WESTERN SYDNEY UNIVERSITY

School of Computer, Data and Mathematical Sciences

HDR Seminar 29
Program
21 June 2023

Time	Session
1:00pm - 1:30pm	**Setup, Lunch, Network Social**
1:30pm - 2:00pm	**Briefing and Opening** **Recall and Summarize of HDR Forum, 3MT Competition and 2023 Writing Retreat** **Speaker:** Dr Kenan Matawie
2:00pm - 3:00pm	**Invited Speech** **Topic:** Enhancing Classroom Dynamics: Real-Time Assessment and Improvement of Student Engagement in Large Classrooms **Speaker:** A/Prof Fady Alnajjar Associate Professor at the United Arab Emirates University
3:00pm - 4:00pm	**Invited Speech** **Topic:** Applied Computational Intelligence: Concern and Directions for Real-Life Applications in Health **Speaker:** Prof Adel Al-Jumaily Professor at the University of Technology Brunei
4:00pm – 4:10pm	**Closing**

Venue: EA 1.04 (Parramatta South Campus)

Next Event: HDR Seminar 30 (26th July 2023)

Enhancing Classroom Dynamics: Real-Time Assessment and Improvement of Student Engagement in Large Classrooms

Speaker: A/Prof Fady Alnajjar

Biography:
Dr. Eng. Fady Alnajjar earned degrees in Computer Engineering, Artificial Intelligence, and Intelligent Systems Design Engineering from institutions in the UAE and Japan. As an Associate Professor at UAEU, he established the AI and Robotics Lab and developed AI curricula in the college of IT. With a passion for studying human behavior, Dr. Alnajjar delves into the intricacies of the brain's neural dynamics and cognitive functions, as well as neuromuscular strategies in learning, adaptation, and recovery. His knowledge in this area allows him to create bio-inspired AI technologies for adaptable robotic assistive devices and various autonomous assessment systems.

Abstract:
Real-time, comprehensive insight into students' attention and engagement within the classroom can provide valuable information on their interests in the covered class topics. This understanding holds the potential to significantly enhance student-cantered educational experiences. A variety of sophisticated artificial intelligence (AI) applications are currently being utilized to analyze and understand student behavior in classroom settings. Several of these applications purport to be effective in assessing students' level of interest or disinterest in a given class or topic, based on their behavior. Such technologies rely on tracking and analyzing visual data related to students' body language. This research introduces a real-time evaluation system for assessing student behavior in the classroom. By analyzing data captured through a web camera, the system provides a graphical representation of students' attention levels. Based on this information, pedagogical recommendations can be generated to support instructors in managing the classroom effectively and enhancing student engagement as required. By improving both student outcomes and instructors' teaching capabilities, our system seeks to elevate the overall educational quality.

Applied Computational Intelligence: Concern and Directions For Real-Life Applications in Health

Speaker: Prof Adel AL-Jumaily

Biography:
Prof. Adel AL-Jumaily is a researcher and academic leader with more than two decades of experience. He is a professor at the University of Technology Brunei and a professor Research-Fellow at ENSTA-Bretagne. His research area is Computational Intelligence and Humanized Computational Intelligence. He has published more than 250 peer-reviewed papers. He has 13 patents that 12 of which are sponsored by industry. Adel has supervised more than 40 PhD and master's students and received two supervision awards.

Abstract:
Applied computational intelligence (ACI) has the potential to revolutionize healthcare by providing personalized, adaptive, and anticipatory care. However, many challenges need to be addressed before these technologies can be widely adopted. One of the biggest challenges is real-time processing. Many healthcare applications require systems to be able to process data in real time. However, current ACI systems often struggle to keep up with the volume and speed of data generated in these environments. Another challenge is the small size of the data sets. Many healthcare applications require large data sets to train and validate ACI models. However, data sets in healthcare are often limited due to privacy concerns and the difficulty of collecting data from patients. Finally, ACI systems often require a long time to pre-process data before they can be used for training or inference. This can be a major barrier to adoption in healthcare, where time is often of the essence. Despite these challenges, there is a growing body of research on how to address them. This talk is exploring our work to solve several of new approaches, including:

- Developing new algorithms that can process data more efficiently.
- Finding ways to use smaller data sets to train and validate models.
- Developing methods for pre-processing data more quickly.
- Personalize treatment plans for patients.
- Provide real-time feedback.
- Other challenges that need to be addressed in future

These advances will make it possible to bring the benefits of ACI to a wider range of healthcare applications.