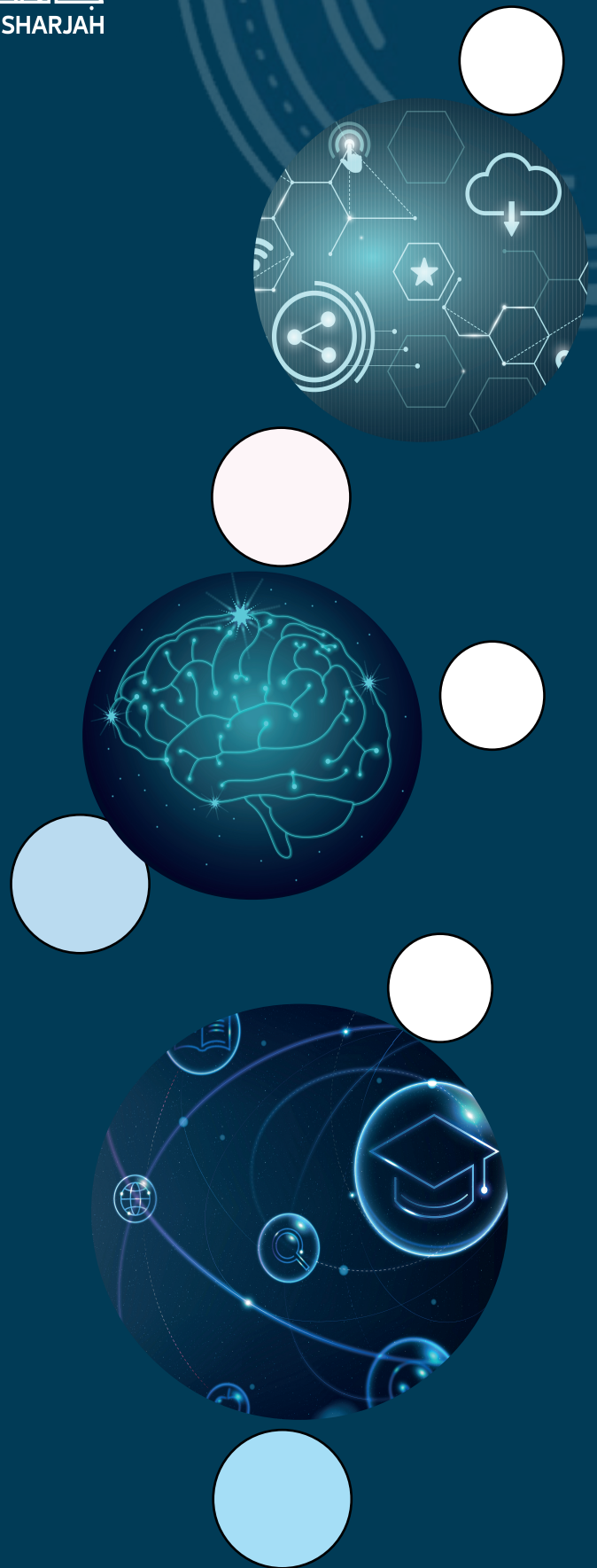




جامعة الشارقة
UNIVERSITY OF SHARJAH

CASCADE

April 2022 Issue



College of Computing & Informatics



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Dean's Message



Welcome to the second issue of CASCADE, a digital publication from the College of Computing and Informatics (CCI) where we highlight and focus on our faculty, students and College activities and success stories. This is the second electronic publication we have in addition to our CONNECT magazine where we disseminate our impact activities.

In this issue, we have compiled a number of success stories and great articles from across CCI communities on a wide range of topics including: CCI new strategic international links with Universities and institutions from Columbia, Estonia, Iraq and Willows academy-Leicester-UK; interdisciplinary events including students competitions in the areas of e-commerce, cyber security and programming we organized as part of our strategy to embed employability and innovation skills in our courses and programs; the second symposium on e-commerce and cybersecurity in collaboration with the Colleges of Business, Communication and Law, including very interesting talks in the areas of e-commerce, blockchain technologies and digital twins; debating computational creativity event in collaboration with the College of Fine Arts and Design; the innovation week with active participation of our students who presented innovative and impactful projects in the areas of artificial intelligence, embedded systems and augmented reality; and many other news and articles from our College, faculty members and students.

