Keynote Speaker 1

Dr. Yessine Hadj Kacem

Dr. Yessine Hadj Kacem is an Associate Professor in Computer Science at the Faculty of Economics and Management, Sfax University, Tunisia. He is also affiliated with the Computer and Embedded Systems (CES) research team at the National Engineering School of Sfax. He began his academic journey by earning a Bachelor's degree in Computer Science from the College of Science in Sfax in 2005. He then pursued a Master's degree in New Technologies and Dedicated Computing Systems in 2007 at the National Engineering School of Sfax. In 2012, he completed his Ph.D. in Computing Systems at the same institution. With a diverse and rich academic background, He has held several impactful roles in the field of computer science. He served as the Head of the Computer Science Department at the College of Computer Science, King Khalid University, Saudi Arabia, from January 2018 to June 2021. During this time, he made significant contributions to the accreditation processes of NCAAA and ABET and played a key role in the development of new study plans for both bachelor's and master's programs. His expertise spans educational data mining, model-driven engineering, schedulability analysis, and the verification of non-functional properties using high-level approaches. In his current role at Sfax University, Dr. Yessine is passionate about enhancing student skills development. His commitment to academic excellence is further demonstrated by his certifications in PMP, ISTQB, and Scrum, highlighting his dedication to fostering quality in software development. At Sfax University, Dr. Yessine's current focus is on student skills development, with a strong emphasis on accreditation and quality standards. His expertise in accreditation processes aligns seamlessly with his research endeavors in educational data mining, where he explores innovative ways to extract valuable insights from educational data to enhance teaching methodologies and learning outcomes.

Talk: Leveraging Artificial Intelligence for Quality Enhancement in Education

In an era of rapidly evolving technology and education paradigms, the role of data in shaping the quality of education has become paramount. This keynote presentation delves into the realm of Educational Data Mining (EDM) with a sharp focus on harnessing the power of Artificial Intelligence (AI) to elevate the quality of educational experiences. Educational institutions worldwide are sitting on vast repositories of data, ranging from student performance metrics to engagement patterns in online learning platforms. These data hold the key to understanding and optimizing the educational process. AI, with its capabilities in data analysis, pattern recognition, and predictive modeling, offers transformative potential in this context.

During this keynote, we will explore:

- The Data-Driven Educational Landscape: A comprehensive look at the wealth of data
- generated in educational settings and its impact on decision-making and quality enhancement.
- Artificial Intelligence in Education: An exploration of AI techniques such as machine learning, natural language processing, and computer vision and how they can be applied to educational data for insights, personalization, and assessment.

- Quality Improvement: Insights into how AI-powered analytics can identify at-risk students, optimize curriculum design, and enhance teaching methods, ultimately leading to improved learning outcomes and quality assurance.
- Ethical Considerations: A discussion of the ethical implications surrounding AI in education,including privacy concerns, bias mitigation, and responsible data usage.
- Future Horizons: A glimpse into the future of educational data mining and AI, including trends, innovations, and the potential to revolutionize education on a global scale.

Keynote Speaker 2

Nardjes Bouchamal Siari

Nardjes Bouchamak Siari is an Associate Professor at Abdelhafid Boussouf University Center of Mila, where she has specialized in the Internet of Things and Artificial Intelligence since 2010. She holds a Ph.D. in Artificial Intelligence from Constantine 2 University (2015). Her research is primarily centered on security within IoT environments, the development of intelligent systems for healthcare applications, and advanced solutions for crisis management. She is the Head of the Laboratory of Intelligent Systems and Informatics (LISI) in Mila University Center and a Senior Member of the IEEE Computer Society (IEEE ComSoc). She founded and presided over the IEEE NTIC Conferences and was selected as the Algerian Ambassador for IEEE initiatives focused on students and young professionals across the Middle East and North Africa. Her academic contributions include supervision of multiple doctoral theses and the authorship of patents in her areas of expertise. Currently, she is the Editor-in-Chief for an upcoming book on Intelligent Healthcare Systems and serves as the Director of the House of Artificial Intelligence.

## Talk: The Next Frontier: AI-Driven Autonomy in IoT Devices

The integration of AI with IoT began as a response to the vast amounts of data generated by IoT networks, which required advanced analytics to extract meaningful insights. Initially, AI in IoT focused on basic data processing and pattern recognition, helping early IoT systems to understand and react to simple conditions.

As computing power grew and machine learning algorithms evolved, AI's role expanded. IoT devices could now perform predictive analytics, allowing for preventive maintenance, resource optimization, and more efficient operations. The development of edge computing further empowered IoT, enabling AI-driven analytics to occur closer to the source of data directly on sensors and actuators reducing latency and enhancing real-time responsiveness.

Today, AI in IoT has reached a new frontier with autonomous devices. Technologies such as Federated AI, Tiny AI, and Edge Intelligence have unlocked the potential for self-sufficient IoT systems that can make decisions independently and securely, even in resource constrained environments. This level of autonomy enables devices to operate intelligently in complex, dynamic settings from smart cities and industrial automation to precision agriculture and healthcare.

