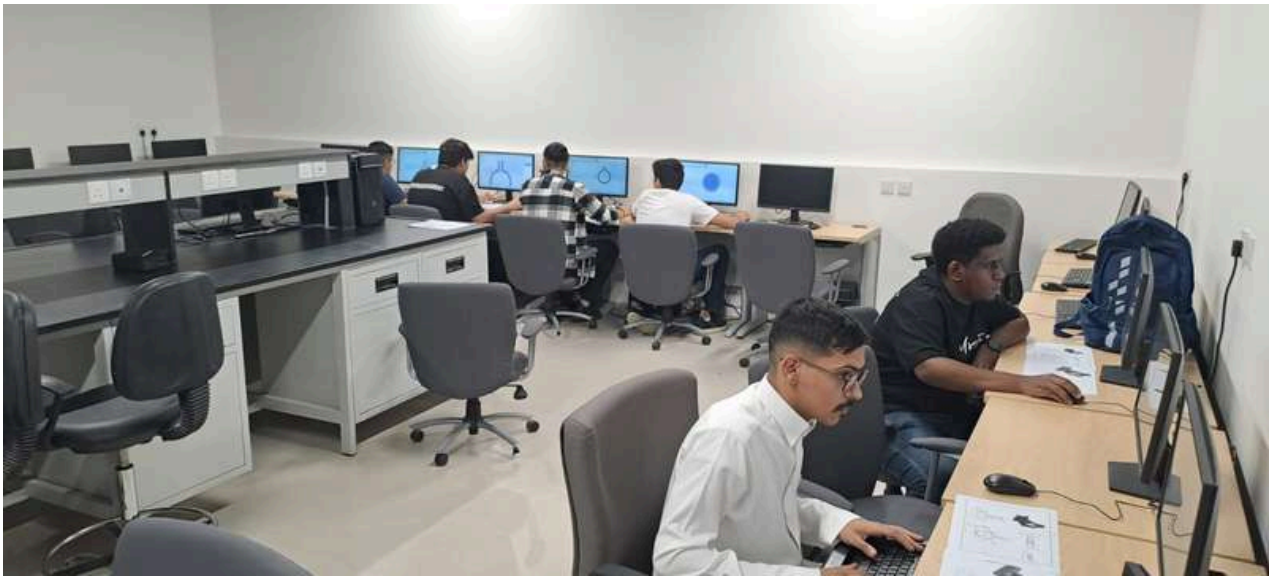
In collaboration with the Industrial Engineering Club, the department organized a student meeting titled "Challenges for Industrial Engineers in the Workplace." The event featured Engineer Hamad Turki Al-Tassan, Senior Industrial Engineer at King Faisal Specialist Hospital and Research Centre. During the meeting, Al-Tassan shared his extensive experience in industrial engineering, highlighting the challenges engineers face in today's workplace, from adapting to technological advancements to managing complex operational processes. He also discussed innovative solutions to these challenges, emphasizing the importance of continuous learning and staying up-to-date with the latest developments in the field to ensure professional excellence. Students actively participated by asking questions about how to adapt to changing market demands and acquire the skills necessary to succeed in their careers. The event concluded with the presentation of certificates of appreciation to the guest and participants by the department chair, Dr. Naveed Ahmed.

Industrial Engineering Events

Collaboration with LARSEN & TOUBRO

A delegation of Larsen & Toubro was hosted to collaborate on different areas of interest especially the Career Opportunities and Growth Path.
Larsen & Toubro one of the largest and most respected companies in India's private sector is a USD 25 billion technology, engineering, construction, manufacturing, and financial services conglomerate, with global operations. L&T Construction is the construction arm of Larsen & Toubro. Power Transmission & Distribution (PT&D) business vertical of L&T Construction was one of the earliest companies to operate in the Gulf and, over the years, has gained significant market presence in UAE, Oman, Qatar, Saudi Arabia, Kuwait, and Bahrain for executing projects on EPC basis. L&T is constructing world's biggest Solar plant at Sudhair (Majma), One more Renewable Energy project at Jeddah and biggest portion of Renewable Energy project at NEOM, Amala , as well Al Ras and Buraida region of Saudi Arabia.

Industrial Engineering Events



Solid Works Marathon

IE department under the supervision of Dr. Hesham Elkenani organized a competition titled · SolidWorks Marathon" for the students to show their skills using SolidWorks as a modelling" ,platform, December 2024·Lead a round of communications with Dassault Systems Company the vendor of SolidWorks design package, concluding by granting Al Yamamah university as a certified exam provider for numerous number of professional certifications and assigning me as a certified exam provider at Al Yamamah University.[NA1]

Dr. Hesham Elkenani as a certified exam provider for Dassault Systems Company, I recently· conducted official examinations for a select group of students who were chosen in accordance with the IED selection criteria. The exams were successful, and the students were ".awarded professional certifications in "Sustainability" and "Additive Manufacturing

Industrial Engineering Events

Graduation Design Project Competition at the 6th African International Conference on Industrial Engineering and Operations Management (IEOM)

IEOM Society International

The 6th African International Conference on

Industrial Engineering and Operations Management

Rabat, Morocco, April 8-10, 2025. Host and Venue: INPT, Rabat

IEOM Senior Design Project Competition Awards

This is to certify that

Nasser Musaad M Almuqbil, Nawaf Badr Eid Alharbi, Abdullaziz Shabib Shafi Almutlaq, Hassan Thabet Mohammad Mohammad and Abdulaziz Ahmed S Alqarawi,
Al Yamamah University, Saudi Arabia
Ali M Alsamhan, Al Yamamah University, Saudi Arabia

In Recognition of Winning the SECOND Place of the IEOM Senior Design Project Competition Entitled "ID 127: Sustainable Design and Development of Industrial Automation Controller of Booster Pump using Variable Frequency Drives." Presented at the 6th African IEOM Rabat, Morocco Conference on April 10, 2025.

Sponsors and Partners

IEOM Society International

The 6th African International Conference on

Industrial Engineering and Operations Management

Rabat, Morocco, April 8-10, 2025. Host and Venue: INPT, Rabat

IEOM Senior Design Project Competition Awards

This is to certify that

Osamah Abdulhameed, Sali Ghanem, Rafal Sadeq, Reemas Al Ghamdi, Naveed Ahmed and Dalal Al Mazyad
Industrial Engineering Department, College of Engineering and Architecture, Al-Yamamah University, Riyadh, Saudi Arabia

In Recognition of Winning the SECOND Place of the IEOM Senior Design Project Competition Entitled "ID 98: Automated Supply Chain Management Platform for Optimization of Truck Assignment and Trip Route." Presented at the 6th African IEOM Rabat, Morocco Conference on April 10, 2025.

Sponsors and Partners

IEOM Society International

The 6th African International Conference on

Industrial Engineering and Operations Management

Rabat, Morocco, April 8-10, 2025. Host and Venue: INPT, Rabat

IEOM Senior Design Project Competition Awards

This is to certify that

Hesham Elkanani, Sultan Almosa, Mishal Alsheikh and Mohammed Alsuhaibani
Al Yamamah University, Saudi Arabia

In Recognition of Winning the THIRD Place of the IEOM Senior Design Project Competition Entitled "ID 133: Developing a digital twin to predict sheet metal forming operation parameters." Presented at the 6th African IEOM Rabat, Morocco Conference on April 10, 2025.

Sponsors and Partners

Industrial Engineering Department has an honor to show a remarkable presentation of Al Yamamah University at the *6th African International Conference on Industrial Engineering and Operations Management (IEOM) in Morocco 2025*. IE Students participated and won positions in the competition.

- **Two groups got 2nd place**
- **One group got 3rd place**

Participation in the Annual Graduation Projects Fair held at College of Engineering

IE students from 10+ graduation projects participated in the annual graduation projects fair held at the College of Engineering. The President of the University, Professor Dr. Hossam bin Mohammed Ramadan, and a delegation from government universities headed by Dr. Ahmed Al Ketbi, in addition to representatives of the Ministry of Culture and Riyadh Municipality visited the event and appreciated the creativity and innovation reflected in graduation projects.

Industrial visit to Unicharm Gulf Hygienic Industries ltd. (UGHI) Saudi Arabia

As part of the Quality Control course, Dr. Madiha and Dr. Wadea organized an insightful industry visit to Unicharm Gulf Hygiene Industries. During the visit, students had the opportunity to explore multiple departments, including Quality Control, Maintenance, and Production. This hands-on experience allowed them to connect theoretical knowledge from the classroom with real-world industrial practices. The visit provided valuable exposure to quality assurance processes, operational standards, and the maintenance protocols essential in a large-scale manufacturing environment.

ARCHITECTURE GRADUATION PROJECTS

Bakr Albakr

Riyadh Gate

Concept

The "RIYADH GATE" project is designed to serve as a welcoming gateway to Riyadh. The building takes the shape of an "L" to symbolize hospitality and reception. It tilts 25 degrees northward for environmental reasons. The project follows a structural grid of 15 meters × 15 meters, with some modules reduced by 5 meters.

Keywords: Riyadh Gateway, L-shaped design 25-degree northward tilt, 15×15-meter structural grid

Supervised by: Dr. Majdi Alkhresheh

Mulham Faham

Corazure Resort

Concept

A harmonious fusion of the site nature and the surrounding context

Goals: Sustainable and environmental attributes
Contemplating the relationship between nature and physical activities
Variety of activities like, aquariums, drag races, and other marine sports allowing guests to experience and engage in activities associated with the surrounding landscape

Supervised by: Dr. Anwar Ibrahim

Mohammed Zawawi

Film Cinematic Production

Concept

It is where creators' dreams resonate, transforming their imaginative ideas into cinematic reality that echoes through time. Each film reflects the voice of a dream, capturing its essence and bringing it to life on screen, leaving a lasting impact.”

Supervised by: Dr. Majdi Alkhresheh

Taif Alenazi

Museum of Lost Wildlife

Concept

A space that takes visitors on a journey through Galleries, allowing them to explore the Lost Wildlife of Saudi Arabia including Extinct, Animals, Semi-Extinct Animals, Animals at Risk of Extinction

Key Words:
1.Awareness 2.Journey 3.Nature

Supervised by: Dr. Dalia Abdal Fattah

Jana Abu Sharar

Multi-sensory Learning Center

Concept

"Just as a single chromosome can reshape the essence of human life, an extra one in Down syndrome unveils a world rich in complexity, while its absence in Williams syndrome highlights the quiet beauty of simplicity. The interplay between presence and absence, fullness and emptiness, reveals the deepest truths in life and design. Like the human genome, the smallest variations shape our experiences, bringing us closer to the essence of what it means to be human."

Supervised by: Dr. Majdi Alkhresheh

Aljohara Zeyad AlShaikh

جوهرة البحر الأحمر
Opera House

Concept

"Jowharat Al-Bahr Al-Ahmar" is a sculptural fusion of art, nature, and innovation—an opera house on Umluj's Red Sea coast that echoes the rhythm of the waves and the spirit of Saudi Vision 2030. It symbolizes a bridge between tradition and modernity, transforming Umluj into a cultural gateway to the Red Sea.

Supervised by: Dr. Dalia Abdal Fattah

Yaseen Marwan Ghieth

Al-Khobar Horizons

Concept

This mixed-use development is envisioned as a modern urban landmark that harmoniously integrates two high-rise towers — a residential and an office tower — anchored by a dynamic commercial podium. Inspired by Riyadh's evolving skyline and contextual textures, the design responds to the site's geometry and climate through clean vertical lines, shaded facades, and warm, natural materials. The project creates a cohesive environment that blends living, working, and leisure, while engaging the city through open plazas, skywalks, and a visually connected public realm.

Supervised by: Dr. Majdi Alkhresheh

Sara Batta

Al-Disah Cancer Survivor Center

Concept

Providing a sanctuary for healing and rejuvenation of cancer survivors through nature and a variety of healing practices incorporating natural springs to rehabilitate cancer survivors.

Location: Wadi Al-Disah, Southwest of Tabuk, Saudi Arabia

Supervised by: Dr. Anwar Ibrahim

Raghad Khalid Aboukhater

Intergenerational Care Center

Concept

To reflect the profound bond between orphans and elders, where intertwined lives shape interconnected masses, flowing with the topography and biophilic design to embody unity, resilience, and renewal.

Philosophy

The orphan and the elderly, two souls entwined, find solace in each others wisdom embracing innocence, longing
met with warmth. In this bond, love flourishes, hearts heal, and life's beauty is rekindled.

Supervised by: Dr. Majdi Alkhresheh

Enas Abdelwahab

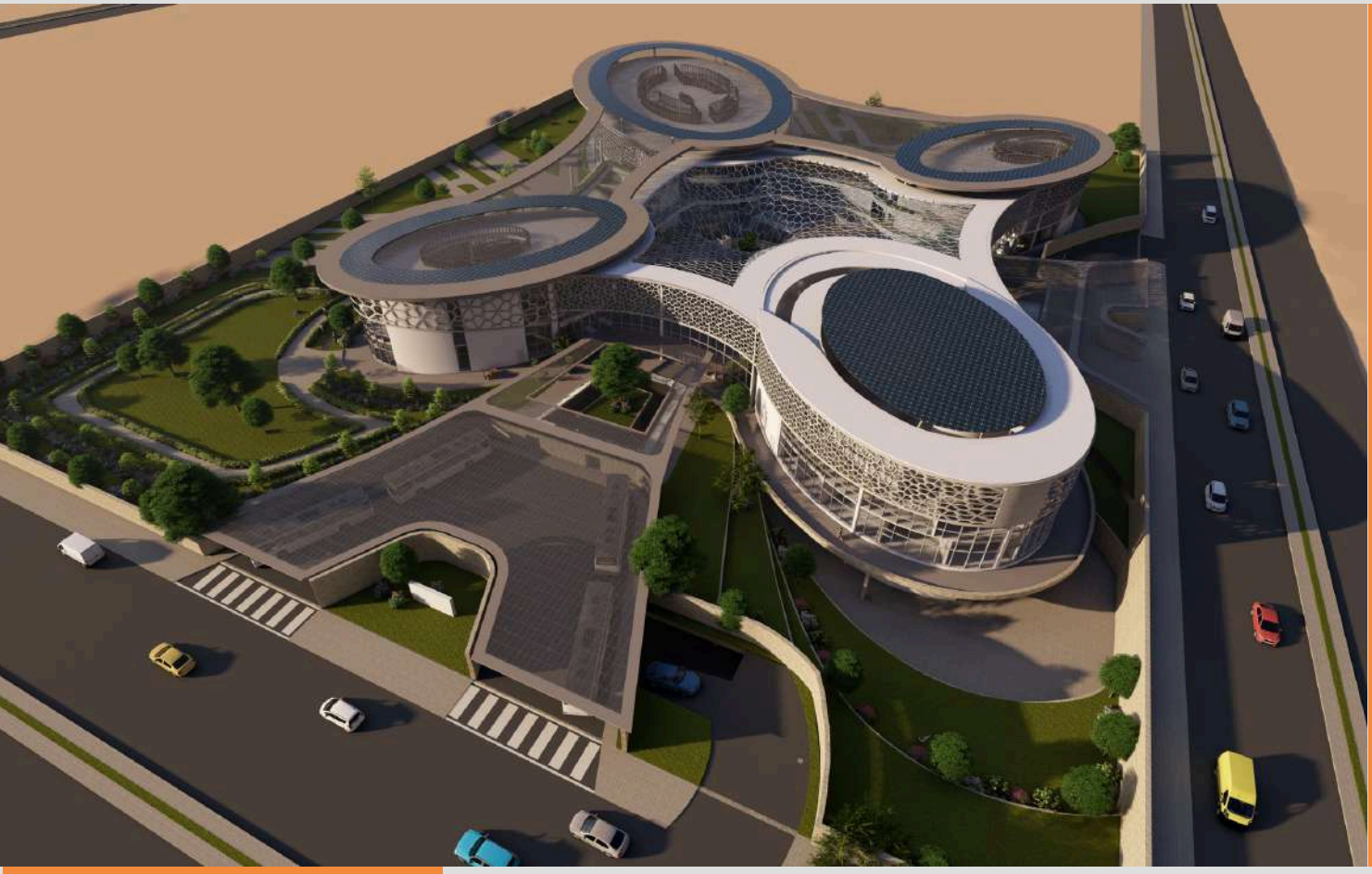
Coral reefs research center

Concept

is to create a research center that merges with the sea, evolving like a living reef. Responsive to tides, light, and water, its architecture breathes and shifts, immersing visitors in the rhythms of the marine world.

Supervised by: Dr. Anwar Ibrahim

Latifa Mohammed Alsalamah



Mawhiba Gifted School

Concept

Designing a school specifically dedicated to talented students, with the aim of nurturing their full potential in an innovative and motivating environment, while integrating principles of sustainability into every aspect of the design.

Keywords

Discovery, Achievement, Creativity, Intelligence, Competitiveness.

Supervised by: Dr. Anwar Ibrahim

Sara Mohammad Alaboody

Saudi Handicrafts center

Concept

Clustered zones representing different Saudi regions while allowing a continuous flow between them.

Key Words:
-Interconnectivity: Symbolizing the link between the regions.
-Inclusivity: A welcoming space for all artisans and visitors.

