WESTERN SYDNEY UNIVERSITY

School of Computer, Data and Mathematical Sciences

HDR Seminar 13

Program

27 October 2021

4:00pm - 4:10pm	**Briefing** **Topic:** Policy update and announcements: university policy of back to campus **Speaker:** TBA
4:10pm - 4:40pm	**Invited Speech** **Topic:** Mapping population-level treatment patterns from administrative healthcare records **Speaker:** Dr. Madhushi Bandara - Postdoctoral Research Associate, Biomedical Data Science Laboratory, UTS Centre for Artificial Intelligence, School of Computer Science, Faculty of Engineering and IT, University of Technology Sydney, Australia.
4:40pm - 5:00pm	**Library Service Talk** **Topic:** Making publishers happy **Speaker:** Linda Thornely - School Librarian, School of Computer, Data and Mathematical Sciences, School of Engineering, Design and Built Environment, The Academy
5:00pm - 5:20pm	**Conference Presentation** **Topic:** Priority-based Traffic Management Protocol for Autonomous Vehicles on Road Network **Speaker:** Jianglin Qiao (PhD candidate 19469397) **Supervisory panel:** A/Prof Dongmo Zhang, Dr Dave de Jonge, Prof Simeon Simoff and Prof Carles Sierra
5:20pm	**Closing**

Venue: Online Zoom

Zoom ID: 886 7872 4041

Next Event: HDR Forum – 24th November 2021

Mapping population-level treatment patterns from administrative healthcare records

Speaker: Dr. Madhushi Bandara

Abstract:
Administrative healthcare records such as hospital registries and claim records from insurance providers contain a large volume of standardised information about an extensive patient cohort. Such dataset(s) can be an asset for population-level healthcare studies on how treatments are administrated in the real world and their compliance to clinical best practice guidelines. Funded by Cancer Australia, my team at UTS is working on developing a network science and machine learning based approach to analyse complex and noisy patient treatment records captured in administrative healthcare records that can identify comprehensible treatment patterns at the population-level. Our primary focus is on identifying treatment patterns that can capture sequential and temporal relationships in patient treatment records for high-incidence Cancers in Australia using National Hospital Data Collection linked with Medicare and Pharmaceutical Benefits Scheme records. In this talk I will present the research problems we are addressing, our current approach and our findings based on the BPIC'11 Hospital event log and MIMIC-III dataset, highlight existing challenges in population-level treatment pattern mining from administrative healthcare records.

Biography:
Dr. Madhushi Bandara is a Postdoctoral Research Fellow in the School of Computer Science at the University of Technology Sydney, Australia. She obtained her PhD in Computer Science and Engineering at the University of New South Wales. She was a lecturer at the University of Moratuwa, Sri Lanka and currently holds a casual lecturer position at the University of New South Wales. Her main research interests cut across the fields of network science, data science, knowledge graphs, and semantic web. In particular, she has applied her network science expertise for community detection in mobile call networks, modelling disease propagation and analysing cancer treatment pathways. Madhushi is the author of the Research Variable Ontology and DASE framework for representing and managing knowledge associated with organisational data analytics processes.

Madhushi has published 20+ peer-reviewed papers in high-quality international conferences and journals including the Semantic Web Journal, and Future Generation Computer Systems Journal and she is the chair of the IEEE EDOC 2021 workshop on AI for Health. She is actively engaged in practice-oriented research and has worked with industry partners such as Cancer Australia, Capsifi, LIRNEasia, Landcom NSW and Cognitivo Consulting to design and deliver knowledge representation and data analytics solutions.

Priority-based Traffic Management Protocol for Autonomous Vehicles on Road Network

Speaker: Jianglin Qiao (PhD candidate 19469397)

Abstract: This paper proposes a generic simulation platform in order to test traffic management protocols for autonomous vehicles. Firstly, we introduce the model as an abstraction of road networks and intersection relations. We provide a formal representation to describe a number of traffic management protocols based on priority over roads or vehicles. Based on the model, we developed a system that can simulate autonomous vehicles driving on a road network based on the platform AIM4. With the simulation system, we can test variety of properties of traffic management protocols with autonomous vehicles from macro and micro perspectives of traffic network.