And as always, we welcome articles and inputs from faculty members and our students to disseminate our activities, success stories and improve the content.

My thanks to all of you who contributed to this issue and we look forward to celebrating major achievements in 2022. The efforts you made, and the results to be hopefully achieved in this academic year, will reshape how the community sees us.

Prof. Abbas Amira
Dean of the College of Computing and Informatics

AI Week



Under the patronage of HE The Chancellor, Prof. Hamid M.K. Al Naimiy, and in fulfillment of one of the strategic goals toward interdisciplinarity, the College of Computing and Informatics in collaboration with the Medical Colleges (Medicine, Health Sciences, Dentistry & Pharmacy), hosted the first Artificial Intelligence (AI) week. "Empowering Digital Health Education with AI" forum, a three-day hybrid tech festival dedicated to AI as a catalyst for change across different disciplines, particularly, the medical and health sciences.

After the opening remarks, HE the Chancellor, welcomed the initiative and emphasized the need for interdisciplinary collaboration, the opening day included two workshops and several talks followed by an open panel discussion from participating faculty from the College of Computing and Informatics and Colleges of Medicine and Health Sciences on several ongoing/planned projects, pedagogical reviews, and methods to integrate different elements of AI as a core competency in dealing with medical imaging diagnosis, prediction, and classification. The day concluded with a competition announcement (Covid-19 detection using symptoms and X-rays). On the second day of the hybrid event, students and faculty attended outstanding presentations and several talks from high-profile international researchers on the Power of Health Digitalization using AI on Community and Education: Challenges & Opportunities. During their closing remarks, the engaged researchers in the topic highlight the importance and needs for precise diagnosis and enhanced patient care; creating an opportunity for AI technology to redefine the healthcare profession.

The event concluded with several impressive talks and two Focused Workshops on AI applications for Dentistry and Pharmacy followed by the announcement of the COVID detection competition winners.

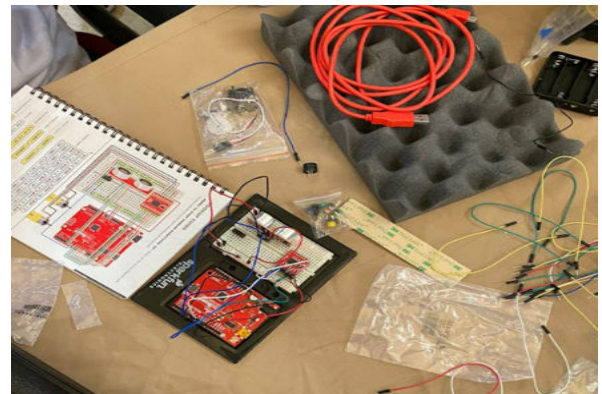
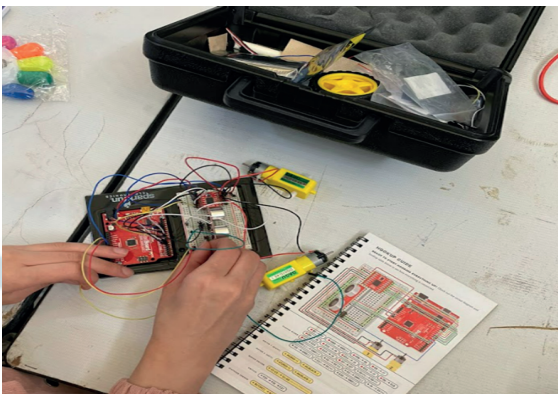
Student's Corner

Google Developers Students 'Club Opening Ceremony and Arduino Workshop

Prof. Abbas Amira, Dean of The College of Computing and Informatics and in participation of wide audience from the CCI faculty and students have inaugurated Google Developers Students Club (GDSC) at the University. The Opening Ceremony program included several talks from participating faculty on the importance of such initiative to connect students with industry leaders in the region and world. The event included a Workshop on Arduino-based Development with 30 students registered for the exploration session Organized by the Club.