Supervised by: Dr. Dalia Abdal Fattah

Hussain Sami Albaqshi

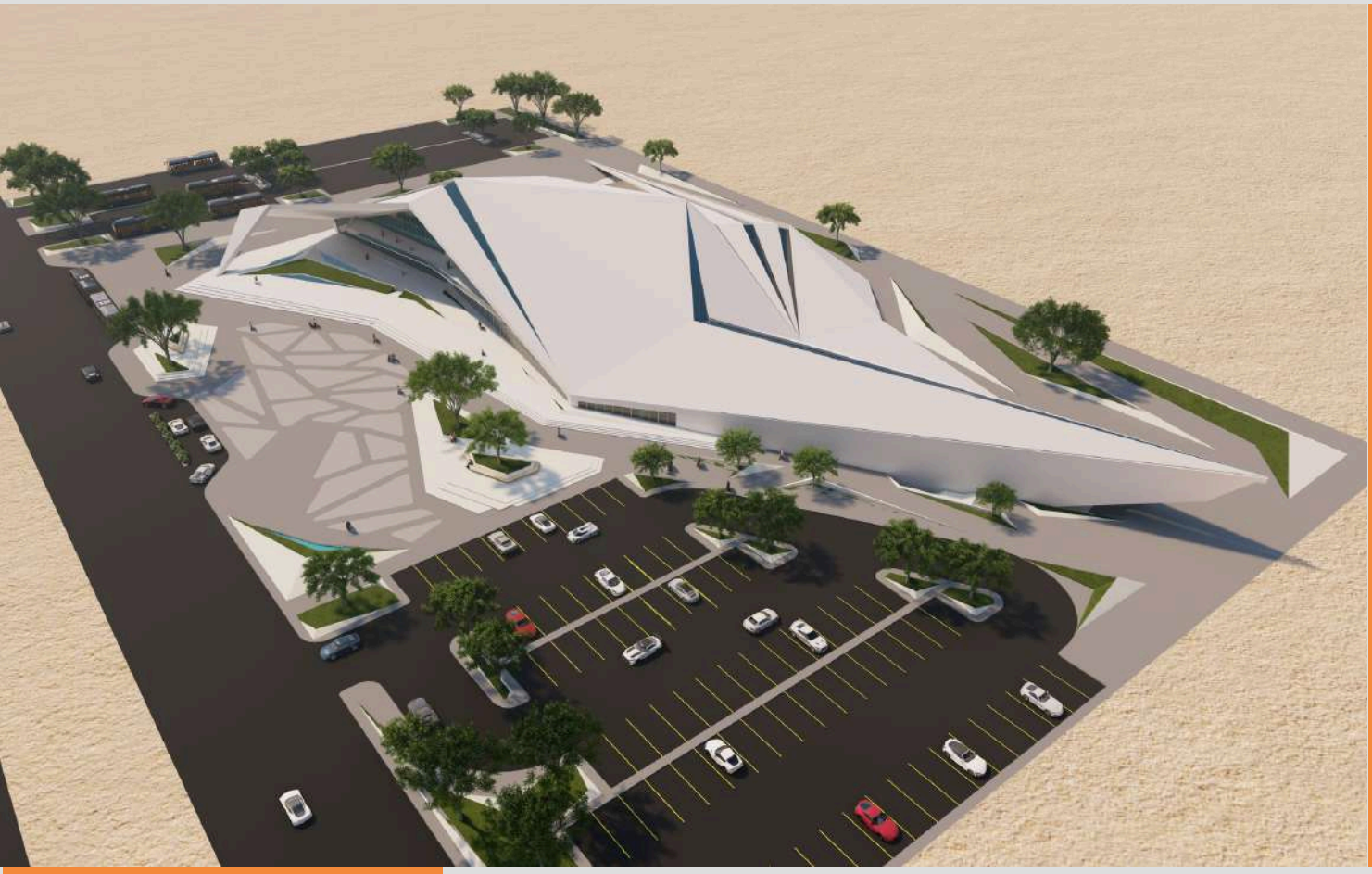
Oasis Environmental Research Center

Concept

In the heart of Al-Ahsa's desert, where environmental heritage meets scientific ambition, the Oasis Environmental Research Center emerges as a beacon of modern ecological advancement.The architectural design reflects the natural formation of oases — flowing green spaces, dynamic terraces mimicking water currents, and open courtyards breathing nature and light.The core idea of the center is to blend applied environmental research with living sustainability, making the building itself a living laboratory that embodies principles of adaptation, resilience, and natural resource conservation.

Supervised by: Dr. Dalia Abdal Fattah

Ahmad Abdu



NEOM Global Convention Center

Concept

A futuristic landmark that combines technology and modern conferences, to be a huge destination for sharing cultural and commercial events at the heart of Neom Vision.

Supervised by: Dr. Anwar Ibrahim

Rayan Qiess Brika

Luxury Beach Resort

Concept

The resort is designed to offer an experience that stimulates the five senses in a thoughtful and profound way, helping visitors rediscover the world through themselves. The philosophy centers on the idea that the senses are our gateway to understanding life, and true luxury lies in awakening these senses to their fullest potential.

Supervised by: Dr. Dalia Abdal Fattah

Rama Hamwi

Rehabilitation Center

Concept

A healing journey that integrates with the patient's needs in an interactive experience of healing through smooth architecture and linking it with green environment.

Supervised by: Dr. Dalia Abdal Fattah

Batoul Siwar

SkyScape Center

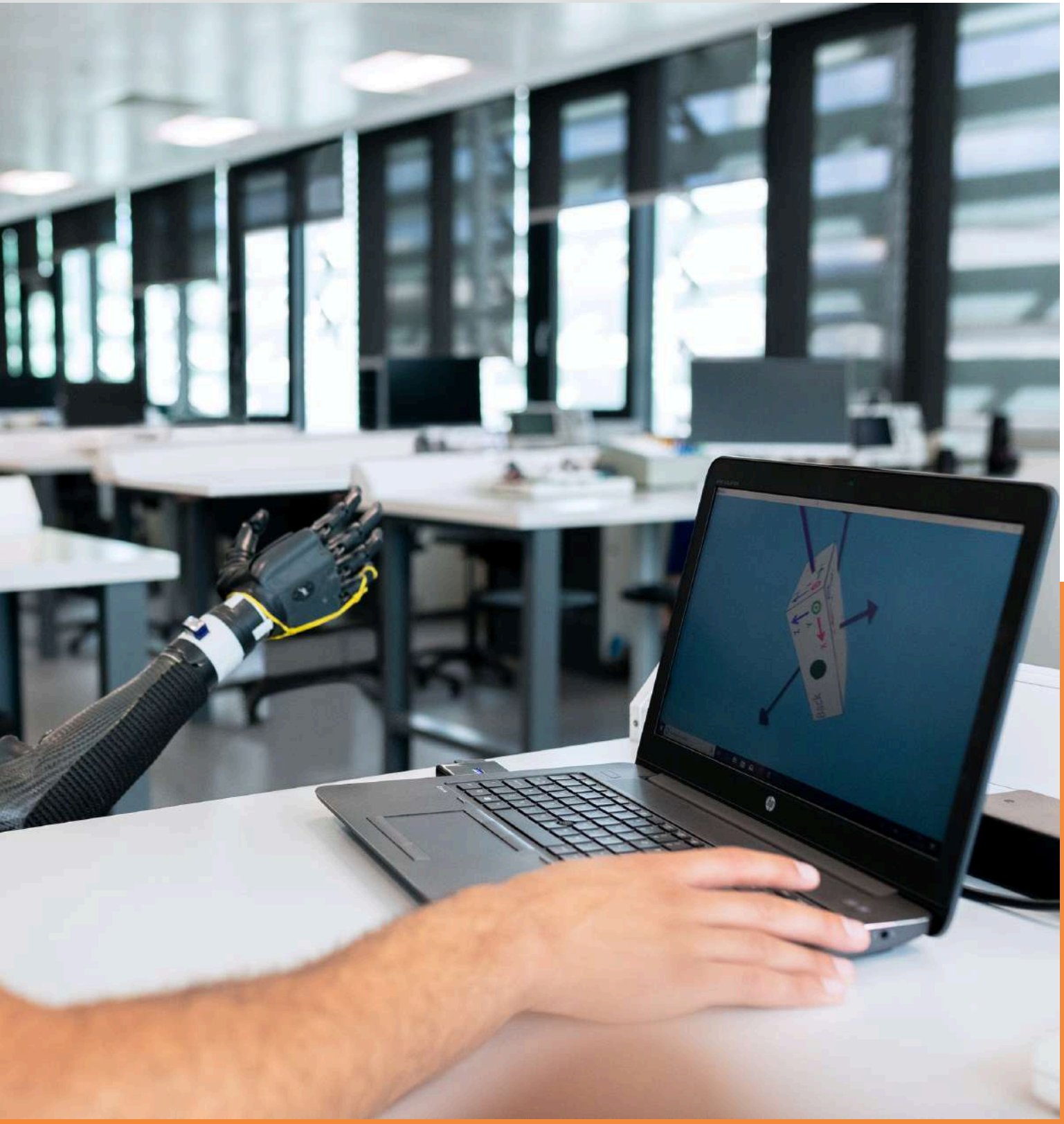
Concept

A world-class observatory and astronomy center in Al-Ula, designed to inspire exploration of the cosmos while harmonizing with the desert landscape, offering sustainable camping and stargazing experiences rooted in the region's natural and cultural heritage.

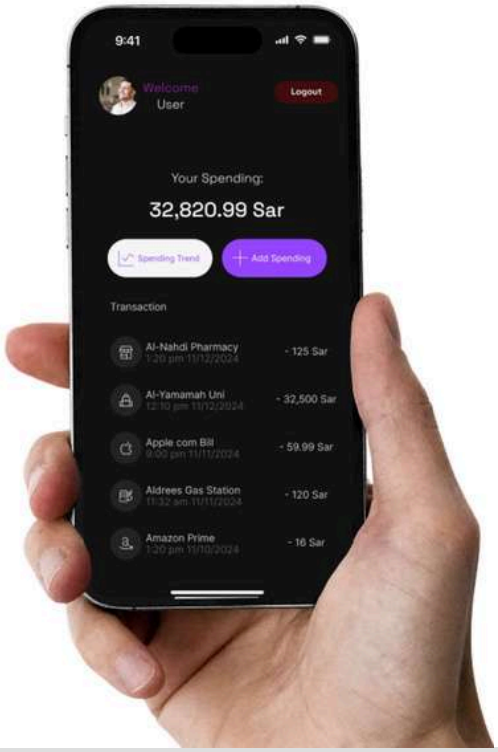
Location: Alula, Saudi Arabia

Supervised by: Dr. Majdi Alkhresheh

COMPUTER ENGINEERING GRADUATION PROJECTS



Mohammed Jebreen - Omar Ramadan
Osama Jazaerli



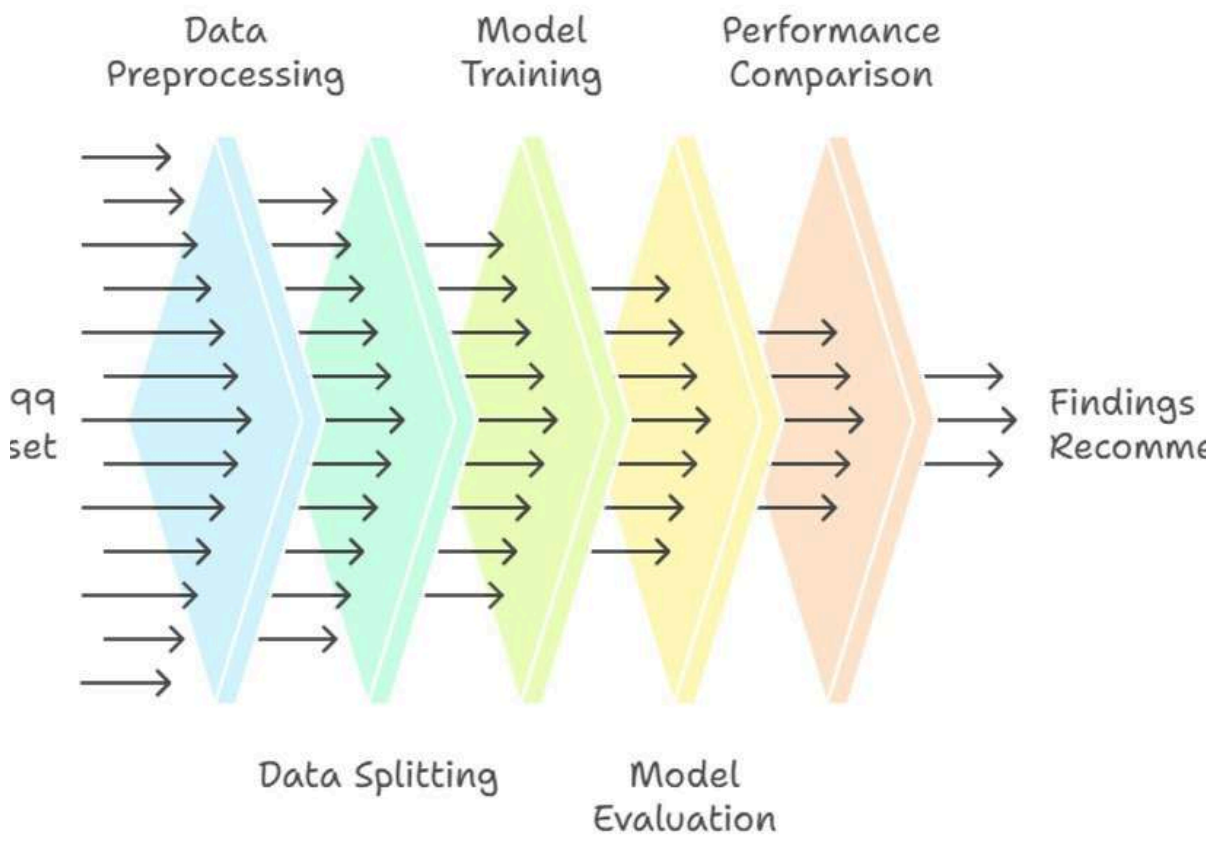
Naqd Finance App

Concept

Naqd is a comprehensive expense management and analysis application designed for individuals and businesses. It facilitates efficient tracking of expenses through mobile and web interfaces and incorporates AI to analyze spending patterns and provide financial advice. The app aims to address the challenges of modern financial management by simplifying data entry, improving accessibility, and ensuring data security.

Supervised by: Dr. Majdi Rawashdeh

HAMAD ALSHALAWI - KHALID ALQAUHTANI
SAAD ALNAFISHI - SOLIEMAN KOLGAN



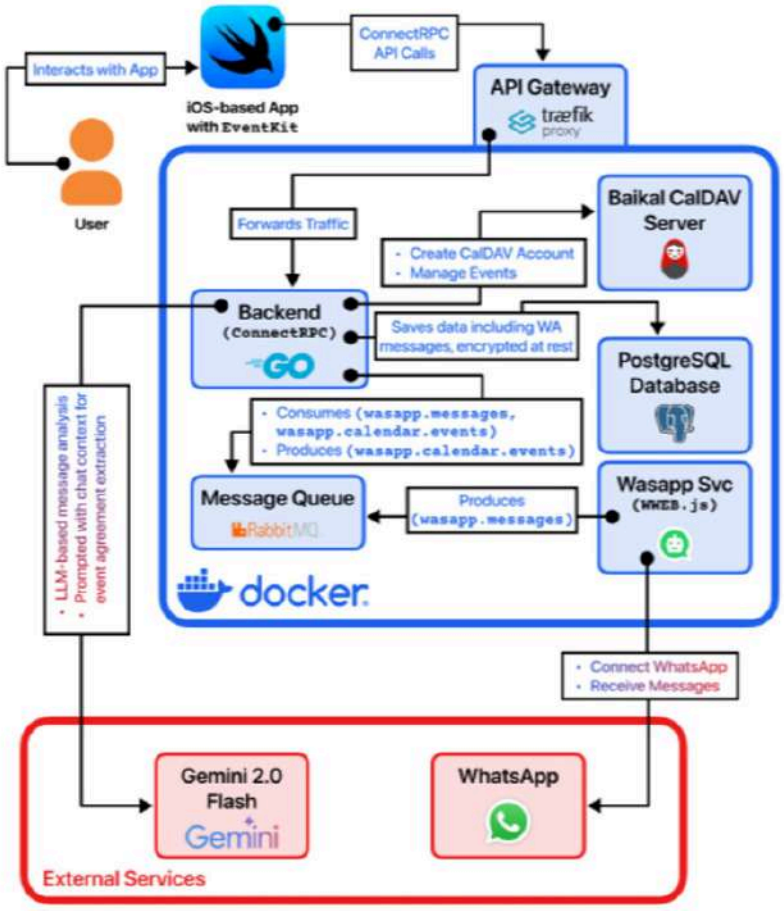
Network Intrusion Detection Using ML & DL Techniques

Concept

The project addresses today's rising cyber risks by incorporating supervised Machine Learning (ML) techniques into Network Intrusion Detection Systems (NIDS). Key factors discussed include encrypted traffic analysis, managing unbalanced datasets, and real-time high-speed processing

Supervised by: Dr. Majdi Rawashdeh

ALI BAWAZIR - AFFAN GHULAM
SAIMAN TAKLAS - YAZED ALKHALAF



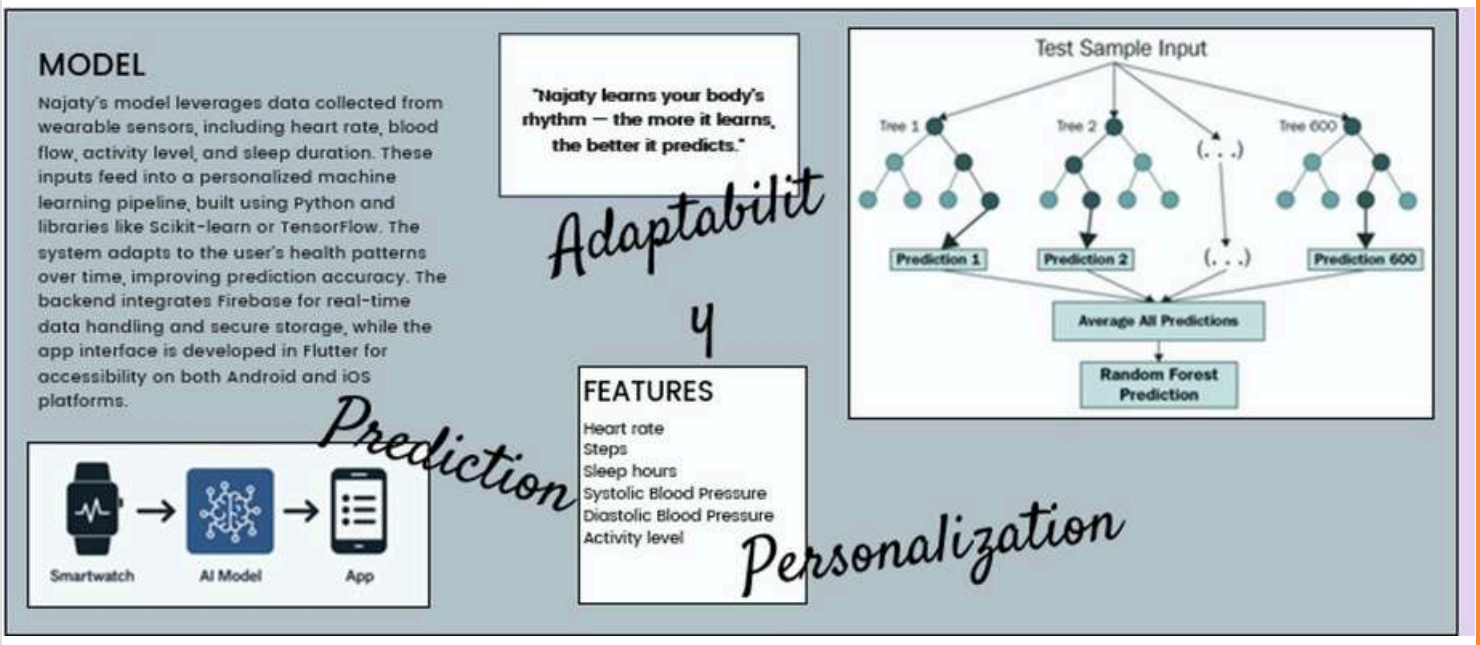
Jadwal: An Intelligent, iOS-based Calendar Manager

Concept

The objective of this project is to develop an iOS based calendar manager that seamlessly extracts agreed-upon events from WhatsApp messages using LLM-powered analysis, synchronizes them via CalDAV, and integrates culturally relevant features such as prayer time prioritization. The system aims to minimize user input while ensuring completeness and accuracy of schedules

Supervised by: Dr. Inayatullah Shah

NANDINI MADHUSUDHANRA
NOOR ALRESAIN - NOURA ALJUHANI



NAJATY– An Epileptic Seizure Prediction APP

Concept

Najaty: An AI-based mobile app designed to predict epileptic seizures using wearable sensor data. It targets Saudi patients, offering real-time, remote health monitoring. It uses machine learning models trained on physiological signals (such as heart rate, skin conductivity, etc.). The app aims to provide early warnings, improve care, and reduce emergency incidents. It promotes patient-centered care through smart, data-driven insights

Supervised by: Dr. Inayatullah Shah

ADNAN CHAAR - AYHAM ZEIDAN
KHALED HAZZAM - KHALIL MELHEM

Egluro – ATutoring Platform

Concept

Egluro is a smart tutoring platform that connects students with verified tutors, enabling easy booking, live sessions, university-based courses all in one place. Egluro, built with Spring, processes HTTP requests by first passing them through a Security Filter Chain, which includes standard filters (CSRF, CORS, authorization) and a custom JWT Filter for token validation. After validation, requests move through the Controller Layer, Service Layer, and Repository Layer, interacting with PostgreSQL.

