



We are delighted to bring out the 8th issue of our Centre's newsletter. We have started 2022 very strong, by hosting the third Women in Maths Day (yes in person) which has become an annual event in Western. The Centre has started hosting several overseas visitors again, has initiated bold projects along with other exciting activities which have been reported in this newsletter.

Women in Maths, 12 May 2022

Women in Mathematics Day at Western Sydney has become an annual event to celebrate the achievements and contributions of women active in Mathematics. It has been generously supported by Australian Mathematical Society (AustMS) and the School of Computer, Data and Mathematical Sciences. The day is held around Maryam Mirzakhani's birthday, who was the first ever woman to win the Fields medal.

At this year's event, we hosted some of the most successful female mathematicians in Australia, including Cheryl Praeger (a recipient of the Prime Minister Prize for Science in 2019). They provided an outline of their career paths, inspirations and challenges along the way, and a brief overview of what they are currently doing. We were delighted to see some of our (female) students attending the event. The Centre is very proud to support Women in Maths Day each year that showcases women mathematicians.



Pictured L-R A/Prof Leanne Rylands (WSU), Prof Barney Glover (Vice-Chancellor of WSU), Prof Cheryl Praeger (University of Western Australia), Dr Susan Wei (University of Melbourne) and Prof Natalie Thamwattana (University of Newcastle).

New Post-Doctoral Fellow for the Centre - Dr Azeef Parayil Ajmal



Azeef completed a Masters at the University of Hyderabad and obtained his Ph.D. from the University of Kerala. He spent a year at IISER Thiruvananthapuram as an Institute Postdoctoral Fellow before joining as a Postdoctoral Scientist at the Ural Federal University, Russia working with the eminent Russian algebraist Prof. Mikhail V. Volkov. After three years in Russia, in 2019, he moved to a teaching position at Prince Mohammad University, Kingdom of Saudi Arabia. This year, he joined WSU as a Postdoctoral Fellow in CRMDS working with the ARC Future Fellow **A/Prof. James East**.

Azeef's main research interest is in the algebraic theory of semigroups: focussing mainly on the interplay of categories and semigroups.

New Degrees in Mathematics and Data Science

Two of the members of CRMDS, **A/Prof Volker Gebhardt** and **A/Prof Laurence Park** (pictured below) were hard at work to introduce new degrees in Mathematics and Data Science. These degrees will produce a stream of new graduates in areas of STEM where there is a substantial shortage in Australia. Moreover, they can hopefully act as a pipeline feeding HDR students to the Centre.



Mathematics:

Mathematics is about using abstraction and logic to discover and understand patterns, and thus fundamental to understanding ourselves and the world around us. Broadly applicable analytic skills are the very reason why employers from a wide range of sectors cry out for mathematics graduates. Our Bachelor of Mathematics degree sets students up for success by giving them a broad basis in key areas of mathematics as well as the option to complete a major in an in-demand area of employment.



Data Science:

In today's and tomorrow's economy, making the best use of available data is essential in every profession. Never has there been more demand for graduates who understand the intricacies of extracting information and knowledge from data. Our Data Science programs blend skills from mathematics, statistics and computing to give students the edge.

CRMDS in Media

Prof Andrew Francis was interviewed in Parliament House in Canberra as an invited witness to the Senate Inquiry into Ministerial Interference with the ARC on March 9th. He also wrote an article in the Conversation about resigning from the College of Experts. The article was also published in the Guardian on the same day. You can read all about it [here](#).



The article generated quite a stir. He was interviewed by several media including:

- [Nature Media \(10th March\):](#)
- [Innovation Australia \(10th Jan\):](#)

Bold Initiatives



Two members of CRMDS, **A/Prof Oliver Obst** and **Dr. Russell Thomson** have been heavily involved in setting up SIMPaCT.

[SIMPaCT](#) is an innovative partnership program between Sydney Olympic Park Authority, Western Sydney University, Sydney Water, Monash University, ISF, ARCS, CTS, ERATOS, SAPHI and HARC. The aim of the project is to optimise water management and cooling capacity of a public park, with the opportunity to scale to other public spaces. A core component of SIMPaCT is a machine learning model, designed by Oliver and Russell, along with Bahman Javadi (SCDMS).

To further help with the implementation of the project, the School is currently advertising a [position](#) for a motivated Machine Learning Engineer who will implement data-driven models that help operate the current recycled water irrigation system and who will integrate real-time environmental sensing with forecasting and machine learning.



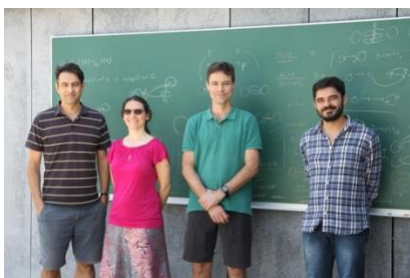
A/Prof Yi Guo has been involved in the establishment of a Medical INtelligence and Data Science Hub (or simply MINDS) at Campbelltown Hospital. It is a coalition of clinicians and data scientists including statisticians, mathematicians, and machine learners from WSU, for the integration of data science approaches in health care. It is research driven endeavour with education component as well for both our students and analytical minded clinicians. We are expecting MINDS to grow and have a substantial impact.

Visits and Visitors

A/Prof Volker Gebhardt hosted Prof. Fernando Szechtman from the University of Regina, Canada in April 2022. Their collaboration is broadly around algebra and abstract discrete structures.



Alfilgen Sebandal from the Mindanao State University, Iligan Institute of Technology (MSU-IIT) in the Philippines is visiting the CRMDS for six months. She is completing a PhD in algebra under the supervision Jocelyn Vilela (MSU-IIT) and **Prof Roozbeh Hazrat**.



Prof Roozbeh Hazrat spent two weeks at Mathematics Research Centre, Oberwolfach (MFO) Germany, working intensively with three colleagues, Daniel Goncalves and Luiz Cordeiro (Florianópolis, Brazil) and Elizabeth Gillaspay (Montana, USA) on non-commutative algebras.



A/Prof James East has been visiting the UK as part of an ARC Future Fellowship working on Diagram categories and transformation semigroups. During his visit he delivered several invited talks in York and St. Andrews.

James is pictured left on his last 'adventure' before returning home to Sydney. He cycled a total of 2754km in the Scottish land!



The Centre PhD student **Fabian Weigend**, under the supervision of **A/Prof Oliver Obst**, has completed his thesis entitled *A Generalised Hydraulic Performance Model For Intermittent Exercise*. He will be starting an exciting Postdoc program at the prestigious Arizona State University with the Interactive Robotics Lab of A/Prof Heni Ben Amor. He will be, of course, keeping his close relationship with CRMDS research activities.

The Centre is in the process of revamping its homepage. Visit our homepage [here](#).