Prof Abbas Amira gave a welcoming speech for the GDSC'S Opening ceremony assuring students that such noncurricular engagement is highly valuable for student learning journey. Followed by additional remarks from Dr. Manar Abu Talib, Club Advisor and Maissan Salim in charge of the club admin.

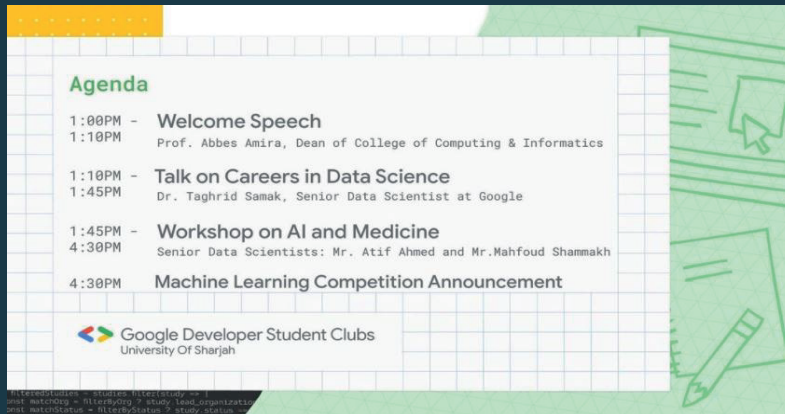
The event included additional insight for the student on how to adapt basic programming concepts toward the board-based development from concept to implementation.



Students' Corner

AI Workshop

The Student Clubs at UoS and AUS delivered workshops on AI and Medicine using machine learning. It is delivered by senior data scientists: Dr. Taghrid Samak from Google San Francisco, USA, Mr Atif Ahmed and Mr Mahfoud Shammakh from Emirates NBD.



Google Cloud Workshop

Google Developer Student Club at UoS in collaboration with Google Developer Group in Sharjah have delivered study jam on Google Cloud. Hands on practice with the Google Cloud platform's fundamental tools and services. The workshop has been delivered by Dr. Nabil Hadj-Ahmed, The Director Training at Jellyfish.



Students' Corner

A Bite of Passion Event



The ACM Student Chapter and CCIA has organized “It all begins with a bite of passion” event that is delivered by Mohammed Aldarsouni, an ITMM senior student and a production, talent and communication assistant at Power League Gaming.

Mentorship Program from Baker Hughes



Congratulations to Rawan Hisham Khanfar, Nour Al Huda Wael El Chihabi and Hajar Humaid Almazrouei who were selected to join a mentorship program in one of the best companies Baker Hughes. They will be mentored by experts in the technology track for the next 8 weeks.

Students' Corner

Innovation Week

The College of Computing and Informatics students have inspiring participation in the innovation week of Sharjah.

Project	Invention
Object-Color-Text detection	Supervisor: Dr. Talal Bonny Students: Anwar Hani Mohammad Awad Nourhan Ahmed Mostafa Tahoun
Arabic Dialect Identification	Supervisor: Prof. Ashraf Elnagar Students: Aghyad Majed AL Sayadi Ahmed Raed Abulohoom
Recognition of handwritten Arabic text	Supervisor: Prof. Ashraf Elnagar Students: Mohammed Moneb Ahmed Khaled, Ala' Mamoun O. Alzebedeh
Game Development using Passive Augmented Reality.	Supervisor: Dr. Naveed Ahmed. Students: Zulaiha Afrah Sadakathullah Shaduly Asma Shahab Shahabuddin Qureshi



College International Links and Collaborations

Meeting with the Assistant Chancellor of Nineveh University for Scientific Affairs

Under the patronage of Prof. Abbas Amira, Dean of The College of Computing and Informatics, a meeting was arranged by International Relations Office with the Assistant chancellor of Ninevah University for Scientific Affairs Prof. Jaafar Ramadan Muhammad on the 19th of December 2021.