Supervised by: Dr. DhiaEddine Salhi

ALANOUD ALABDULLAH - NOUR ALKHALAF
NURA AHMED - RAGHAD SOLIMAN

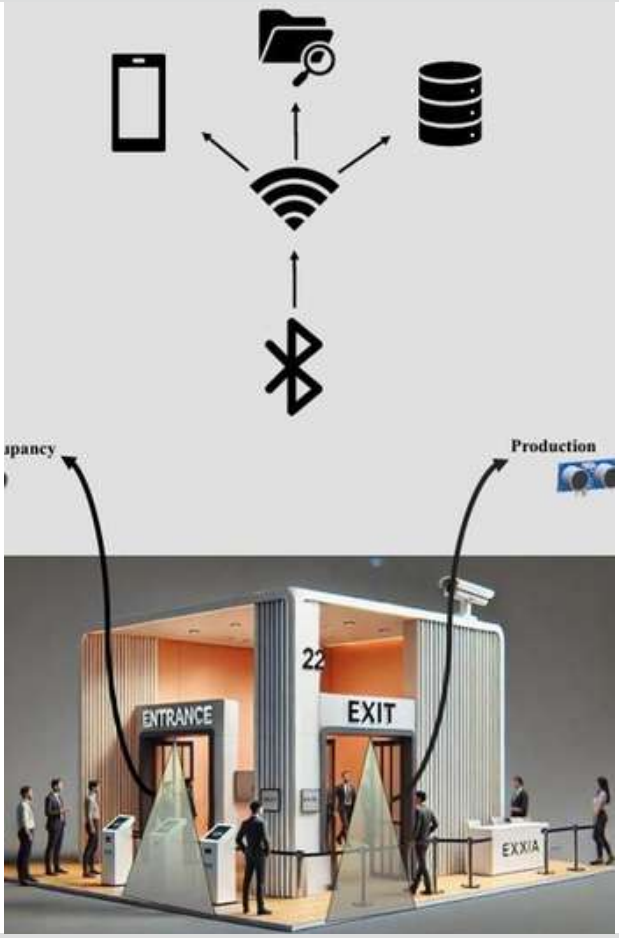
SMRK: Mobile APP IoT-Based Parking Management System

Concept

SMRK is a smart parking mobile application developed to help solve parking issues, especially in crowded places like universities. It uses Internet of Things (IoT) technology, including sensors and Wi-Fi modules, to detect available parking spots in real time. Users can search for and reserve parking spaces through the app, saving time and reducing stress. By improving parking efficiency, SMRK also helps reduce traffic congestion and vehicle emissions. The app features a user-friendly design and strong security, making it both easy and safe to use

Supervised by: Ms. Sara Alsabeg

DALIA JABER - LAMA ALHAMSS
NOUR TAQESH - RAND ABUMUSTAFA



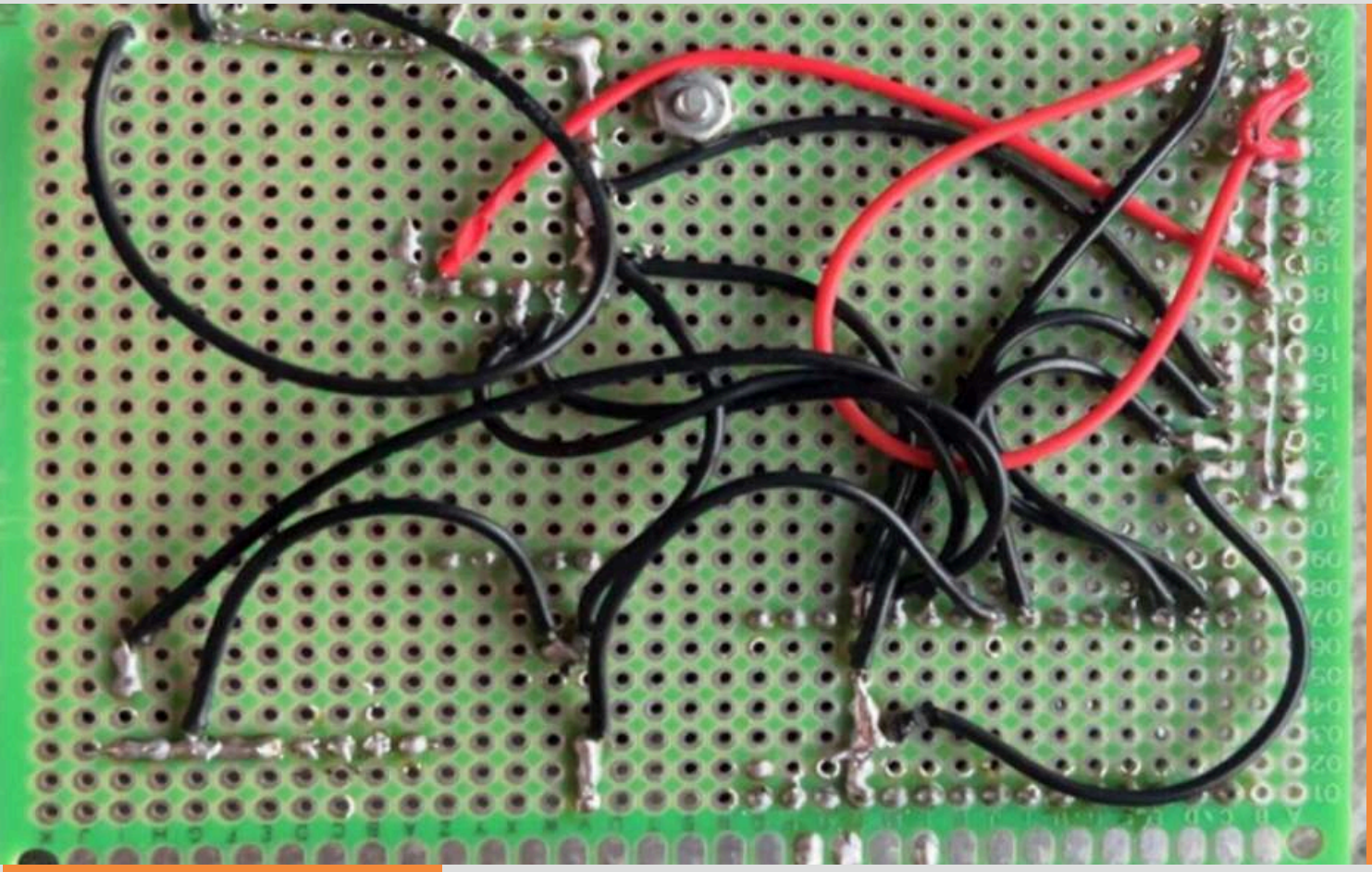
Mobile APP for EXPO Events

Concept

The ExpoDash app is designed to enhance the visitor experience at Expo 2030 in Riyadh. It offers real-time data on wait times, interactive maps, appointment scheduling, and personalized booth recommendations. Using sensor technologies, the app optimizes visitor flow and provides real-time updates, improving event efficiency and satisfaction. It also supports multilingual capabilities and generates reports for organizers to optimize booth layouts and staffing.

Supervised by: Dr. DhiaEddine Salhi

AHMAD ABDULLAH - NAWAF ALMUHANNA
SAUD ALANAZI - SHAIK IMAM



IoT-Based Speed Detection System with Mobile APP for Traffic Monitoring in KSA

Concept

The KSA Traffic Practitioner project aims to improve road safety in Saudi Arabia by introducing a camera-free, IoT- and mobile-based speed monitoring system. Using GPS and Bluetooth, the system offers real-time, in-vehicle speed tracking—especially useful in rural areas lacking traditional camera coverage. It promotes safer driving through user-specific alerts and supports integration with existing traffic management frameworks. Aligned with Vision 2030, the project emphasizes safety, innovation, and accessibility, providing a scalable and user-friendly solution to nationwide traffic enforcement challenges.

Supervised by: Ms. Sara Alsabeg

LEENA ALGHAMDI - NORA ALSHEHRI
SHAHAD BINJABER

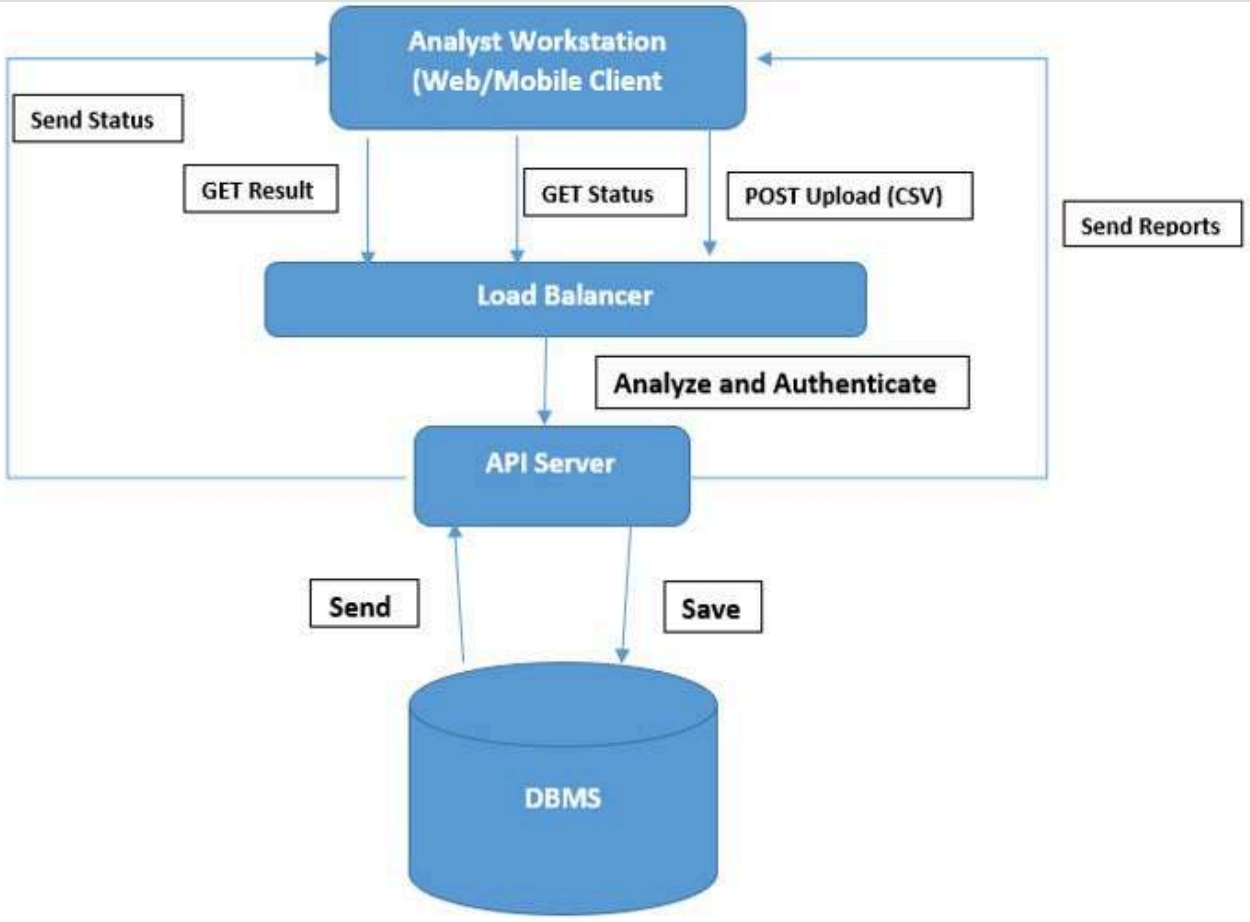
SAHEM Inc

Concept

Many Saudi business owners have great ideas and already established projects but struggle to find the right investors to support their growth. Our centralized platform is designed to provide market intelligence, business performance insights, and networking tools for investors and entrepreneurs. Additionally, we provide them with visibility where they can gain recognition in the market

Supervised by: Ms. Firdaous Bouzegza

MAJED ALDOSSARI - MESHARI ALDOWESH



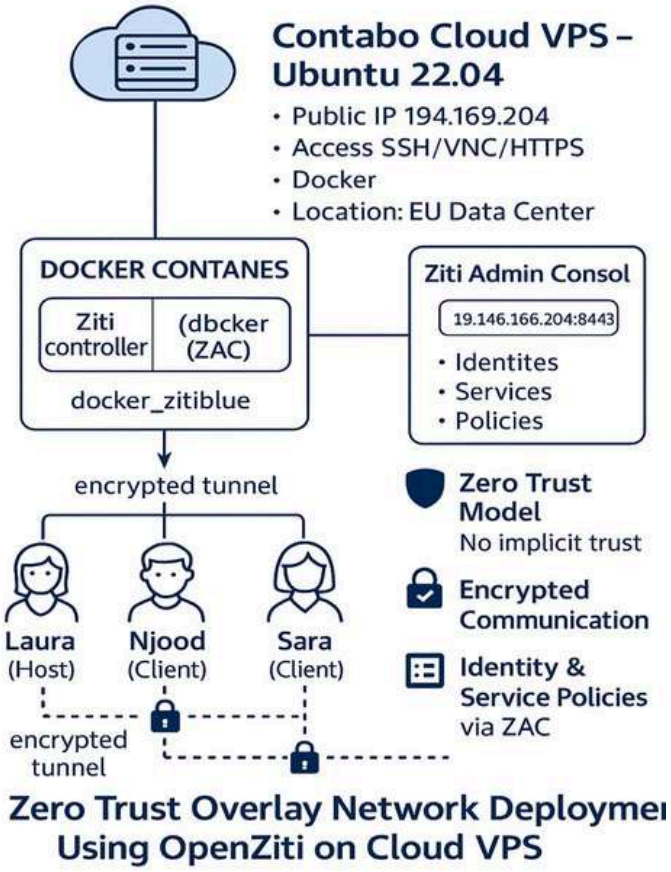
AI-Powered Intrusion Detection for Real-Time Threat Monitoring

Concept

This project implements an AI-driven Intrusion Detection System (IDS) for Small and Medium Enterprises (SMEs). Using the CICIDS2017 dataset, the system employs advanced machine learning techniques, including an autoencoder neural network for unsupervised anomaly detection and a Random Forest classifier for precision. Data preprocessing included cleaning, normalization, and strategic splitting. The backend uses Flask and FastAPI for efficient API management, while a React.js frontend ensures a user-friendly dashboard. Hardware deployment utilized a high-performance Intel Xeon processor with optional GPU support.

Supervised by: Prof. Samer Samarah

DIMAH ALGHAMDI - LURA ALHADHBAN
NEJOOD ALOHALY - SARAH BAEESA



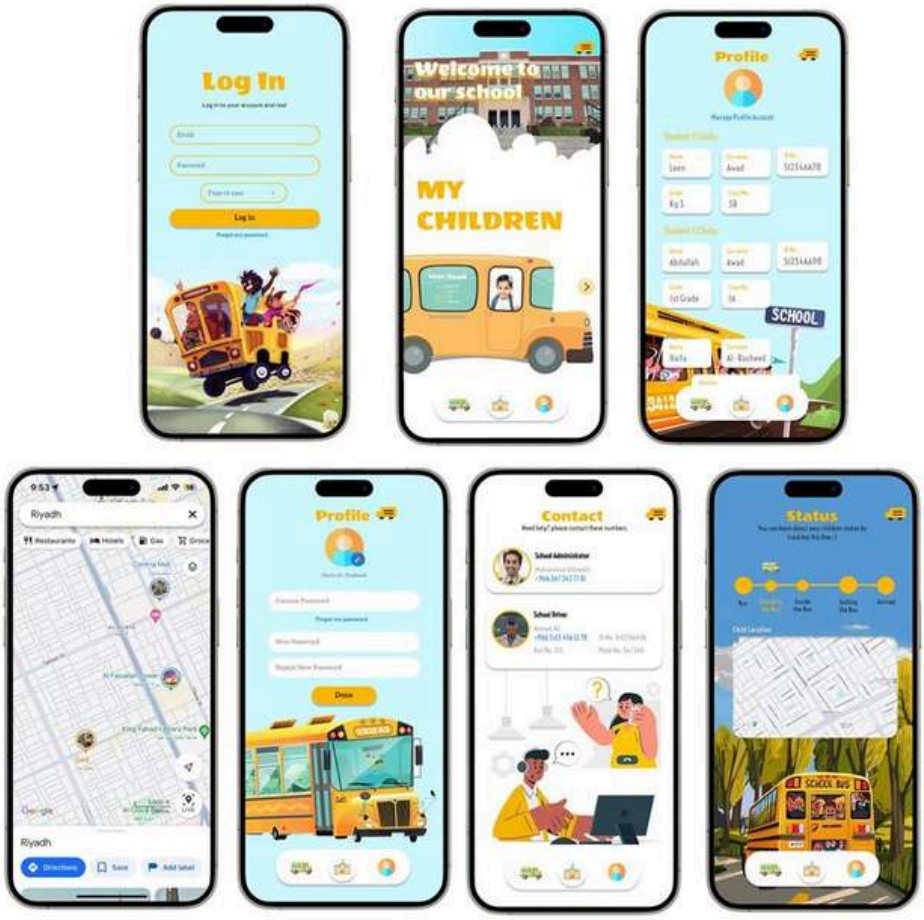
Design and Implementation of a Secure IoT Infrastructure Using Zero Trust Architecture

Concept

The model assumed that everything inside the network could be trusted, but modern threats such as insider attacks, credential theft, and lateral movement have proven otherwise. Zero Trust Architecture (ZTA) offers a smarter approach: “never trust, always verify.” By continuously checking user identity, device health, and behavior, ZTA limits access and stops threats before they spread. This is especially important in IoT environments, where devices are often insecure. ZTA ensures that only verified users and systems can access critical resources

Supervised by: Dr. Adeel Baig

HALA ALNADEEM, DINAH ABURAHMAH,
BASMA ALHAJJI, RASHA HIMADA



Design and Implementation of a Secure IoT Infrastructure Using Zero Trust Architecture

Concept

Our solution involves school buses with IoT sensors to gather real-time data, cooperating with AI algorithms that enable route optimization and more. The focus of our solution covers many aspects from the integration of face recognition to tracking the school bus for safety. Moreover, our solution provides a user-friendly interface that is accessible to parents, drivers, and school administrators, where it provides real-time updates on location, estimated arrival time using GPS, and notifications and status of the child.

