



## HDR Seminar 37

# Program

24 April 2024

|                         |   |
|-------------------------|---|
| 12:00pm<br>-<br>12:25pm | <b>Briefing:</b> Associate Professor Quang Vinh Nguyen<br>Policy updates and announcements<br><br><b>Briefing:</b> Dr Kenan Matawie - APA MRes, MICT(Res), MAI(Res), DS(Res)<br>Announcements and related matters on Master Research Programs                 |
| 12:25pm<br>-<br>12:55pm | <b>Invited Speech</b><br><b>Topic:</b> Reinventing the wheel - RoboCup Small Size League at Western Sydney<br><b>Speaker:</b> Associate Professor Oliver Obst, Center for Research in Mathematics and Data Science, Western Sydney University                 |
| 12:55pm<br>-<br>01:25pm | <b>Invited Speech</b><br><b>Topic:</b> Win-Win when using a good loss-loss function<br><b>Speaker:</b> Associate Professor Laurence Park - Associate Dean, Learning and Teaching, Center for Research Mathematics and Data Science, Western Sydney University |
| 01:25pm<br>-<br>01:40pm | <b>Student Speaker</b><br><b>Topic:</b> Graphs in Trajectory Prediction: Beyond Distance<br><b>Speaker:</b> Vishal Patel<br><b>Supervisory Panel:</b> A/Prof. Laurence Park, A/Prof. Oliver Obst, A/Prof. Yi Guo.   |
| 01:40pm<br>-<br>01:55pm | <b>Student Speaker</b><br><b>Topic:</b> Why It's Not Easy (But Why We Want It)<br><b>Speaker:</b> Yubraj Jung Shah<br><b>Supervisory Panel:</b> A/Prof. Oliver Obst, A/Prof. Laurence Park, A/Prof. Yi Guo.   |
| 01:55pm                 | <b>Closing Remarks</b>  |

Venue: PS-EA.2.29

Meeting ID: 826 3788 3113

Password: HDR

Link: <https://uws.zoom.us/j/82637883113?pwd=dWV2V2xsbmZkRGhSTkZveUNRenI2QT09>

Next Event: HDR Seminar TBA

## **Reinventing the wheel - RoboCup Small Size League at Western Sydney**

**Speaker:** Associate Professor Oliver Obst

**Abstract:** “TurtleRabbit” is the new Western Sydney robotic soccer team, involving students from across the disciplines. RoboCup is an annual scientific competition and symposium that first took place in 1997, with the goal to foster research in AI and robotics. The WSU Team TurtleRabbit is a collaborative activity between students of the Robotics, Automation and Manufacturing club, supported by academic guidance. In the “Small Size League” teams of 6 robots (180 mm diameter, 150 mm height) play soccer against other teams, on a 6 m x 9 m field. The robots are designed and built from scratch. Participating in this league involves everything from CAD modelling, 3D printing, milling aluminium, soldering, working with electronics, programming, up to writing and reviewing papers.

In my presentation, I will talk about our progress so far, our plans for this and the next years, and also about some of the effort behind the scenes organising this activity.

## **Win-Win when using a good loss-loss function**

**Speaker:** Associate Professor Laurence Park

**Abstract:** A large part of data science and machine learning comes in the form of fitting statistical models to data. The goodness of fit of a model to data is measured using a likelihood or loss function. In this presentation, we will investigate the problem of multi-label learning and selection of an appropriate loss function for given data. P.S. The terms loss-loss was used in the title to match the win-win in the title. The talk is about loss functions, not loss-loss functions.

## **Graphs in Trajectory Prediction: Beyond Distance**

**Speaker:** Vishal Patel

**Abstract:** Graph-based model of the trajectory prediction has many advantages in understanding complex traffic scenarios. In this talk, graph theory is introduced and current applications of trajectories prediction models are presented. Limitations of current use and promising researches are also introduced focusing on the study of better graph construction link with a deeper input in traffic objects properties, gaining more accurate and intelligent system.

## **Why It's Not Easy (But Why We Want It)**

**Speaker:** Yubraj Jung Shah

**Abstract:** Autonomous vehicles are the emerging technology in today's world. These vehicles rely on computer vision technology and complicated hardwares. It is stressed that self-driving cars are powered with sophisticated sensors and high-performance computers that allow the vehicle to move on its own. The use of self-driving cars is immense. Moreover, it may provide the driver and the passengers with notably higher safety. If adopted by a sufficient number of people, self-driving technology may also decrease the amount of congestion on the roads. However, there are a number of drawbacks of the technology, too. One of the major ones is the high cost. Computer vision algorithms require high computational power. Which leads to excessive hardware costs. My talk will illustrate the current advancement of self-driving cars and the main challenges and benefits that they offer.