UNAB Delegation Visit to CCI

In continuing efforts towards the fulfillment of the founding strategic vision, Prof. Abbas Amira, Dean of the College of Computing and Informatics has welcomed HE Juan Camilao Montoya Bozzi, Rector of Universidad Autonoma de Bucaramanga (UNAB) -Colombia, along with Prof. Cesar Guerrero, General Director for Research.



College International Links and Collaborations

College of Computing and Informatics Willows & Sharjah Partnership Tuesday

Prof. Abbas Amira, Dean of the College of Computing and Informatics has welcomed a team from the United Kingdom, Prof. Fahad Rizvi, Chair Willows Academy RIZVI, Fahad (NHS West Leicestershire CCG), and Dr. Tariq SA Kapasi, Medical Director, Willows Health, Honorary Associate Professor of Primary Care and General Practice. The team presented their ongoing activities, what they do, their strengths, and their associated partners including NHS in the UK.

Following that, there was an open discussion towards building further opportunities of collaboration and development activities. A tentative plan has also been discussed, including:

- A general discussion of future research and development (R&D) collaborations in medical and bioinformatics, autonomic systems, and other medical and computer sciences topics.
- Possible joint projects and research supervision.
- Facilitation of possible final year student's international placement, and capacity building.



College International Links and Collaborations

Meeting with Prof. Marko Kaaramees from Tallinn University of Technology



As part of the College efforts to build strategic international links, a meeting between Prof. Abbas Amira, Dean of the College of Computing and Prof Marko Kääramees from Tallinn University of Technology, Estonia took place on 22nd March 2022 to explore collaboration opportunities in research, teaching and students mobility.

College Initiatives and Events

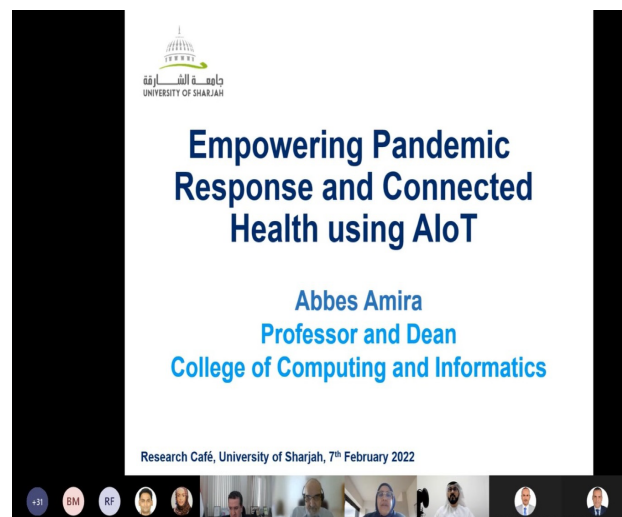
The 15th Research Café Talk

Digital Technology as a Tool for Pandemic Preparedness and Response



How AIoT, deployed in connected (digital) health frameworks, can support:

- Remote patient monitoring?
- Robotic surgery?



The office of the Vice-Chancellor for Research and Graduate Studies at the University of Sharjah organizes short talks called Research Café. The idea is to foster further research and scholarship culture within the University. These short talks are scheduled for 10-15 minutes on a topic of interest to be followed by a discussion. The idea is to mimic the intellectual cafes meetings where intellectuals, scientists, engineers, researchers etc., meet to discuss a topic. Under this umbrella the 15th Research Café was held on February 7th, 2022, Prof. Abess Amira, Dean of The College of Computing and Informatics, spoke on "Empowering Pandemic Response and Connected Health with AIoT".

The event was attended by many faculty members and students from various colleges and disciplines. The program started with a brief introduction and welcoming remarks by Prof. Maamar Bettayeb, Vice-Chancellor for Graduate Studies and Research. Prof. Abbes Amira talked about the opportunities, technologies, data, and applications related to AIoT in the pandemic response.

Prof. Amira emphasized the importance of connected health and prevention, diagnosis, treatment, management, leadership, and prediction to improve decisions in managing the pandemic crisis.

The seminar ended with a lively discussion and questions on several AIoT related topics.