Supervised by: Dr. DhiaEddine Salhi

MARYAM ABDELAZIZ, SHAIKHA ALDREES, BAYAN ALSAHLI, RAGHAD SAFFAF, AYA HAMDAN

Easy-Thru A MOBILE APPLICATION FOR FOOD ORDERING SYSTEM

Concept

Easy-Thru establishes new standards for urban life by combining technology, and focusing on users' design principles, improving the ordering process with an easy interface and a diverse menu choices. Furthermore, it deepens the relationship between businesses and their customers, encouraging community involvement and loyalty. Easy-Thru is positioned beyond standard drive-thru concepts, representing an enormous advancement in urban convenience and customer-centric service delivery

Supervised by: Ms. Sara Alsabeg

YAZED ALMHMOUD, FAHAD ALHMOUDI

Qiddiya Events System

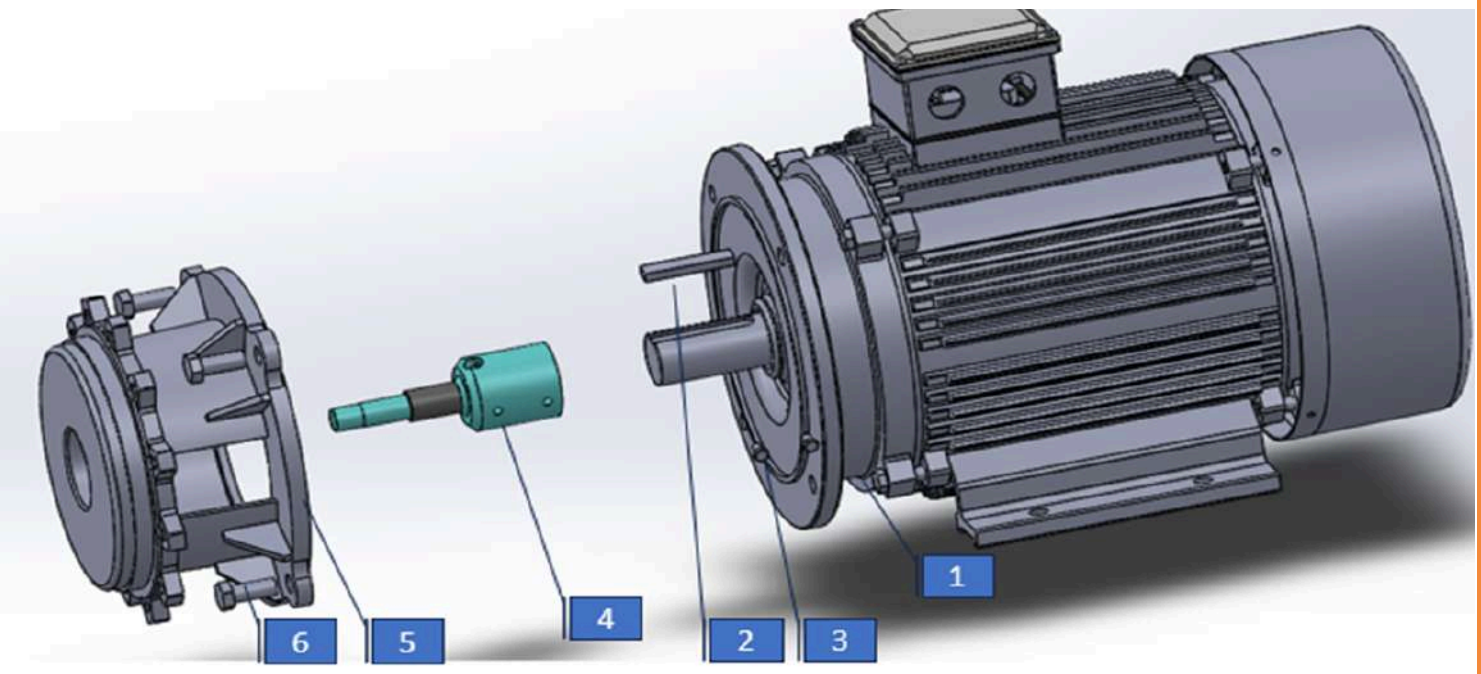
Concept

The Qiddiya Events System aims to address the growing need for a centralized and efficient platform that enhances the event management experience for visitors, organizers, and administrators. By focusing on user-friendly functionalities, robust analytics, and secure operations, the platform seeks to simplify event discovery and improve logistical efficiency for organizers. Its alignment with Saudi Arabia's Vision 2030 underscores its importance in fostering economic development, promoting tourism, and facilitating cultural exchange

Supervised by: Ms. Firdaous Bouzegza

INDUSTRIAL ENGINEERING GRADUATION PROJECTS

MOHAMMED ALKUAIT - MOHANAD ALMSAUD
MOHAMED ELARENI - TALAL ALHARB



Design and Development of Centrifugal Pump Coupled to Standard Electric Motor Platform

Concept

In this project, a local pump manufacturer in Riyadh aims to develop a new centrifugal pump platform to address rising demand and design limitations. Using Product Development Process (PDP) and Design for Manufacturing and Assembly (DFMA) methods, three motor-pump coupling concepts were evaluated. The end coupling motor-pump was selected for its lower assembly time and manufacturing cost.

Supervised by: Prof Ali M Alsamhan

ABDULAZIZ ALRABIAH - AMER ALAJAYAN
BADER ALOBED - KHALED ASAKER

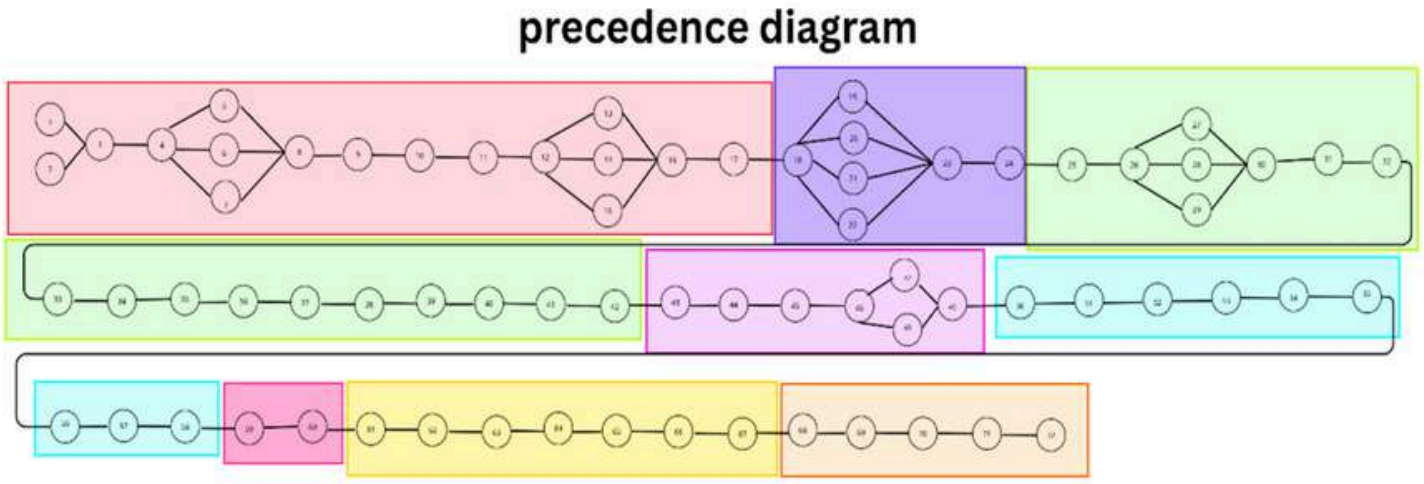
Design & Optimization of a Sustainable Transportation System for Athb Co. in S.A

Concept

The following project has been designed to “Design and Optimization of a sustainable Transportation System for the Athb Water “. framed through optimizing logistical efficiency and reducing environmental impact of carbon emission. In recognition of competitive demands within the bottled water industry and driven by ecological concerns, this project assesses the company’s current transportation setup in relation to fuel usage, emission efficiency, and routing. By using vehicle routing method and build mathematical model for the system.

Supervised by: Dr. Murtadha Aldokhi

AWADH ALNUFEAI - MOHAMMED ALHAMMAD
MOHAMMED BINIMRAN - WALEED ALSARRAWI



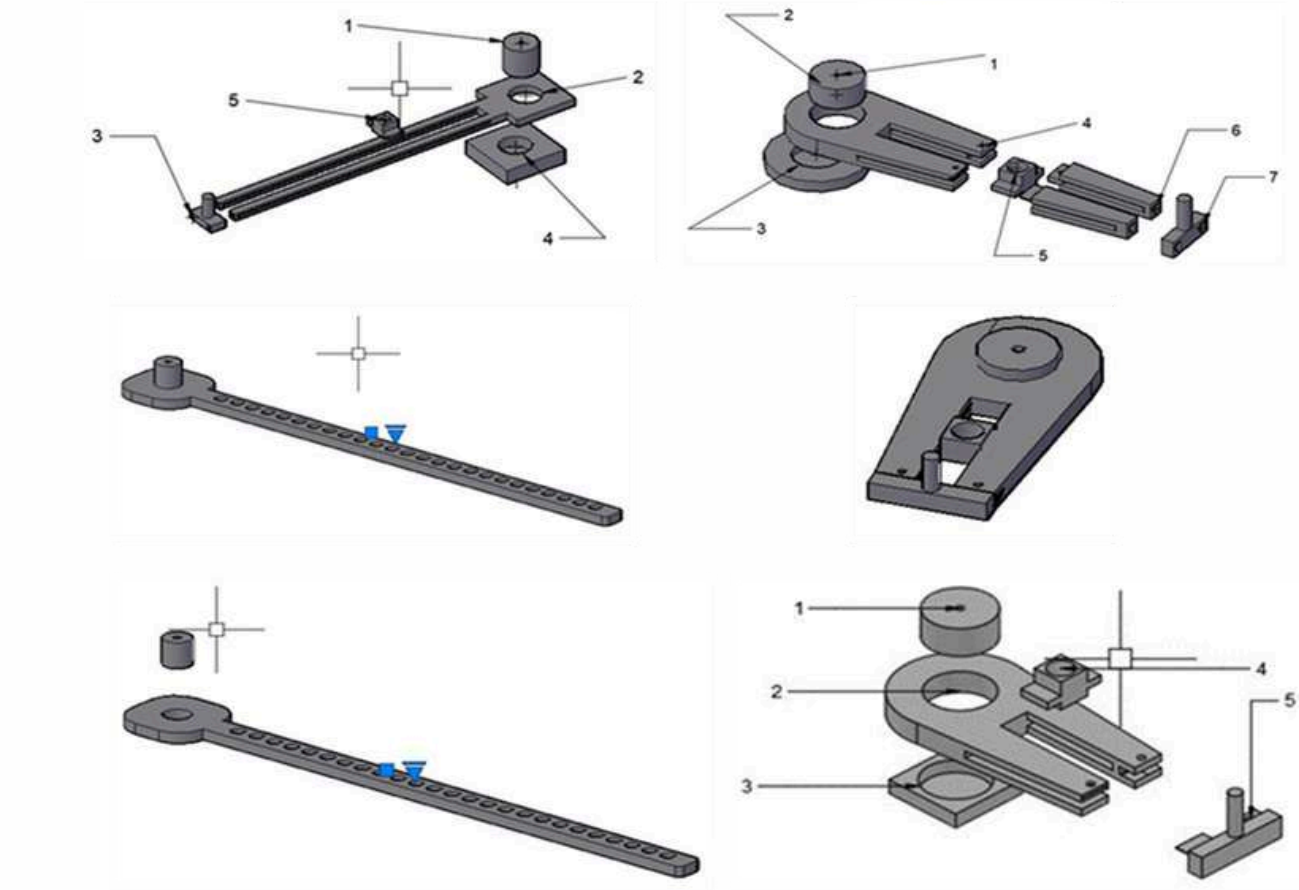
Design a balanced Assembly Line of Al-Omran Factory

Concept

In this project, a balanced assembly line is designed for Al-Omran Factory to improve production efficiency and meet increasing demand. By analyzing task times, dependencies, and using line balancing techniques such as the Ranked Positional Weight method, tasks are evenly distributed across workstations. The goal is to minimize idle time, reduce bottlenecks, and maximize overall line efficiency.

Supervised by: Dr. Wadea Ameen

ABDULELLAH ALOSAIMI - MUSTAFA DIRBAS
SALMAN ALKHALEEFAH - YAZEED MOHAMED



Designing a Jig for Marking Different Profiles Used for Sheet Cutting

Concept

In this project, a fixed tracing jig is designed to enhance accuracy and reduce errors in manual manufacturing tasks. Through worker interviews and literature review, various designs and materials were evaluated to develop an optimal solution. A prototype will be produced and tested in the next phase to validate its performance.

Supervised by: Dr. Naveed Ahmed

AHMAD ALDAWOOD - MANSOUR ALMUTAIRY
NAIF ALSAUD - YAZID ALSHAIBANI

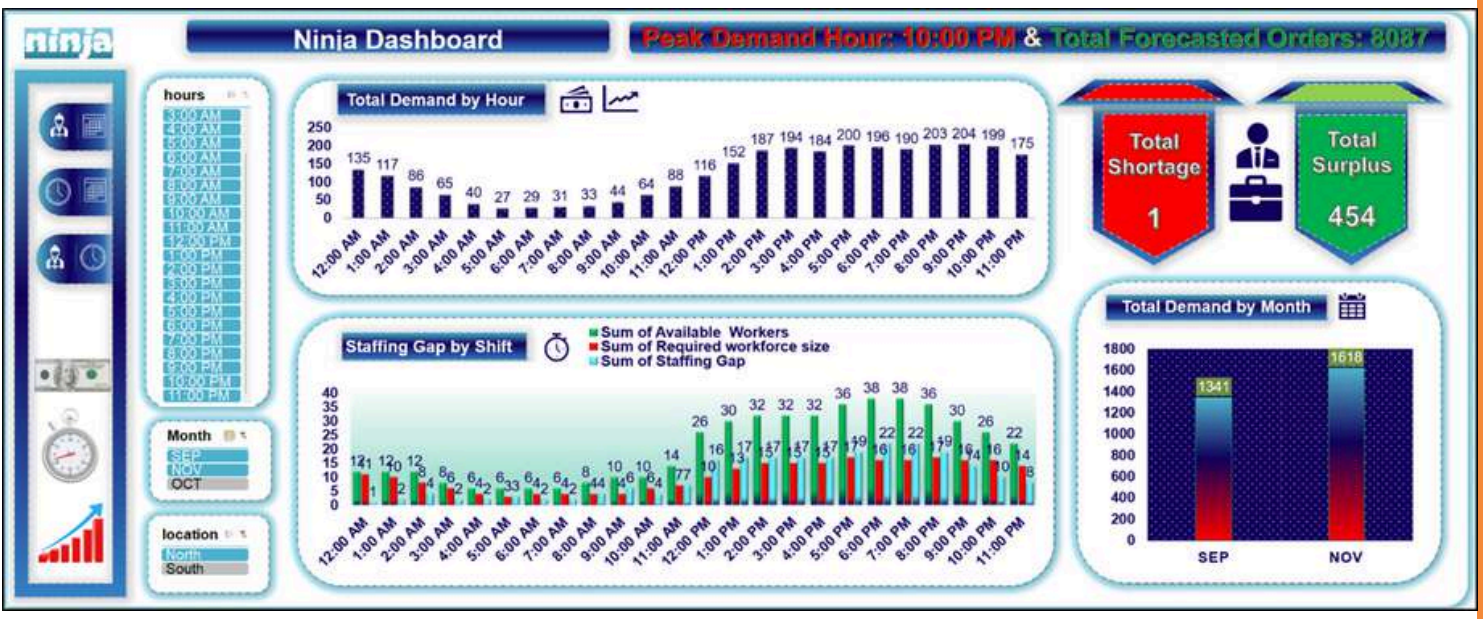
Production Forecasting in Savor Farms

Concept

in this project, an optimized forecasting model is developed for Savor Farms to reduce supply-demand imbalances and minimize product waste. Various forecasting techniques were evaluated using historical data and performance metrics like MAD, MAPE, and RMSE. The goal is to improve forecasting accuracy, reduce waste by 20–30%, and enhance overall profitability.

Supervised by: Dr. Wasim AlShammary

ABDULAZIZ ALSWILEM - MOHAMMED AREF
MOHAMMED JUMAIAH - SHAKER MARDINI
TIRAD ALMU



Designing Manpower Planning Interface for Demand uncertainty at Ninja Company

Concept

This design project developed a manpower interface to address workforce management challenges under fluctuating demand at Ninja Company Using data from the North and South dark stores, the interface optimizes staffing based on real time demand forecasts Time series and regression analysis were used for forecasting, with accuracy checked using MAPE A mathematical model in Excel incorporated 24 hour demand, picking time, PFD, and orders per picker to determine required workforce size.

Supervised by: Dr. Madiha Rafaqat

ABDULAZIZ ALQARAWI - NASSER ALMUQBIL
ABDULAZIZ ALMUTLAQ - NAWAF ALHARBI
HASSAN THABET

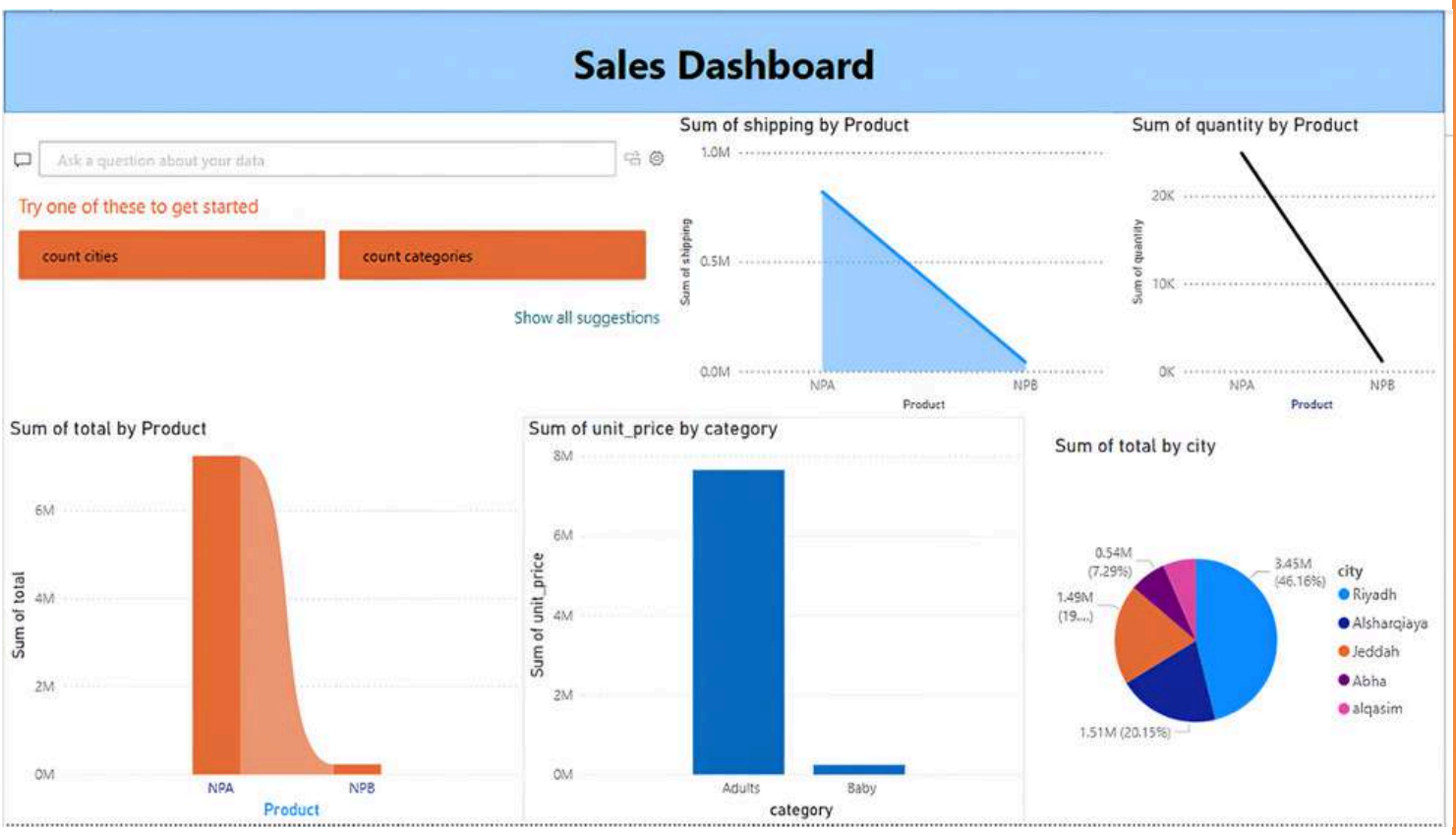
Sustainable Design and Development of Industrial Automation Controller of Booster Pump using Variable Frequency Drives

Concept

In this project, an energy-efficient industrial controller with variable frequency drives (VFDs) is designed and simulated for booster pump applications in water treatment. The system uses pressure sensors to dynamically adjust pump speed, reducing energy consumption and increasing reliability. The controller will be assembled, simulated, and tested in collaboration with a local booster pump dealer and industrial lab.