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Keynote Speaker 3

Victor Chang
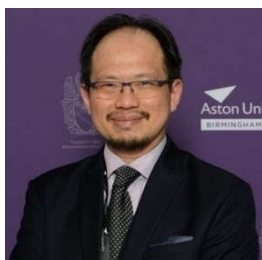
Prof. Victor Chang is a Professor of Business Analytics at Operations and Information Management, Aston Business School, Aston University UK, since mid-May 2022. He has deep knowledge and extensive experience in AI-oriented Data Science and has significant contributions in multiple disciplines. He won 2001 full Scholarship, a European Award on Cloud Migration in 2011, IEEE Outstanding Service Award in 2015, best papers in 2012, 2015 and 2018, the 2016 European award: Best Project in Research, 2016-2018 SEID Excellent Scholar, Suzhou, China, IEEE Outstanding Young Scientist award in 2017, IEEE 2017 special award on Data Science, 2017-2023 INSTICC Service Awards, Talent Award Suzhou 2019, Top 2% Scientist between 2019 and 2024, top Business Research Scholar, the most productive AI- based Data Analytics Scientist between 2010 and 2019, Highly Cited Researcher 2021, Top 125 British Computing Scientists 2022-2024 and numerous awards mainly since 2011.

Talk : Knowledge Graph & Deep Learning-based Text-to-GraphQL Model for Smart Medical Consultation Chatbot

Text-to-GraphQL is a task that converts the user's questions into Graph + QL (Query Language) when a graph database is given. That is a task of semantic parsing that transforms natural language problems into logical expressions, which will bring more efficient direct communication between humans and machines. The existing related work mainly focuses on Text-to-SQL tasks, and there is no available semantic parsing method and data set for the graph database. To fill the gaps in this field to serve the medical Human–Robot Interactions better, we propose this task and a pipeline solution for the Text2GraphQL task. This solution uses the Adapter pre-trained by "the linking of GraphQL schemas and the corresponding utterances" as an external knowledge introduction plug-in. By inserting the Adapter into the language model, the mapping between logical language and natural language can be introduced faster and more directly to better realize the end-to-end human–machine language translation task. The proposed Text2GraphQL task model is mainly constructed based on an improved pipeline composed of a Language Model, Pre-trained Adapter plug-in, and Pointer Network. This enables the model to copy objects' tokens from utterances, generate corresponding GraphQL statements for graph database retrieval, and builds an adjustment mechanism to improve the final output. And the experiments have proved that our proposed method has certain competitiveness on the counterpart datasets (Spider, ATIS, GeoQuery, and 39.net) converted from the Text2SQL task, and the proposed method is also practical in medical scenarios.

Keynote Speaker 4

Carlos Juiz García

Professor Carlos Juiz received his PhD degree in Informatics from the University of the Balearic Islands (UIB), Spain. He has got a postgraduate degree on Office automation Management from the Polytechnic University of Madrid, Spain. Before joining the Department of Computer Science at UIB, he had several positions related to the computer systems industry. From 1990 he was Systems Analyst in Xerox, leaving this position as Senior Analyst in 1999. He was visiting researcher at Department for Computer Science and Business Informatics, University of Vienna, in 2003 and Visiting Associate Professor at Biomedical Informatics Research, in 2011, at Stanford University. Carlos Juiz is heading the ACSIC research group (http://acsic.uib.es) and his research interest mainly focuses on performance engineering, Green IT and IT governance. He is co-author of more than 200 international papers (including journals, published reviews, proceedings and book chapters) and two university textbooks. Carlos Juiz has given about 50 international seminars and invited to conferences at numerous prestigious universities in the world. Carlos Juiz is senior member of the IEEE and also senior member of the ACM. He has also been appointed as a member of the Domain Committee on Cloud Computing from IFIP until 2017. Carlos Juiz was the Director of the Chair from Telefónica at UIB (2012-2014). He is one executive vice-president at the TURISTEC cluster and also board member of Balears.T cluster. He is the coordinator of the workgroup of Governance of IT AENOR, the Spanish body in ISO and coeditor of the ISO/IEC 38503 standard. Currently, He is Subdirector of the Laboratory of Entrepreneurship and Social Innovation at UIB.

Talk: On the Scalability of the Speedup considering the Overhead of Consolidating Virtual Machines in Servers for Data Centers

Virtualization technologies are extensively utilized in data centers, particularly cloud computing. This facilitates data center management and diminishes the number of physical machines (servers) and, subsequently, their cooling requirements, leading to cost, space, and power consumption reductions. When applications in data centers are executing independent parallel transactions but with similar performance requirements, which is typical in e-commerce, the appropriate level of virtual machine consolidation on a server poses a fundamental challenge for capacity planning. This keynote presents how Amdahl and subsequent performance laws should be evolved to evaluate the performance speedup achieved through virtualization on any kind of server and the effects of virtualization and consolidation overheads on physical or virtual machine scalability.