College Initiatives and Events

Cupcarbon: A Platform for Designing and Simulating IoT and Wireless Sensor Networks Dedicated to Secured Smart City Application

The College of Computing and Informatics hosted Dr. Ahcene Bounceur, Associate Professor of Computer Science at the University of Brest (UBO) for virtual seminar via Teams for Faculty, Staff, and students titled "CupCarbon: A Platform for Designing and Simulating IoT and Wireless Sensor Networks Dedicated to Secured Smart City Applications".

The proliferation of radio communication systems and the significant advances in enabling device technologies are paving the roads towards Internet-of-Things (IoT) and opening new horizons for Smart City applications and its services. Such evolution became essential to enhance the security, quality of urban services, reduce costs, and actively engage citizens more than any earlier time.

INTRODUCTION

IoT & Smart-cities
We need simulators / Digital Twins

CupCarbon
Presentation of the WSN/IoT simulator CupCarbon

01 Introduction
02 Pseudo-Polygon
03 CupCarbon
04 Conclusion & Future Work

Pseudo-Polygon
Presentation of the D-RRLPCN algorithm

Conclusion & Future Work
Digital Twin: First work

1

Image Processing: Contour drawing

Future Work

2

Smart City & IoT Simulator

2D/3D City model, Network design, Sensor Node Programming, Mobility/Dynamics

SEI SCRIPT

SIMULATOR

Code generation, Signal Interferences, Signal Propagation, Algorithm visualisation/Debug

15

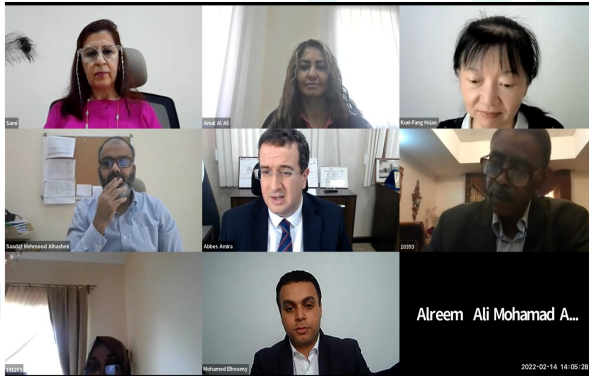
Conclusion and Future Work

- CupCarbon:**
 - A platform to simulate WSN and IoT
 - Simulation of smart-cities and smart-grids
 - Digital Twin for cybersecurity of smart critical infrastructures
- Pseudo-Polygon**
 - Boundary node determination (networks / images)
 - Gap and Hole detection
 - Data Clustering
 - Fingerprint Characterisation
 - Key generation
- Cybersecurity**
 - Healthcare Application: **Suidia2** (new project)
 - Homomorphic encryption
- AI**
 - Statistical classification (copulae theory, EVT, Classification, ...)
 - Deep learning

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College Initiatives and Events

Academic Advising



1. Dr. Samar Mouakket had a presentation about advising during the orientation meeting which was held by the CCI for new students on 12/9/2021. The presentation focused on the importance of advising and the responsibilities of each the advisee and the advisor to ensure successful progress of the student toward meeting degree requirements. In addition, the presentation informed the students about the importance of advising for student who fall under probation.
2. In its efforts to promote the awareness of academic advising and mentoring as an essential part of the educational process, the CCI Student Success Committee held an advising and mentoring workshop for its faculty members on Thursday 11 November 2021 from 9:30 AM to 1:00 AM. The goal of this workshop is to improve the advisor's knowledge of his/her responsibilities and the University policies in order to provide his/her students the mentoring and guidance they need on academic planning, completion of graduation requirements within a reasonable period, and career planning. The workshop was interactive on campus in the computer lab in W5-005. The faculty members used the computer in the lab to learn about the use of MY UDC for advising purposes. The Dean of CCI, Prof. Abbes Amira, opened the workshop and talked about the advising initiatives. Dr. Talal Bonny talked briefly about the importance of advising. The Director of Registration Department, Ms. Reem AL Hashemi, was present in the workshop and answered questions raised by the faculty members. Two members from the registration Department (Ali Kamel Salim and Asma Almazrouei) presented the registration role in advising and explained to the faculty members some important features in MYUDC which they need for students' advising. This workshop represented a collective effort between the CCI and the registration department. Therefore, the CCI would like to thank the Director of the Registration Department and her team for their collaboration with us and for their time and valuable contribution. The attached pictures show some activities which took place during the event,
3. The Information Systems (IS) Student Success Committee organized an advising event to its students who major or minor in Business Information Systems on 14/2/2022 via Zoom. The Dean (Prof. Abbes Amira) opened the event by talking about the importance of advising, followed by the Chair of the IS Department, Dr. Mohamed Nour. Then, Dr. Amel Al Ali presented the students with a digital advising guidelines brochure which lists the main advising issues concerning students. She informed the students that the brochure will be sent to all major and minor students in BIS after the event. Prof. Kuei-Fang then introduced the IS Department's faculty members and the staff, who introduced themselves briefly to the students. The event was concluded by a brief talk from fourth year student and an alumni student who shared their experience with the students. Students were then given open discussion period to ask questions to the faculty members, staff, and the students.