Supervised by: Prof Ali M Alsamhan

GHALIAH ALDAYEL - HAYAT ALANZI
RANA ABURAHMAH



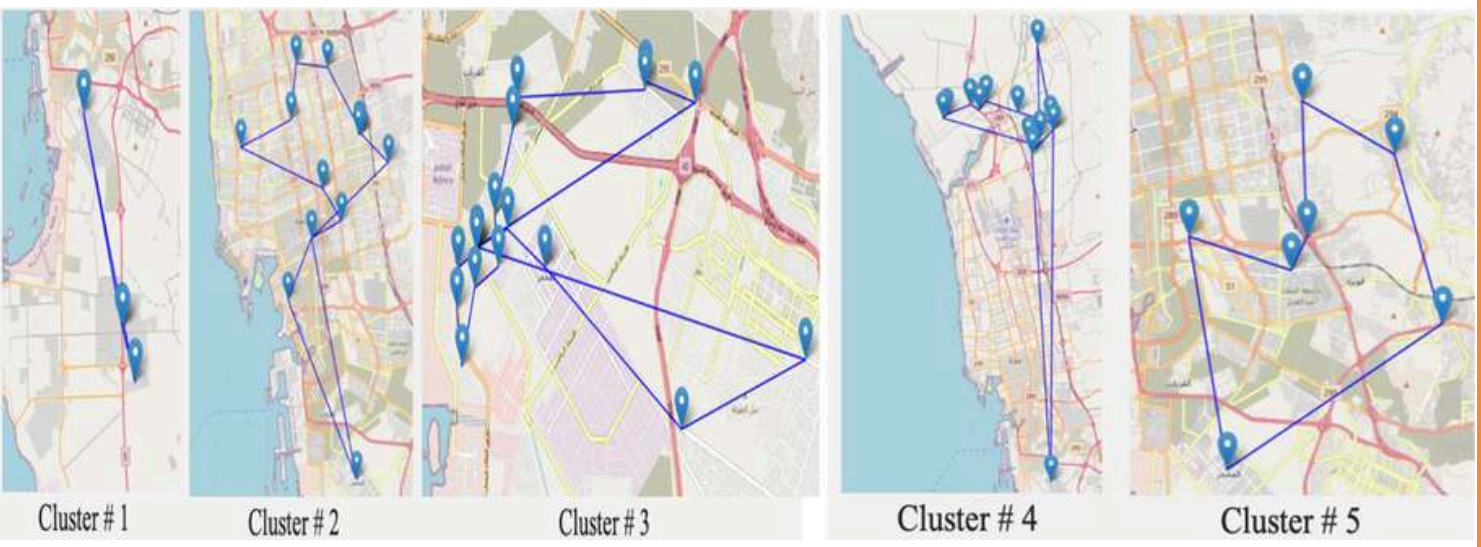
Designing and Development of Forecasting Interface for Inventory Management at Qubes Company

Concept

In this project, a forecasting interface and sales dashboard is designed for Qubes Company to address inventory issues caused by inaccurate demand predictions. Using methods like Moving Average, Exponential Smoothing, and EOQ calculations, the system aims to improve inventory control and reduce stockouts and overstocking. The interface will support better sales forecasting and streamline supply chain operations for Qubes' sub-brands, Neyam and Candlly.

Supervised by: Dr. Madiha Rafaqat

DALAL ALMAZYAD - RAFAL SADEQ
REEMAS ALGHAMDI - SALI GHANEM



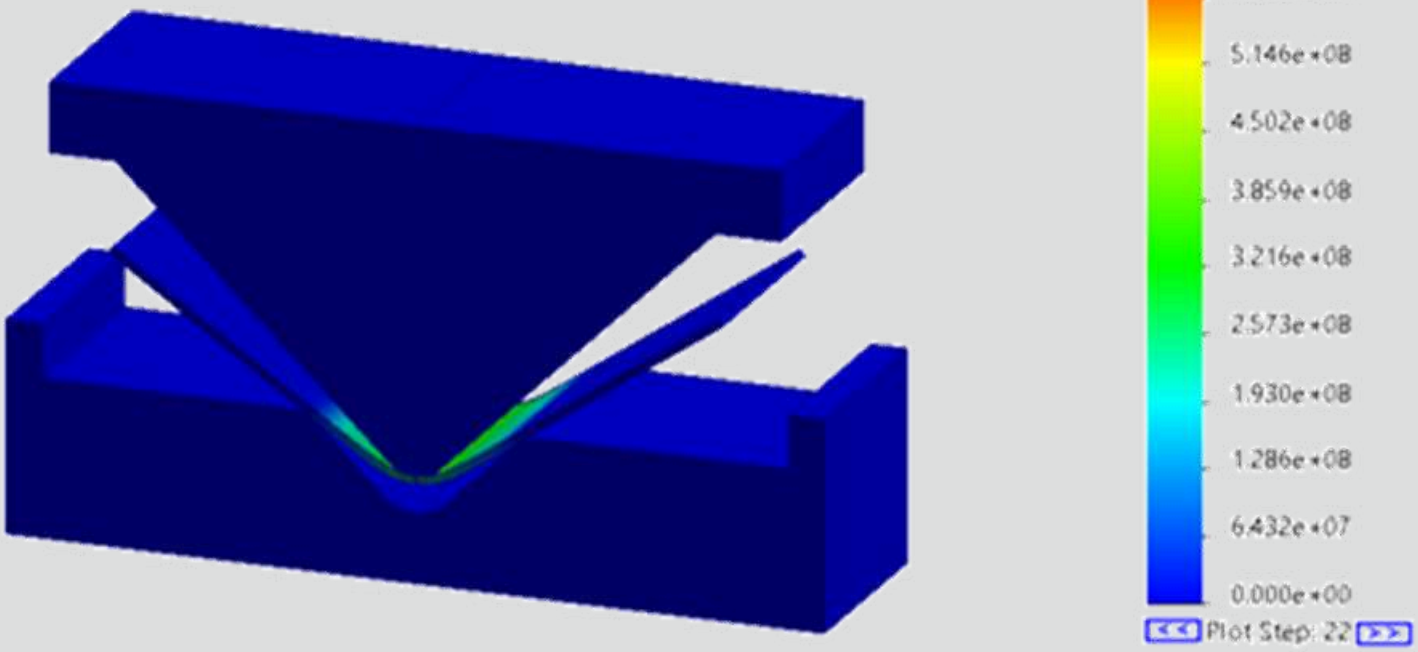
Automated Supply Chain Platform for Truck Assignment and Route Optimization at KINZA Co.

Concept

In this project, a logistics optimization model is developed for Kinza, a beverage brand by Al-Jameel Global Company, to improve truck loading and delivery route planning. By applying data analysis and Vehicle Routing Problem (VRP) solutions, the model aims to reduce fuel consumption, operational costs, and delivery times. This enhancement is expected to boost customer satisfaction, serviceability, and the company's competitive edge in the beverage market.

Supervised by: Dr.Osamah Abdulhameed

Mishal Alsheikh - Muhammed Alsubhaini
Sultan Almosa



Developing a Digital Twin to Predict Sheet Metal Forming Operation Parameters

Concept

In this project, a digital twin is developed using SolidWorks Simulation® to predict parameters in sheet metal forming operations. By integrating the MODSIM concept, the model accurately simulates real-world conditions, including springback angle and press loading capacity. Validation against experimental and empirical data confirms its effectiveness in optimizing manufacturing processes and design accuracy.

Supervised by: Dr. Hesham Elkenani

Architecutre Faculty achievements

UNLOCKING WALKABILITY IN CAR ORIENTED CITIES: ASSESSING BUILT ENVIRONMENT FEATURES AFFECTING WALKABILITY IN RIYADH'S NEIGHBORHOODS.

BY: MAYAS NADIM AHMAD TAHA

JOURNAL OF ARCHITECTURE AND PLANNING , VOL. 37 (1)

ABSTRACT

Enhancing walkability in urban settings, particularly in regions characterized by hot, arid climates and car-oriented development patterns, is increasingly recognized as a pivotal factor in elevating the quality of urban environments. Despite historical underemphasis in urban planning discourse, the imperative of pedestrian-friendly spaces is garnering heightened attention due to its intrinsic link to urban sustainability. This manuscript endeavors to synthesize existing literature on walkability within urban contexts, explicitly focusing on extrapolating these insights to the urban context of Riyadh's residential neighborhoods, Saudi Arabia, a domain where previous studies underscored deficiencies in pedestrian infrastructure and a prevalent dependence on automobiles for travel behavior. This study aims to highlight the efficacy of the Humanization of Cities Initiative, a strategic directive outlined within the framework of Saudi Vision 2030, by defining the urban features that determine walkability and pedestrian behaviors in residential neighborhoods. The study highlights the enhancements to walkability within the Al-Falah district, selected as the pilot community for this initiative. Through a comprehensive analysis, including the outcomes of the Humanization of Cities Initiative and insights gleaned from previous studies, this research seeks to develop a robust conceptual model for advancing walkability standards and propose recommendations to improve pedestrian friendliness within Riyadh's urban context.

Keywords: Car-Oriented Cities, Built Environment Features, Walkability, Factors, Humanization of Cities initiative.

URBAN SPRAWL IN RIYADH: ASSESSING THE IMPACTS OF HORIZONTAL EXPANSION ON SUSTAINABILITY AND QUALITY OF LIFE.

BY: MAJDI ALKHRESHEH

ABSTRACT

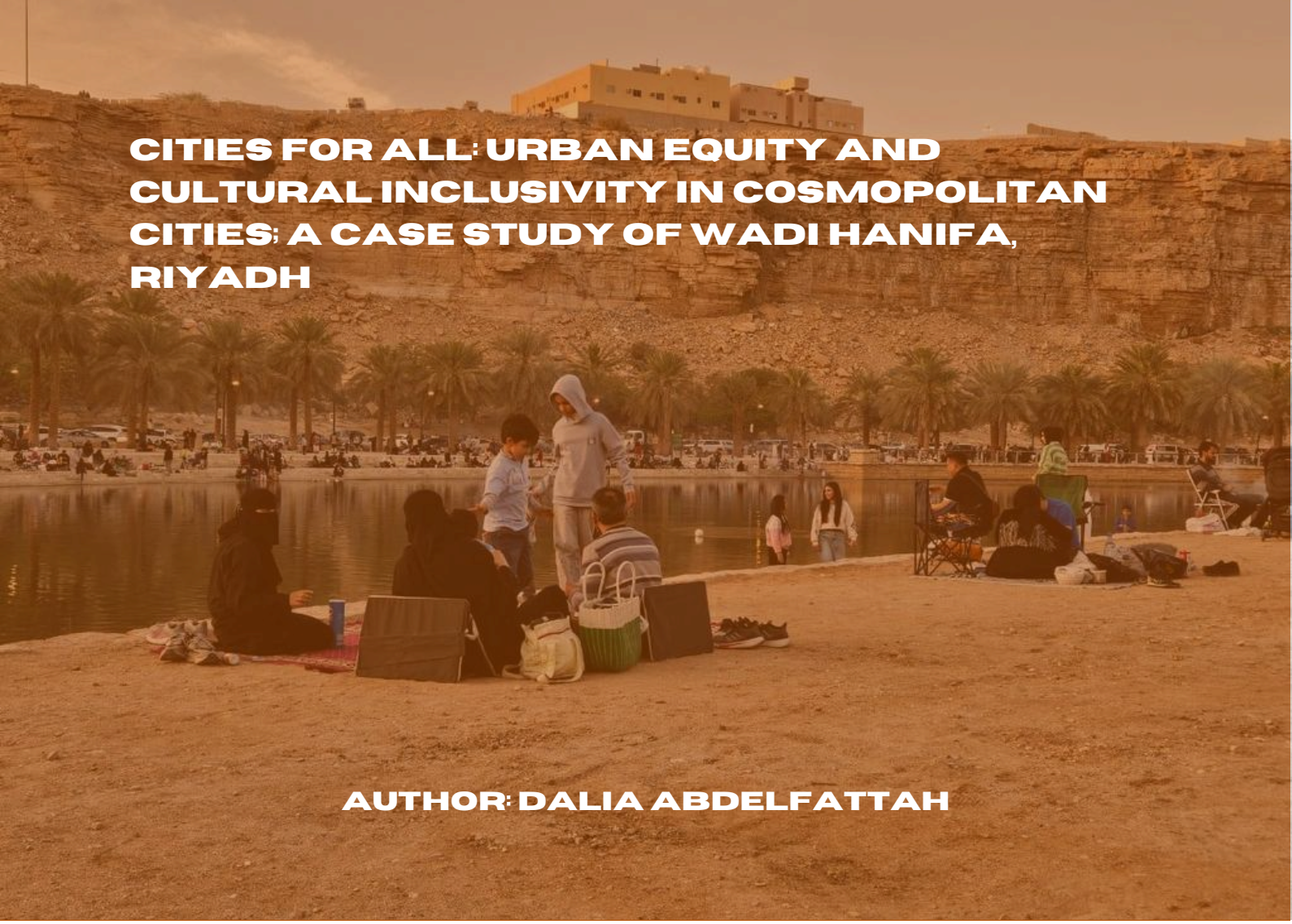
Characterized by its urban grid of two-kilometers square neighborhoods, its low-rise urban development, and its repetitive coarse internal layout, Riyadh's horizontal expansion has notably affected its urban form, social life, and environmental sustainability. While this growth has accommodated fast population increases, it has also presented challenges such as increased car dependency, traffic congestion, air pollution, and social segregation. An exploratory survey underscores these issues, revealing residents' concerns about declining quality of life, difficulty daily trips, and social disconnectedness. This paper also examines the morphological reconfiguration of Riyadh, with a particular focus on the impacts of poor connectivity within its neighborhoods, and higher levels of congestion on its main arterials and freeways.

To address these challenges, the study proposes a reconfiguration of Riyadh's urban morphology, emphasizing the integration of high-rise residential developments along main roads and central corridors, by redesigning the urban section in addition to proposing finer urban fabric within neighborhoods. Guided by New Urbanism principles, this approach promotes walkable, mixed-use, and transit-oriented neighborhoods, fostering compact, connected, and sustainable urban environments. By optimizing land use and increasing density, the proposed model aims to improve access to public transit, amenities, and services. Additionally, innovative parking solutions—such as multi-level underground or podium facilities, smart parking systems, and shared spaces—are recommended to reduce land consumption and alleviate traffic congestion.

Although focusing on the morphological aspects of the urban forms of the city, the paper also is deriving from broader strategies to moderate urban sprawl, including smart growth by creating compact, mixed-use development prioritizing walkability and public transit, Transit-Oriented Development (TOD) by creating high-density neighborhoods around transit hubs to reduce car dependency, Urban Growth Boundaries (UGBs) by limiting outward expansion, infill development by revitalizing underused urban areas and parcels, greenbelts creating open green spaces and trees buffers around cities to limit sprawl, zoning reforms by enabling mixed-use and higher-density development, and fostering walkable communities. These strategies collectively aim to reduce low-density, car-dependent expansion while promoting sustainable urban growth. Public participation is highlighted as a critical component, ensuring that community needs are met and fostering support for transformative urban planning initiatives.

In conclusion, the study proposes policy recommendations for sustainable urban development in Riyadh, advocating for compact design, vertical growth, and community-centric planning. These measures seek to enhance livability, preserve cultural and environmental integrity, and ensure balanced urban growth. This research promotes the discourse of urban sprawl and provides practical insights for policymakers and planners aiming to reconfigure Riyadh's neighborhoods into more sustainable urban spaces.

Keywords: Urban sprawl, Riyadh urban character, sustainable urban development.



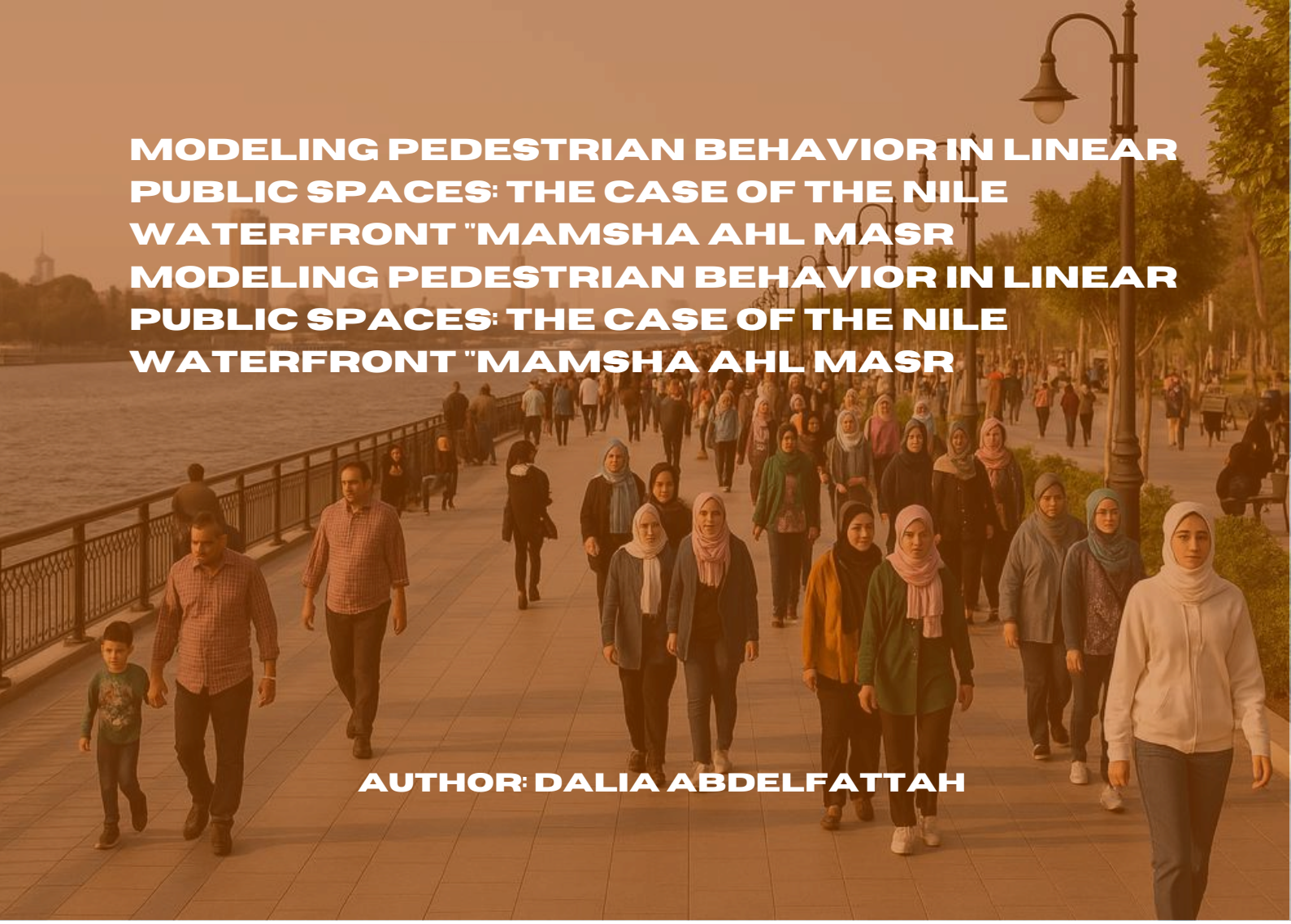
CITIES FOR ALL: URBAN EQUITY AND CULTURAL INCLUSIVITY IN COSMOPOLITAN CITIES; A CASE STUDY OF WADI HANIFA, RIYADH

AUTHOR: DALIA ABDELFATTAH

ABSTRACT

The concept of "Cities for All" has become a necessity for addressing the challenges of urbanization, multiculturalism, and social equity in the 21st century. As cities are rapidly evolving and developing increasingly diverse multicultural layers, it became crucial to foster inclusive environments that promote equity, equality, and justice. Yet, challenges persist in developing truly inclusive urban spaces, this acquires a deep understanding of the interlocking complex relationship between social community needs and urban design parameters. This research explores the dynamics of the multicultural societies in urban spaces. It highlights the challenges faced in accessing equitable public spaces. It examines the role of urban design in fostering social cohesion and reducing spatial inequalities. The research aims to study the capacity of the outdoor public spaces to accommodate people needs with cultural diversity, including individuals of different nationalities, genders, age groups, and cultural backgrounds, enabling them to practice their activities and express themselves in public without conflict, while fostering mutual acceptance. The research employs a mixed-methods approach, combining qualitative analysis of spatial data with user experiences and perceptions. The study incorporates observational research, annotated mapping techniques, photographing, and looking for traces to provide a comprehensive understanding of space utilization and cultural dynamics. The research conducts systematic observations of public behavior and space usage patterns across different times of the day.

This method supported the documentation of how various cultural groups interact with the urban public space, providing insights into the effectiveness of design elements in promoting inclusivity and equity in multicultural settings. The study utilizes annotated maps to visually represent spatial data, and uses qualitative observations to present the distribution of amenities and facilities across the urban public space to identify the patterns of use by different cultural groups. The overlapping between the observational data with the annotated maps creates a powerful tool for analyzing the relationship between urban design of public spaces and social equity in multicultural environments. The study proposes a robust framework for assessing and improving urban equity in diverse public spaces. The research applies its methodology to analyze a case study within the context of Riyadh city (an evolving cosmopolitan city as the capital of Saudi Arabia) with a specific focus on Wadi Hanifa as a study area. This case study concentrates on understanding the concept of urban equity in designing public spaces to promote social cohesion, especially in multiculture communities. The research explores the impact of Wadi Hanifa redevelopment project in promoting spatial justice and equity in public spaces, taking into account the varied requirements of the multicultural community in Riyadh. It examines the project's strategy for establishing welcoming public areas that honor local cultural practices while encouraging intercultural harmony, which provide fair access to parks and recreational areas for all groups. The case study analysis of Wadi Hanifa, demonstrates that its strategy aligns with the macro- movement towards creating "Cities for All." It emphasizes how important it is to accommodate a comprehensive approach that considers culturally-sensitive design. The public spaces of Wadi Hanifa has a flexible design qualities that serve the whole community. The research shows that the Wadi Hanifa project successfully integrates principles of equity and urban justice, resulting in increased public use and improved quality of life for diverse multi-cultural groups. The study concludes its findings by highlighting the importance of such successful projects in promoting social cohesion in cosmopolitan cities that embrace diversity as well as harmony. This approach is aligned with the kingdom 2030’s vision for Sustainable Development, to create safe, inclusive, and resilient communities.



MODELING PEDESTRIAN BEHAVIOR IN LINEAR PUBLIC SPACES: THE CASE OF THE NILE WATERFRONT "MAMSHA AHL MASR

MODELING PEDESTRIAN BEHAVIOR IN LINEAR PUBLIC SPACES: THE CASE OF THE NILE WATERFRONT "MAMSHA AHL MASR

AUTHOR: DALIA ABDELFATTAH

ABSTRACT

The design of urban spaces that foster sustainable practices along the waterfront requires new analytical and structural approaches to promote spatial planning processes. This research discusses the relationship between the configuration of riverbanks as linear urban spaces and the public interest by studying the appropriation of pedestrian behavior. This paper adopts a multi-method approach to investigate pedestrian movement and interactions in linear urban spaces. By combining automated trajectory analysis with environmental mapping, behavioral observation, and user interviews, this approach enables to capture qualitative insights into user experience, and perceptions of safety and comfort. The study aims to identify factors that influence the visitors flow patterns, evaluate the impact of design features, and uncover safety concerns. The model incorporates spatial analysis for the stipulated urban features, and testing visitors' alternatives for the new transformation of the Nile riverfront project. The new pedestrian promenade known as “Mamsha-Ahl Masr” (the walk of Egypt’s citizens), incorporates several transformations of the river landscape which aims to improve the quality of life for the first completed phase and further extensions are taking place consecutively. However, the quantitative understanding of population flows expedites specific procedures on the urban scale to showcase people’s interactions. Therefore, the research deploys a multi-agent behavior simulation technology to demonstrate the interaction between individuals and the linear environment. The research represents empirical data synthesizing variables that affect walkability models related to visitors’ attractiveness towards diverse activity preferences, clustering, and visiting frequency.

Finally, the qualitative comparison and quantitative correlation analysis are combined to enhance the understanding of the spatial design features affecting visitors' experiences while studying the potential behavior simulation model. By combining these analyses, we can identify areas for improvement and optimize the promenade's design for a better pedestrian experience. The research explores the various scenarios for pedestrian flow tracking by explicitly simulating activities and therefore enhancing the aspects of social cohesion. The research concludes by presenting relevant criteria required for optimizing pedestrian-friendly experience in linear urban areas as a comprehensive approach that promotes walkability, safety, and social interaction in cities.

Keywords: Pedestrian Behavior, Spatial Design, Modelling, Urban Dynamics, Walkability, Riverfront

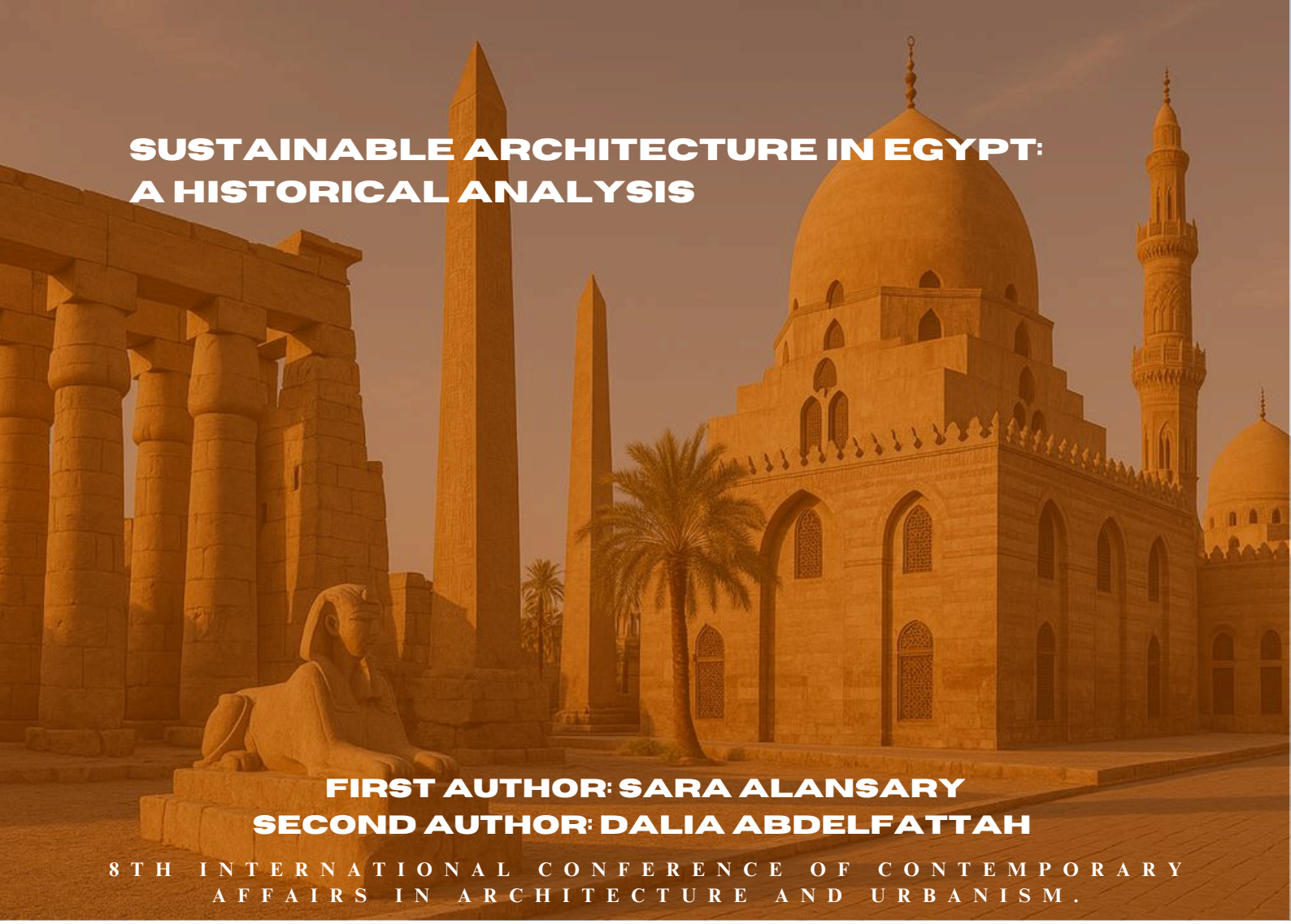
BEYOND CONSERVATION: A FRAMEWORK FOR QUANTIFYING URBAN QUALITIES IN HISTORIC CITY CENTERS.

FIRST AUTHOR: DALIA ABDELFATTAH
SECOND AUTHOR: SARA ALANSARY

JOURNAL E3S WEB OF CONFERENCES. OCTOBER 2024

ABSTRACT

What gives a place its unique character? What makes this place valuable to its community? Questions like these ultimately revolve around the practices that contribute to urban qualities. Historic city centers in MENA regions, despite their cultural significance, face challenges due to neglect, economic constraints, over-density, and inappropriate urban development. While conservation efforts have been extensive, they often overlook the urban qualities of these areas. This research aims to develop quantitative methods to assess the impact of conservation on urban qualities. By analyzing various conservation approaches and their effects on both physical (buildings, streets, and other urban elements) and non-physical (comfort, safety, services) urban elements, the study seeks to identify key factors contributing to urban quality. Quantitative techniques will be employed to evaluate these factors, including aesthetics, sense of place, heritage, and social interaction. The research will ultimately propose a methodological framework for quantifying urban qualities in conserved historic areas, aiding in the evaluation and optimization of future conservation efforts.



SUSTAINABLE ARCHITECTURE IN EGYPT: A HISTORICAL ANALYSIS

FIRST AUTHOR: SARA ALANSARY
SECOND AUTHOR: DALIA ABDELFATTAH

8TH INTERNATIONAL CONFERENCE OF CONTEMPORARY AFFAIRS IN ARCHITECTURE AND URBANISM.

ABSTRACT

The growth of what we may, in the present context, describe as "unsustainable architecture" began with the industrial revolution, as more and more new technologies were incorporated into the fabric of buildings. Before all these developments, most buildings employed the properties of material and form to provide appropriate relationships between their uses and the environments. In other words, buildings of the past were sustainable. This paper will present the background of sustainable architecture features in Egypt by studying ancient Egyptian architecture to address sustainability features through architectural heritage with a focus on the ancient civilization and Islamic civilization in Egypt. The research methodology encompasses the establishment of criteria for evaluating the sustainability of architectural products, followed by a comprehensive review of these products during periods under study. Furthermore, the historical approaches towards sustainable architecture examined allow the formulation of recommendations aimed at enhancing contemporary Egyptian architecture.

DAYLIGHT PARAMETERS IN HOSPITAL WARDS IN HOT, ARID REGIONS: A SIMULATION ANALYSIS IN THE CONTEXT OF SAUDI ARABIA

FIRST AUTHOR: ANAS HUSSEIN
SECOND AUTHOR: ABDULLAH ELSHAFIE

ABSTRACT

The healing effect of daylight cannot be underestimated or overstated because multiple studies and research have revealed that exposure to natural light accelerates the healing or recovery process of patients. This research paper investigates the optimization of daylighting in hospital wards situated in hot, arid regions with a focus on Saudi Arabia. The study employed simulation tools to evaluate different daylighting strategies, aiming to improve energy efficiency and well-being. The research determined that patients in daylight rooms tend to experience less pain; this is a testament to the therapeutic effects of daylight. Consequently, daylighting decreases hospital stays and enhances mood and productivity among staff. The evaluation of the recent situation in the case study ward in a Saudi Arabia hospital established that the daylight levels are below the recommended standards and that the daylight varies between the identical wards due to the time of the day and ward direction.

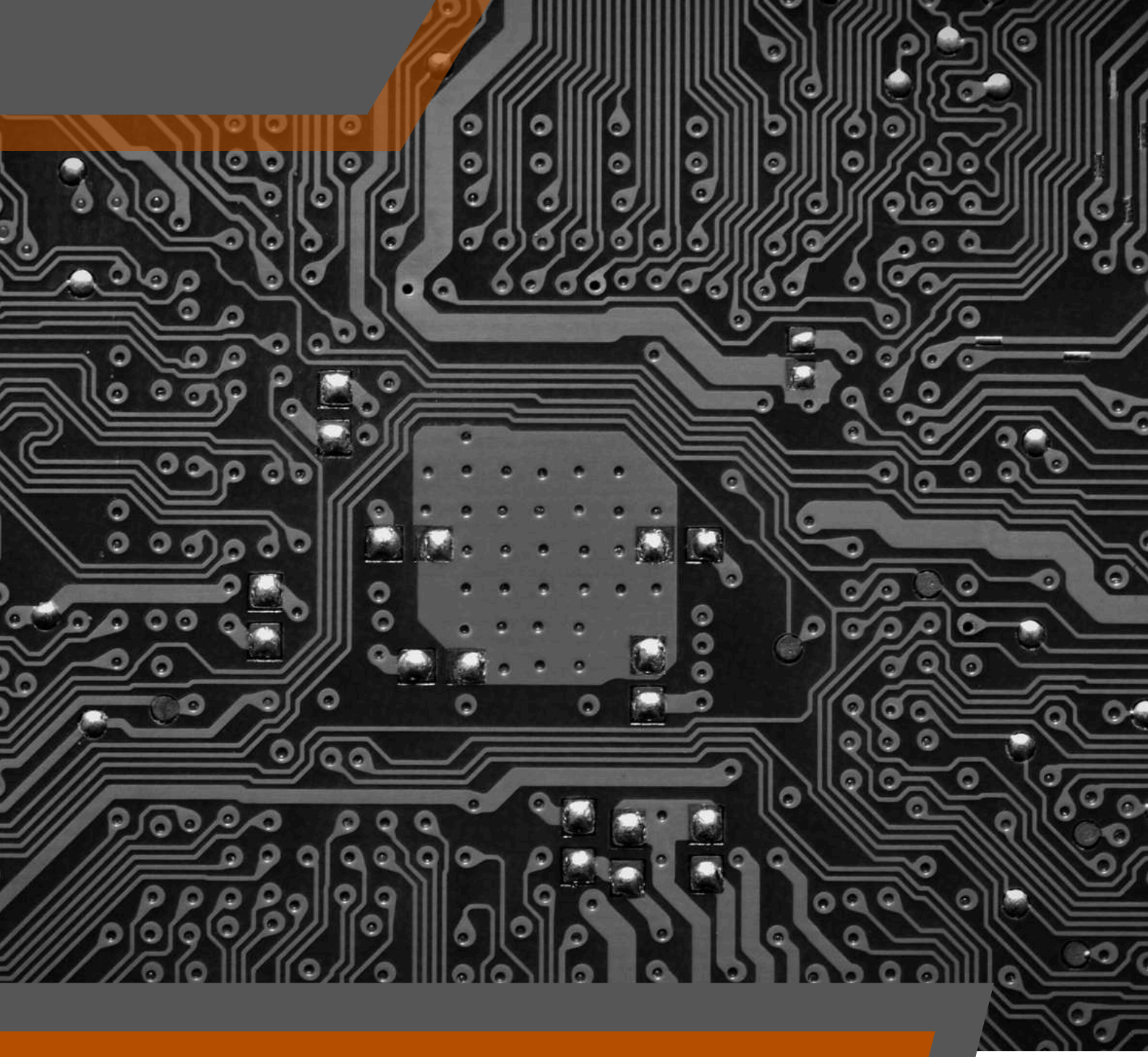
Keywords: Illuminance levels; Uniformity distribution; Healthcare Buildings; Daylight performance