College Initiatives and Events

Debating Computational Creativity

The College of Computing and Informatics, in collaboration with the College of Fine Arts and Design, hosted a hybrid forum "Debating Computational Creativity".

The forum brought together faculty and students from both colleges to exchange ideas and practices at the intersection of creativity and technology. The diversity of projects demonstrated the need for closer collaboration between the two colleges, enlightening students to a wide range of opportunities as emerging technologies are enabling artists and designers to extend their reach and augment the quality of their work through the different applications in 2D & 3D, fabrication machines, and smart system.

The advancement of artificial intelligence (AI) and its integration into numerous facets of our daily lives has heightened the necessity to explore AI's position in the creative industry.

The forum concluded with remarks from Prof. Abbas Amira on further threads on technology adoptions for the artistic and creative domain.



College Initiatives and Events

First Social Gathering

The Social Committee of the College of Computing and Informatics organized the first social gathering for all faculty and staff members to celebrate the end of another successful semester, Fall 2021. The gathering which held on Wednesday December 22nd, 2021, with the attendance of around thirty-five staff and faculty members started with a short talk by Prof. Abbas Amira, Dean of College of Computing, and Informatics at the University of Sharjah in which he thanked all faculty and staff members for their hard-working and dedications through the fruitful and successful Fall 2021 semester.

All faculty and staff members enjoyed the event which was held during the launch break by sharing some enjoyable moments and discussions and by playing some simple enjoyable games that were held by the social committee. The gathering also involved granting appreciation certificates provided by the Dean, Prof. Abbas Amira, to the previous Head of Departments Dr. Iman Akour and Dr. Naveed Ahmed appreciating the service they provided to the College. Moreover, the announcement and the appreciations of the selected staff members for the new initiative "Star Award". Mrs. Amna Al Suwaidi - Department of Information Systems, Mrs. Hiba Al-Sadek – Department of Computer Science, and Eng. Maha Alaa Eddin – Department of Computer Engineering.



College Initiatives and Events

Cybersecurity Week 2022

The College of Computing and Informatics in collaboration with College of Business Administration, College of Law, and College of Communication hosted a hybrid event as part of the Cybersecurity Week to discuss recent advances in the domain and the need for developing new interdisciplinary programs in Cybersecurity.

Prof. Yousef Haik, The Vice Chancellor for Academic Affairs commanded the initiative and expressed his admiration for the stance taken by the Colleges which comes in a series of initiatives led by CCI that aims to promote interdisciplinary work and the underpinning employability value provided for the future cohorts of students.

Prof. Abbas Amira, Dean of College of Computing & Informatics, echoed the critical need to take practical step forward to ensure a timely preparation and delivery of programs as forecasted by market demands and changing market dynamics.

During the panel discussion, moderated by Dr. Mohammad Lataifeh, with participating faculty Dr. Mohammad Al Hawari, College of Business Administration, Dr. Mohammed Yousaf, College of Communication, Dr. Ahmad Farah College of Law, and Prof. Brahim Kamel College of Computing and Informatics about developing Interdisciplinary programs in Cybersecurity.

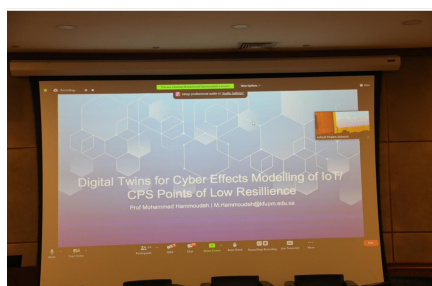
The panel deliberated key issues that must be addressed, if we are to align the University programs with the UAE centennial vision 2071 where excellence in education, a diversified knowledge economy, and A happy and cohesive society that have been drafted as the pillars of such transformation.

Among these issues were the expected challenges that could face the adoption of interdisciplinary programs in cybersecurity curriculum, including internal and external factors, accreditation regulations and policies and the future of such interdisciplinarity in terms of employability, viability, market feasibility, and cost of implementation.

The second part of the event included a timely presentation from our distinguished Guest Speaker Prof. Mohammad Hammoudeh, Saudi Aramco Chair Professor, KFUPM about Digital Twins for Cyber Effects Modelling of IoT/CPS Points of Low Resilience. In his talk Prof. Hammoudeh discussed the scale and complexity needed to approach cyber resilience in IoT-enabled critical national infrastructure (CNI) through the use of digital twins.

The Speaker then elaborated on the efficiencies and challenges introduced from the combination of cyber modelling and simulation using digital twins and state-of-the-art AI-enabled threat source characterisation in building secure and resilient CPS/IoT systems.

The talk concluded with a roadmap of holistic cyber resilience testing scenarios that integrate cyber standards and security descriptors with emerging modelling techniques to effectively represent the impact of cyberattacks and resilience efforts.



College Initiatives and Events

Second Symposium on E-commerce & Cybersecurity SEC 2022

The 2022 Symposium on E-Commerce and Cybersecurity, SEC 2022 was organized by College of Computing and Informatics, University of Sharjah in Cooperation with Sharjah Chamber of Commerce and Industry and delivered the following program

9:30 - 10:00	<ul style="list-style-type: none">Opening Session (National anthem & Holy Quran)Welcome by HE Prof. Hamid M.K. Al Naimiy, the ChancellorWelcome by HE Mr. Abdullah Sultan Al Owais, Chairman, Sharjah Chamber of Commerce, and IndustryWelcome by HE Prof. Maamar Bettayeb, Vice Chancellor for Research & Graduate StudiesWelcome speech by Prof. Abbas Amira, Dean, College of Computing & InformaticsShort video
10:00 - 10:30	Guest speaker session: Dr. Majida Al Azazi, CEO and founder of Glory Holdings Title: E-commerce - a Practical Case Study
10:30 - 11:00	Guest speaker session: Prof. Mohammad Hammoudeh, Saudi Aramco Chair Professor Title: Bringing Blockchain into Industry 4.0 – The Case of Supply Chain
11:00 - 11:30	Competition winner's announcement
11:30 - 12:00	Exhibition opening and tour
Afternoon Sessions - Parallel	
	Session 1: (Arabic) Chair: Dr. Ahmad Qasim Al Hamad
	Session 2: (English) Chair: Dr. Samar Mouakket
12:00 - 12:30	استغلال الذكاء الاصطناعي في التجارة الإلكترونية الفرص والمخاطر د. محمد مرسى عبده، كلية القانون
12:30 - 01:00	لاستعداد لمواجهة تحديات التجارة الإلكترونية في ظل جائحة كورونا أ.د. مؤيد أحمد عبيدات، كلية القانون
01:00 - 01:30	دور القانون الجنائي في حماية الأمن السيبراني وخلق مناخاً آمناً للتجارة الإلكترونية د. محمد نور الدين سيد، كلية القانون
	Security issues in e-commerce Dr. Iman Akour, College of Computing, and Informatics
	Cybersecurity Management in e-commerce: Challenges, strategies, and trends Prof. Qassim Nasser, College of Engineering
	On Detecting Route Hijacking attacks in Opportunistic Mobile Networks Dr. Ala' Altaweel, College of Computing and Informatics



Winning/Successful Stories

Student Competition – AI Week

On behalf of College of Computing and Medical Colleges (Medicine, Health Sciences, Dentistry and Pharmacy), we thank you all for the successful AI Week. It wouldn't be possible without your passion, contributions and dedication.