RIYADH'S ARCHITECTURAL METAMORPHOSIS: BALANCING MODERNITY AND TRADITION

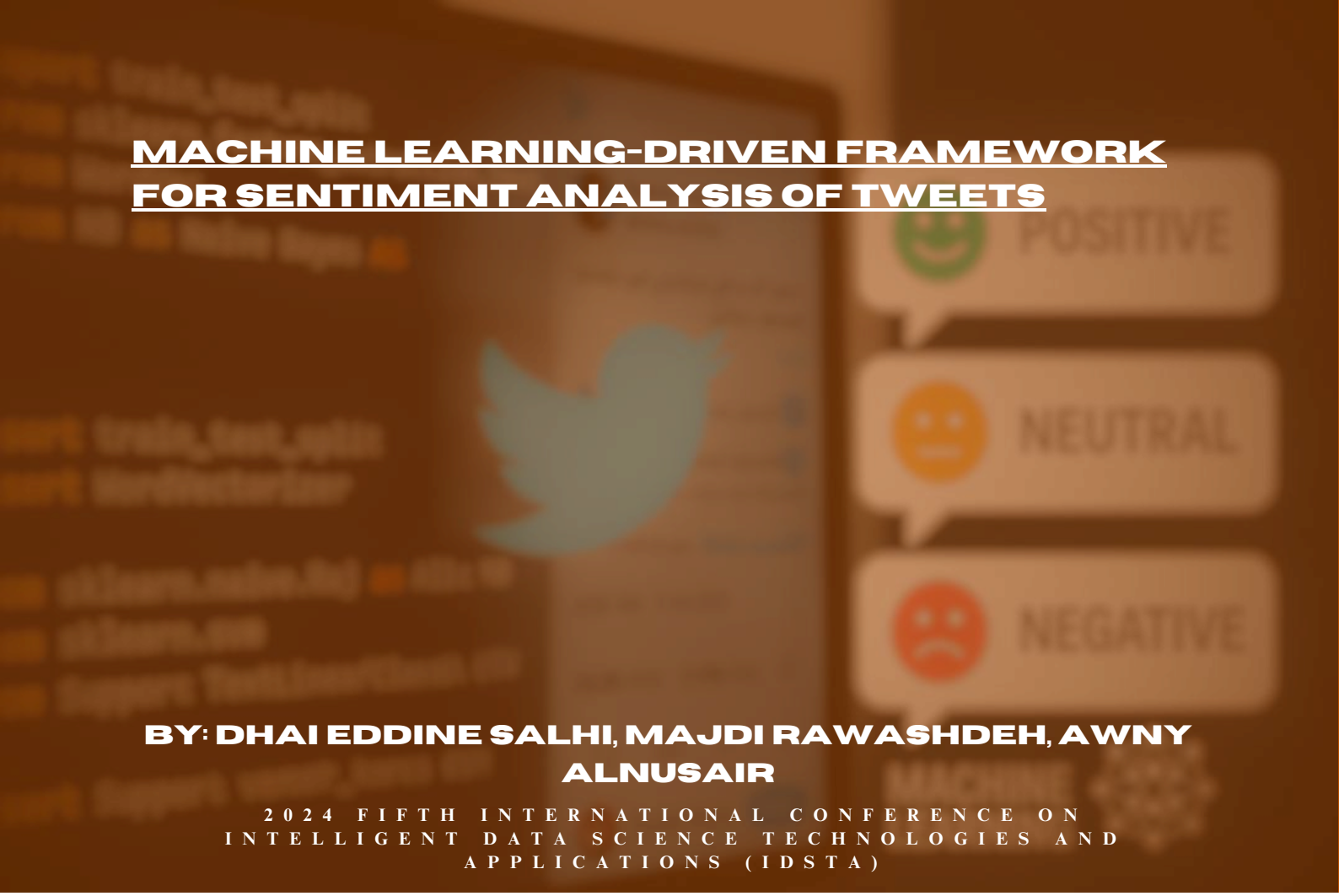
BY: ANAS HUSSEIN

ABSTRACT

This study investigates the transformation of Riyadh's architecture, from traditional forms to a contemporary urban landscape. Using a qualitative approach, it explores the historical, cultural, and economic factors that have influenced Riyadh's architectural development. The key findings reveal a shift from the traditional Najd style to a blend of modern and traditional elements, driven by globalization and economic diversification. However, this rapid modernization has led to a conflict between contemporary and traditional forms, resulting in a loss of cultural identity. The study highlights the importance of integrating local cultural elements into architectural design to preserve heritage amidst urban development. As Riyadh evolves, the challenge is to balance modernization and the preservation of its rich architectural legacy, reflecting both its past and future aspirations. This research contributes understanding the complex interplay between architecture, history, culture, and identity in the context of urban development, providing insights into the delicate equilibrium between preservation and progress in the face of rapid urbanization and cultural change.



Computer Faculty achievements



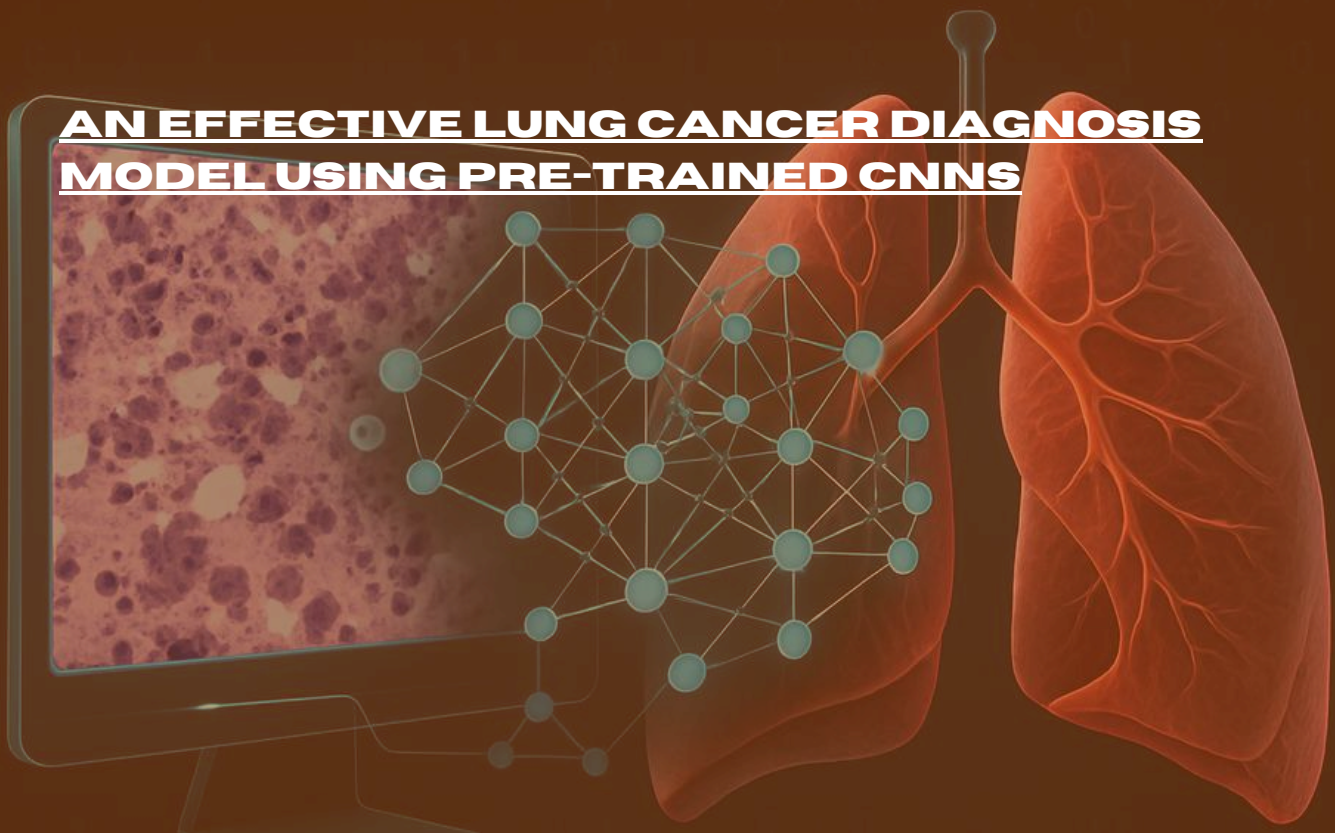
MACHINE LEARNING-DRIVEN FRAMEWORK FOR SENTIMENT ANALYSIS OF TWEETS

BY: DHAI EDDINE SALHI, MAJDI RAWASHDEH, AWNY ALNUSAIR

2024 FIFTH INTERNATIONAL CONFERENCE ON INTELLIGENT DATA SCIENCE TECHNOLOGIES AND APPLICATIONS (IDSTA)

ABSTRACT

Sentiment analysis has become increasingly pivotal across diverse fields such as politics, marketing, and social sciences, driven by the profound influence of public opinion on decision-making processes. This study advances sentiment analysis for Arabic, a language marked by its rich morphological structure and high surface shape variability, which poses significant challenges in text analysis. Employing machine learning models including Recurrent Neural Networks (RNN), Support Vector Machines (SVM), and Naive Bayes (NB), alongside techniques like TF-IDF and Word2Vec for text representation, this research innovatively incorporates a comprehensive root extraction from the Holy Quran to enhance feature extraction. An extensive dataset, enriched with an augmented list of 3,000 stopwords, supports the analysis. Our findings reveal a promising accuracy of 91% with RNN based on the Word2Vec technique, underscoring the effectiveness of integrating deep linguistic features in improving sentiment analysis for Arabic text.



AN EFFECTIVE LUNG CANCER DIAGNOSIS MODEL USING PRE-TRAINED CNNS

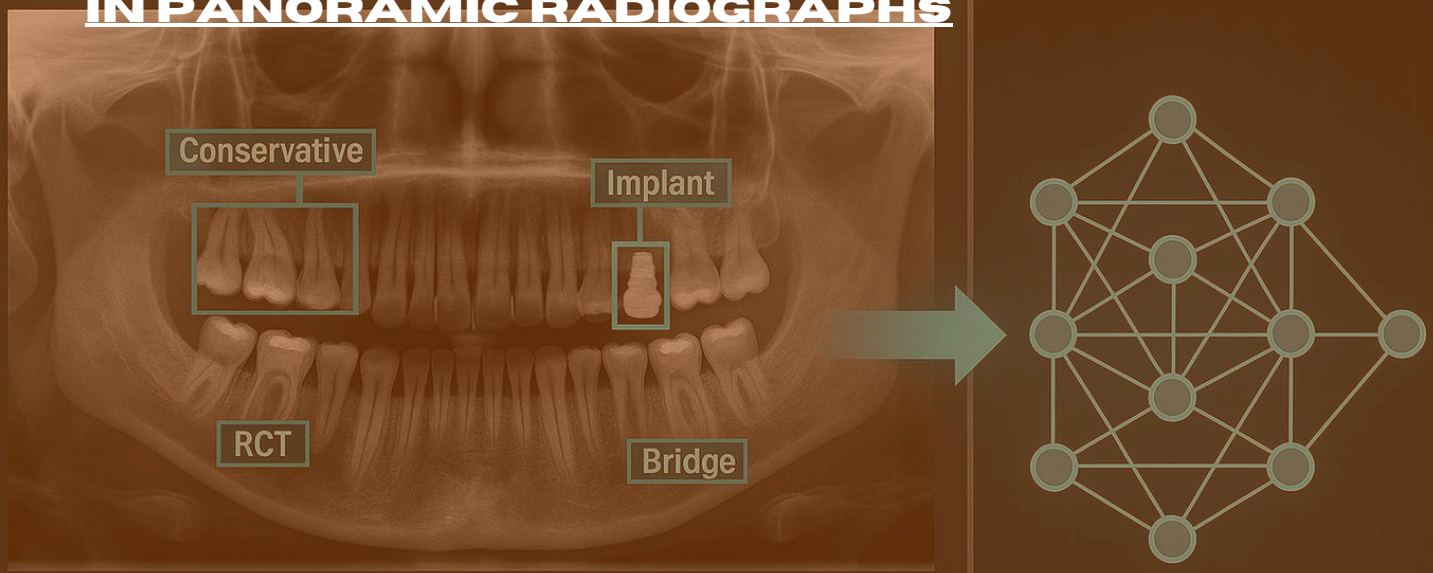
BY: MAJDI RAWASHDEH, MUATH A. OBAIDAT , MERYEM ABOUALI , DHIA EDDINE SALHI , AND KUTUB THAKUR

JOURNAL: CMES-COMPUTER MODELING IN ENGINEERING AND SCIENCES

ABSTRACT

The study aims to create a computer-aided diagnosis (CAD) that accurately diagnoses lung disease by classifying histopathological images. It uses a publicly accessible dataset that includes 15,000 images of benign, malignant, and squamous cell carcinomas in the lung. In addition, this research employs multiscale processing to extract relevant image features and conducts a comprehensive comparative analysis using four Convolutional Neural Network (CNN) based on pre-trained models such as AlexNet, VGG (Visual Geometry Group)16, ResNet-50, and VGG19, after hyper-tuning these models by optimizing factors such as batch size, learning rate, and epochs. The proposed (CNN + VGG19) model achieves the highest accuracy of 99.04%. This outstanding performance demonstrates the potential of the CAD system in accurately classifying lung cancer histopathological images. This study contributes significantly to the creation of a more precise CNN-based model for lung cancer identification, giving researchers and medical professionals in this vital sector a useful tool using advanced deep learning techniques and publicly available datasets.

ENHANCING DENTAL DIAGNOSIS THROUGH AUTOMATED DETECTION OF TEETH DISEASES IN PANORAMIC RADIOGRAPHS



MAJDI RAWASHDEH, TARIQ BDAIR, DHAIEDDINE SALHI

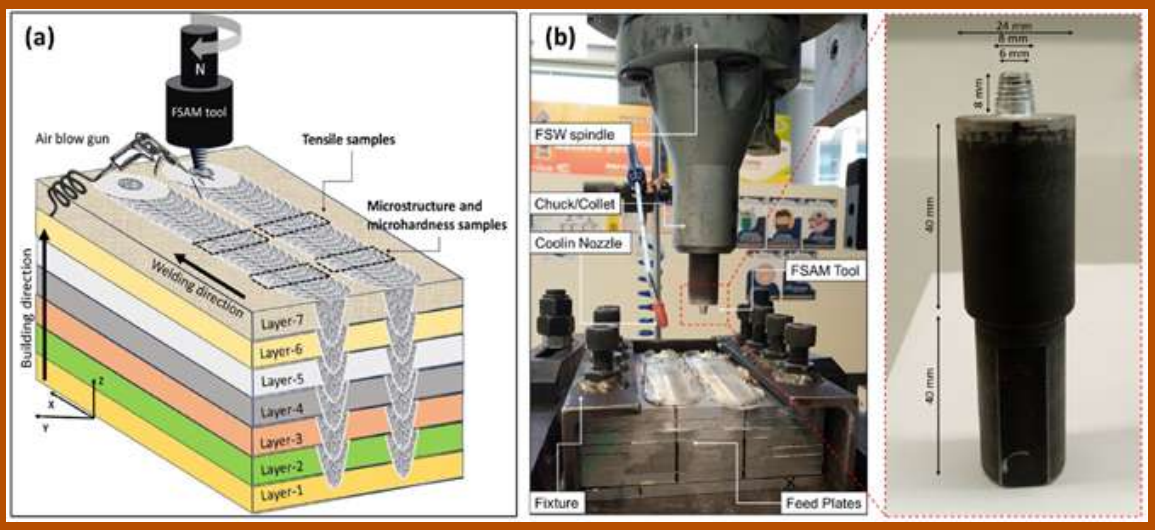
GLOBECOM 2024-2024 IEEE GLOBAL COMMUNICATIONS CONFERENCE

ABSTRACT

Edge learning has shown promising solutions to address diseases by exploiting edge computing capabilities. On the other hand, the analysis of dental radiographs is a crucial step in clinical routine practice since the dentist must evaluate tooth-related issues throughout the clinical diagnosis. Further, errors in manual human analysis may lead to false predictions. Fortunately, the automated approach for identifying and categorizing dental issues can help in the early diagnosis of diseases and prevent tooth loss. This paper aims to create a model that may offer a second viewpoint and simplify dental diagnosis for dentists. The proposed method utilizes state-of-the-art deep learning architecture for object detection. It provides panoramic teeth radiograph images to the proposed network to detect four teeth diseases: conservative (fillings and crowns), implant, RCT (root canal treatment), and bridges. After data preprocessing and augmentation, our framework is used to detect the above teeth diseases with high detection quality and accuracy with mAP and F1-score at 0.902 and 0.86, respectively.

Industrial Faculty achievements

ENHANCING MICROHARDNESS AND TENSILE STRENGTH OF IN-PROCESS COOLED AL-7075-T651 FSAM LAMINATES WITHOUT COMPROMISING DUCTILITY THROUGH PWHT



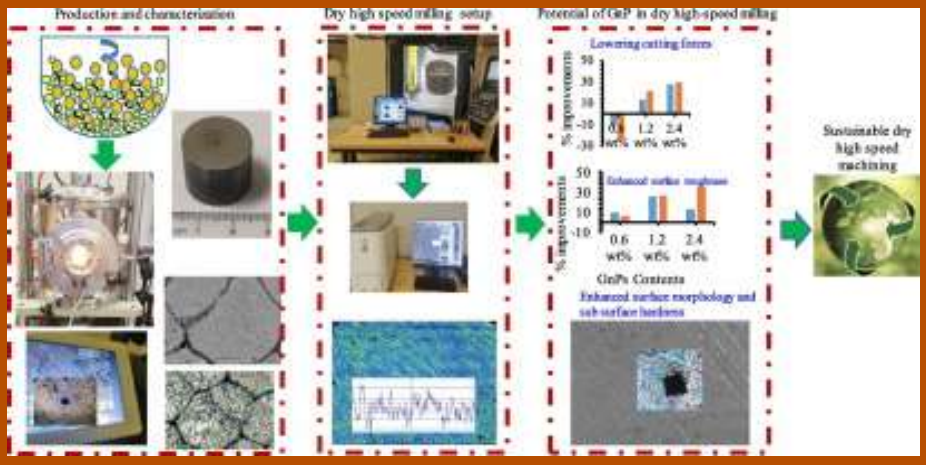
BY: ADEEL HASSAN, KHURRAM ALTAF, NAVEED AHMED, SRINIVASA RAO PEDAPATI, ROSHAN VIJAY MARODE

JOURNAL OF ADVANCED JOINING PROCESSES
VOLUME 11, JUNE 2025, 100304

ABSTRACT

Friction Stir Additive Manufacturing (FSAM) is a promising technique for developing large, irregularly shaped components from non-fusionable aluminum alloys, such as Al-7075, while avoiding solidification defects. Studies on melting-based AM of Al-7075 have shown poor mechanical properties, whereas FSAM has demonstrated comparatively better mechanical properties, though with non-homogeneous properties. Furthermore, conventional post-welding heat treatment (PWHT) has been found to enhance microhardness and strength but significantly reduces ductility. This study addresses these challenges by employing in-process cooling FSAM and cyclic solution PWHT. Seven-layered Al-7075-T651 laminates were manufactured through FSAM, achieving a homogeneous microstructure and mechanical properties using the in-process cooling approach. The cyclic solution treatment resulted in a 38.3 % increase in hardness and a 17.17 % improvement in UTS compared to the as-welded state, without compromising ductility

SUSTAINABLE HIGH-SPEED MILLING ENHANCEMENT OF GNP-REINFORCED TITANIUM NANOCOMPOSITES UNDER DRY ENVIRONMENT



BY: MUSTAFA M. NASR A, SAQIB ANWAR B, ALI M. AL-SAMHAN C, KHALED N. ALQAHTANI A, MOHAMMED H. ALHAAG D, RAYAN SALEEM M. OMAR A

JOURNAL OF MANUFACTURING PROCESSES
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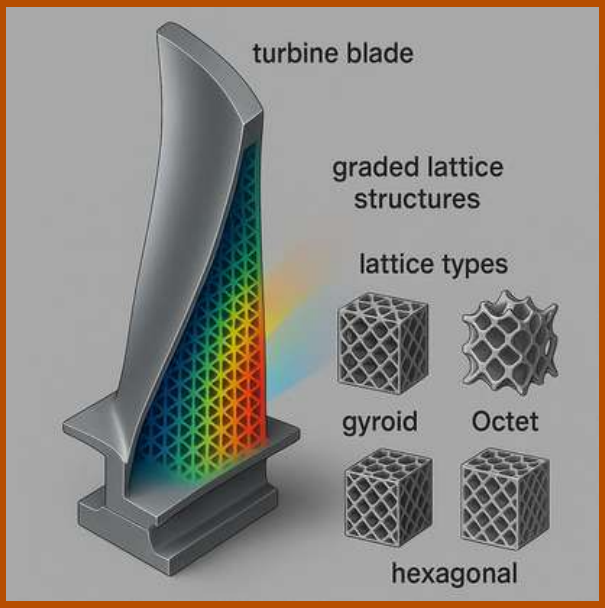
ABSTRACT

No studies have been done on using graphene nanostructure reinforcement material to improve titanium alloy's dry high-speed machining performance, which is crucial for green manufacturing. This study seeks to understand the impact of graphene on improving the high-speed machining of Ti6Al4V (Ti64) nanocomposites. High-density Ti64-based nanocomposite samples with varying amounts of GnPs (0 wt%, 0.6 wt%, 1.2 wt%, and 2.4 wt%) were fabricated using ball milling and HFIHS sustainable technologies. Subsequently, a detailed investigation was conducted to examine the impact of the GnP contents on high-speed milling performance, namely, cutting force components, surface quality, and machined surface and subsurface microhardness. The variable milling parameters include the cutting speed and feed rate. The results showed that the inclusion of GnPs significantly affected the dry high-speed milling of the nanocomposites. The nanocomposites containing 1.2 wt% and 2.4 wt% of GnP-Ti64 exhibited lower cutting forces than the base-Ti64 without GnP (0 wt% Gnp). At a 100 m/min cutting speed, the cutting and feed forces decreased by 35% and 44%, respectively, compared to the base-Ti64 specimens. This is attributed to lower machining friction due to the presence of graphene and TiC (formed due to the reaction of Ti and GnP particles during sintering) at grain boundaries, facilitating material removal and reducing cutting force. Although the nanocomposites had a higher microhardness, they all showed improved surface quality in comparison to the base-Ti64 specimens. For example, at a feed rate of 270 mm/min the nanocomposites contain 0.6 wt%, 1.2 wt%, and 2.4 wt.% GnPs showed roughness reductions of 6%, 27%, and 38%, respectively, compared to the base-Ti64.

Regarding surface and sub-surface hardness after machining, the 2.4 wt.% GnP samples showed superior performance in terms of minimal post-milling hardness variations compared to the base hardness of the material. All GnP-Ti64 milled specimens showed considerably improved surface morphology compared to the base-Ti64 machined specimens. Overall, the nanocomposites containing 1.2 wt% and 2.4 wt% GnPs are strong contenders for reducing cutting forces, enhancing surface roughness, and lowering the fluctuations in microhardness, leading to green manufacturing.

DESIGNING AND OPTIMIZATION OF DIFFERENT TYPES OF GRADED LATTICE STRUCTURES OF TURBINE BLADE ENGINEERING SOLID MECHANICS 13 (2025) 153-164



BY: OSAMAH ABDULHAMEED

ABSTRACT

Additive manufacturing by direct metal fabrication represents one of the fastest-growing areas in material science and manufacturing. Modern manufacturing demands that parts be engineered to have high strength, be lightweight with complex geometrical details, and be suitable for operation upon completion. A very good example of such engineering-manufacturing involves the design and manufacturing of turbine blades for energy efficiency. On the other hand, topology-optimized lattice structures have huge potential and flexibility available to designers operating in the area of designing lightweight structures and high-strength ones at the same time, in contrast to solid form structures. The key issues involved in the research include designing graded density structures made from different lattice architectures for dense materials by characterization of the thermo-mechanical properties for a number of lattice settings in Gyroid, Diamond, Schwarz, Lidinoid, Split P, and Neovius lattices for varied parameters. This paper questions how appropriately the design structure functions in high-speed-rotating elements, such as turbine blades. The current research work will be aimed at the design, finite element analysis for simulation, and manufacturing through additive manufacturing of the turbine blades, considering several designs and lattice structures that satisfy the requirements of lightweight construction and high strength. A detailed preliminary design study has already been performed with the aim of justifying the idea presented in this paper and to create an initially validated basis. It therefore presents findings from the design of different lattice structures, supported by simulations that explain the potential, extent, and limitations of the proposed paper with regard to its general scope.

DRIVE-THRU FIXTURE DESIGN

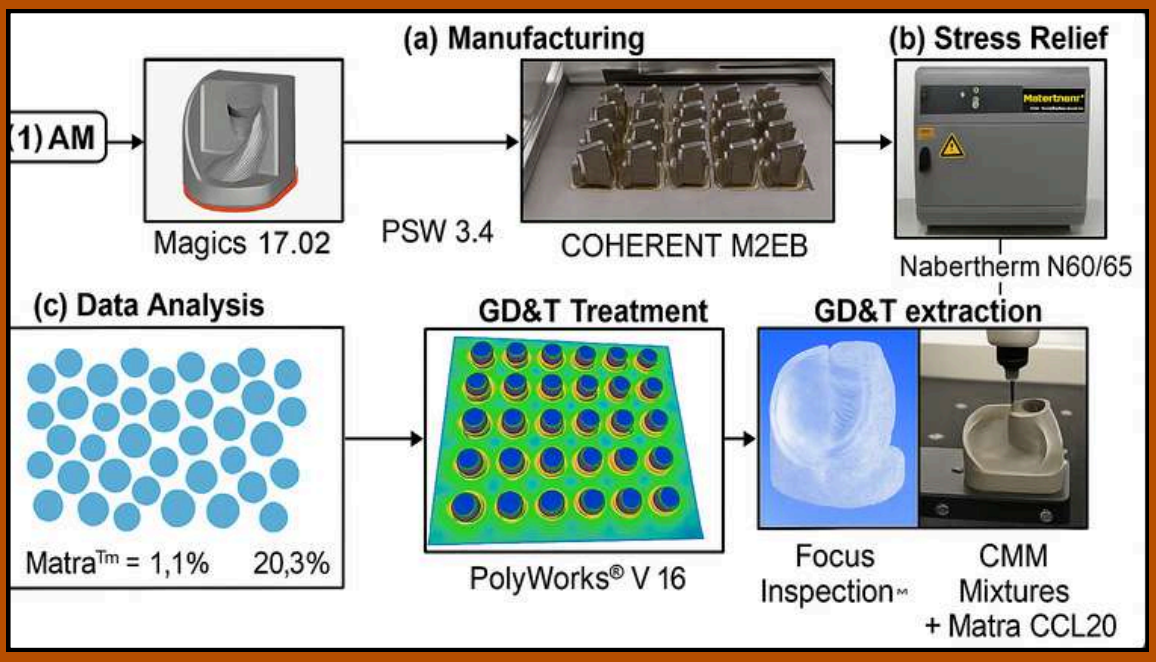
BY: FAHAD ALHADYAN, FARIS ALMOSA, KHALID ALKHATEEB, MUSAAD ALHOBAYB, TAREQ ALMOHAWIS AND DR. WASIM ALSHAMMARY

14TH ANNUAL INTERNATIONAL CONFERENCE ON INDUSTRIAL ENGINEERING AND OPERATIONS MANAGEMENT

ABSTRACT

The project focuses on designing an ergonomic drive-thru fixture to reduce workplace injuries in the fast-food sector. It addresses the occurrence of musculoskeletal injuries among drive-thru workers, caused by repetitive leaning and awkward postures during long shifts. The project aims to develop a product that minimizes these risks, improving the working environment and employee satisfaction. An initial RULA assessment indicated a high-risk score, prompting the design of a fixture that attaches to drive-thru windows, reducing the need for leaning. The project considers factors such as cost, durability, simplicity, and efficiency, resulting in the development of a mechanical fixture as the optimal solution. This fixture moves forwards, backwards, and upwards, thus reducing the need for leaning. The prototype testing showed improved ergonomic conditions, with a lower RULA score, demonstrating the fixture's effectiveness in creating a safer work environment for drive-thru employees. The project's impact extends to reducing healthcare costs and enhancing workplace safety and ergonomics

ADDITIVE MANUFACTURING OF AEROSPACE ALLOYS: MATERIAL, PROCESS AND APPLICATIONS REVIEW



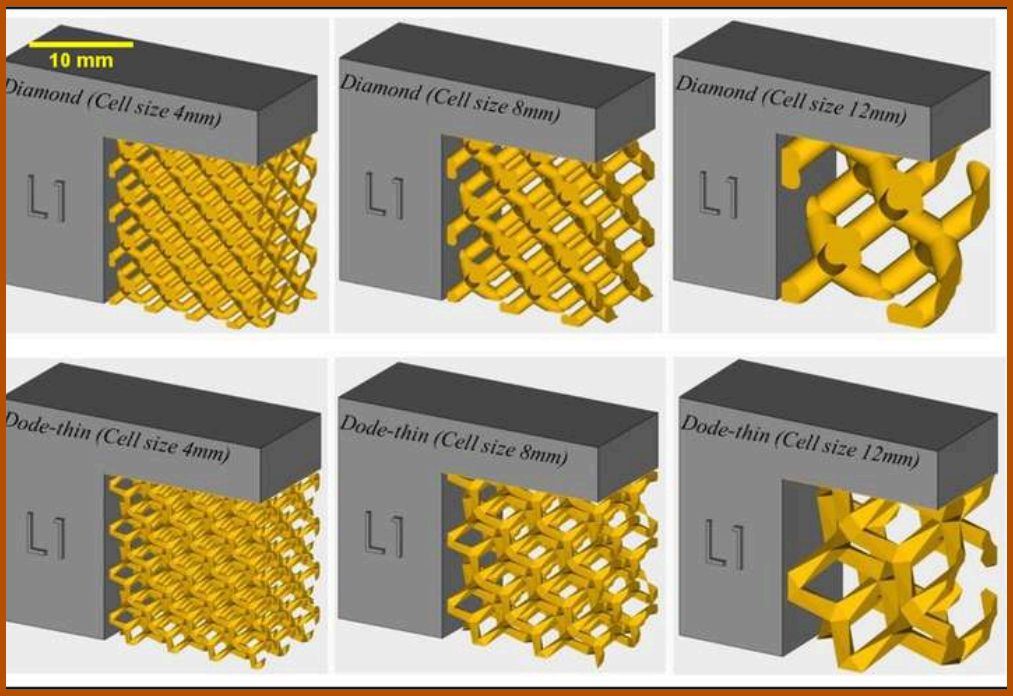
BY: HAYAT ALANZI & MADIHA RAFAQAT

15TH ANNUAL INTERNATIONAL CONFERENCE ON INDUSTRIAL ENGINEERING AND OPERATIONS MANAGEMENT

ABSTRACT

This review presents an overview of the progress and development in the additive manufacturing of aerospace alloys extracting the research from 150 papers. With manufacturing technology continually spreading in the aerospace industry, this research focuses on exploring the ways in which adoption of AM technologies can bring improved flexibility of designs, optimization of waste, and productivity than conventional approaches to manufacturing. For instance, Laser Powder Bed Fusion (LPBF) and Selective Laser Meling (SLM) processes are reviewed regarding the ability to standlise the mechanical properties of aluminum and titanium alloys that are used in aerospace engineering. In addition, current studies show that the addition of nanomaterials such as LaB6 particles to improve tensile strenth and hardness of the AM products that are developed. The review also discusses the difficulties related to the material homogeneity, process control and post processing which are crucial for the quality and reliability of aerospace parts. Multiple research articles related to AM for aerospace are searched, and identifies the applications, materials and other prospects towards the future of using AM technology in aerospace industry. The findings derived from this body of literature not only help elaborate the literature by extending knowledge regarding the effects of AM in aerospace production but also assist in charting the future direction of investigation in this dynamic domain.

UTILIZING LATTICE SUPPORT STRUCTURES IN ELECTRON BEAM ADDITIVE MANUFACTURING



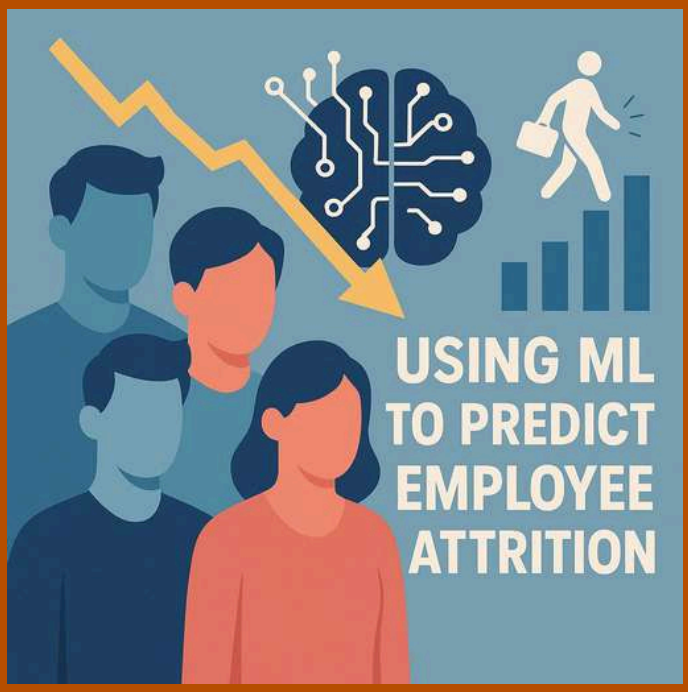
BY: WADEA AMEEN

MULTISCALE AND MULTIDISCIPLINARY MODELING, EXPERIMENTS AND DESIGN

ABSTRACT

Using the support structures in producing overhang structures via Electron Beam melting (EBM) is essential, but it results in higher material consumption, and higher post-processing time and costs. In this study, lattice structures with a relatively minimal volume fraction and post-processing time are utilized to support parts produced via EBM. Two types of lattice structures, Diamond and Dode-thin, have been considered in this study. The impact of design and process parameters support of metal lattice support on support removal time and overhang deformation is also evaluated. The findings demonstrate that lattice structures function effectively as support for EBM overhangs with a reduction percentage of support volume of 46.73% for the Diamond structure and 66.23% for the Dode structure and a reduction in removal time of 45.91% for the Diamond structure and 63.2% for the Dode structure compared with block support structures with a slight increase in part deformation. The findings also indicate that the performance of lattice support structures is effected by it's design and process parameters; nevertheless, these effect was not significant.

USING MACHINE LEARNING ALGORITHMS WITH IMPROVED ACCURACY TO ANALYZE AND PREDICT EMPLOYEE ATTRITION



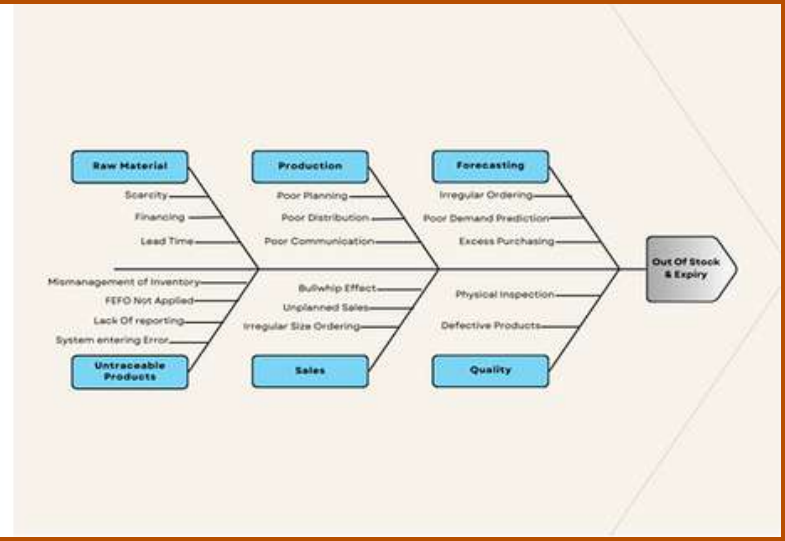
BY: FIYHAN ALSUBAIE & MURTADHA ALDOUKHI

DECISION SCIENCE LETTERS

ABSTRACT

Human migration is based on pull factors that individuals evaluate when it comes to moving to a different territory. Likewise, employee attrition is a phenomenon that represents the tendency to a reduction in employees within an organization. This research paper aims to develop and evaluate machine learning algorithms, namely Decision Tree, Random Forest, and Binary Logistic Regression, to predict employee attrition using the IBM dataset available on Kaggle. The objective is to provide organizations with a proactive approach to employee retention and human resource management by creating accurate predictive models. Employee attrition has significant implications for an organization's reputation, profitability, and overall structure. By accurately predicting employee attrition, organizations can identify the factors contributing to it and implement data-driven human resources management practices. This study contributes to improving decision-making processes, including hiring and firing decisions, and ultimately enhances an organization's capital. The IBM dataset used in this study consists of anonymized employee records and their employment outcomes. It provides a comprehensive HR data representation for analysis and prediction. Three machine learning algorithms, Decision Tree, Random Forest, and Binary Logistic Regression, were utilized in this research. These algorithms were selected for their potential to improve accuracy in predicting employee attrition. The Logistic Regression model yielded the highest accuracy of 87.44% among the tested algorithms. By leveraging this study's findings, organizations can develop predictive models to identify factors contributing to employee attrition. These insights can inform strategic decisions and optimize human resource management practices.

IDENTIFICATION OF CAUSES OF MEDICINE EXPIRATION IN THE WAREHOUSE-A CASE OF SAUDI MEDICAL COMPANY



BY: SHAMSAN SAEED SHAMSAN, ABDULAZIZ MOHAMED SENJAB, OMAR ABDULHAI ABUHASSNA, ABDULLAH SAMER ABUDURRAH, KHALED HUSSEIN ZREED, MADIHA RAFAQAT, NAVEED AHMED

5TH ASIA PACIFIC CONFERENCE ON INDUSTRIAL ENGINEERING AND OPERATIONS MANAGEMENT TOKYO, JAPAN, SEPTEMBER 10-12, 2024

ABSTRACT

Effective inventory management is critical for firms to maximize efficiency, minimize waste, and maintain a healthy financial position. This research investigates the causes of medicine expiration in the warehouse setting. Expired medications not only represent a waste of resources but can also pose safety risks if inadvertently distributed. Understanding the root causes of expiration is a crucial step toward improving warehouse operations and inventory control. The research applies several analytical techniques to diagnose the problem. ABC analysis is used to categorize medicines based on their annual usage value, allowing the team to focus on the most critical inventory items. Turnover ratio calculations provide insights into the velocity at which different medicines are sold, highlighting slow-moving stock that is prone to expiration. A fishbone diagram is constructed to systematically explore the potential causes of expiration, covering factors such as forecasting accuracy, storage conditions, packaging, and supplier reliability. Finally, a Pareto chart is leveraged to identify the vital few medicine categories that account for the majority of expiration issues. Through this multifaceted approach, the project team can uncover several key drivers of medicine expiration. Inaccurate demand forecasting emerges as a primary culprit, leading to the procurement of excess inventory that exceeds shelf-life. Suboptimal storage conditions, such as forecasting and sales, also contribute to the accelerated degradation of certain medicines. The findings of this work have broader implications for inventory management practices across various industries

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