We also congratulate the following students who won several prizes in AI Competition. We are so proud of you and we wish you continued success.

COVID-19 DETECTION USING SYMPTOMS

WINNERS

1

RUBA ABDUL GHANI KHARSA
Computer Science Master's Student, College of Computing and Informatics, UOS

2

AMMAR ELSABE
Computer Engineering Junior Student, College of Computing and Informatics, UOS

3

ROHAN MITRA
Computer Science & Math Junior Student, College of Engineering, AUS

COVID-19 DETECTION USING X-RAYS

WINNERS

1

ALI REZA'S TEAM
• Ali Reza Sajun • Donthi Sankalpo • Nadeen Tcreq
Computer Engineering Master's and Senior Students, College of Engineering, AUS

2

AKCHUNYA CHANCHAL
Computer Science Junior Student, College of Engineering, AUS

RADI AMAN RIYAS
Computer Engineering Sophomore Student, College of Engineering, AUS

MOHAMMED MONEB KHALED'S TEAM
• Mohammed Moneb • Alad' O. Alzebedeh • Ahmed Elnour Khaled
Computer Science Senior Students, College of Computing and Informatics, UOS

3

AMMAR ELSABE
Computer Engineering Junior Student, College of Computing and Informatics, UOS



Organized By



Winning/Successful Stories

E-Commerce Hackathon

1st Place: Maissan Bazazeh, Mohammad Mansour, Syed Ameen Uddin, Drones for Parcel Delivery

2nd Place: Maha Murad, Tamara Nasro, Sahar Naser, Jahizha - جَهْزَهَا

3rd Place: Fatima Dakalbab, Automated Trading Robot for FOREX Market with Machine Learning



Cybersecurity & Security Applications Competition



1st Place: Shaikha Alzaabi, Rawan Khanfar, Ruba Kharsa, Learning to Rank Approach in Software Defect Prediction

2nd Place: Hala Ghannam, Mariame Ebid, Drone Boxes Localization in Dubai

3rd Place: Maissan Salim, Hind Abdalla, Shaikha Ahmed, Hessa Hassan, Hessa Saeed, Drones in Search Application

Winning/Successful Stories

Programming Contest

1st Place: Kamel Aladdein Kamel Samara

2nd Place: Abdalrahman Mohamed Elsheikh Eltahir

3rd Place: Yaser Haitham Alesh



Research Informing Teaching

Teaching is a journey I live with each student and goes beyond the expectations. I enjoy the long-term mentorship where the university students' potentials are explored and their road is paved. "Students come first" and "An open door policy" are my central teaching principles. Teaching for me has different ways. One of the successful teaching experience is incorporating my research field and expertise in courses like software engineering for my undergraduate and graduate students. This showed great deal of engagement and inspiring results. For example, my students in Object Oriented Software Engineering master course last term have been asked to write research paper about software quality metrics on specific software project and to summarize their experiments and results in this paper. I have divided the students to work on real software projects in my research lab. They worked with senior research assistants and have conducted experiments on projects like: software defect detection, wearable devices to detect COVID, breast cancer detection, ...etc. Another example is the final project for my undergraduate software engineering course. Every term the students are engaged with real software project that is related to software company such as IBM, SUSE or IT department in specific organization like Dubai Police, Emirates NBD, IEEE Software Engineering Challenge...etc. The students have also access to my research lab to talk to my researchers and to use the lab resources such as servers, drones, Raspberry Pi, ...etc. Moreover, I invite the experts from these companies to talk to these students and guide them in the project scope. In addition, I do trips to these companies and organizations to see how software lifecycle models are applied and what are the best practices followed. All driven by continuous research efforts and R&D teams. Indeed, we can innovate more in our way of teaching when we engage our students in our research fields and apply the course concepts in these research projects. The students will have experience that they will remember for life.



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