



HDR Seminar 33

Program

31 October 2023

12:00pm - 12:15pm	Briefing: Dr Kenan Matawie Topic: Policy updates and announcements
12:15pm - 12:45pm	Invited Speech Topic: Designing Immersive Virtual Reality Technologies for Enrichment and Wellbeing Speaker: Dr. Kiran Ijaz, Lecturer Human-Computer Interaction, School of Architecture, Design and Planning, The University of Sydney
12:45pm - 01:05pm	Student Presentation Topic: Enhancing Financial Inclusion for Smallholder Farmers with Blockchain Technology Speaker: Malni Kumarathunga (Candidate ID: 19192143) Supervisory Panel: Prof.Athula Ginige, A/Prof.Rodrigo Calheiros
01:05pm - 01:25pm	Student Presentation Topic: Persistent Homology and Musical Harmonic Complexity Speaker: Riccardo Gilblas
01:25pm	Closing Remarks

Venue: PS.EA.2.29

Meeting ID: 873 2537 5829

Password: HDR

<https://uws.zoom.us/j/87325375829?pwd=SluYzZOK3VkNHbXtUdUNEVxUk1xQT09>

Next Event: HDR Seminar

28th November 2023

Designing Immersive Virtual Reality Technologies for Enrichment and Wellbeing

Speaker: Dr. Kiran Ijaz

Abstract:

Immersive Virtual Reality (VR) technology has the potential to revolutionize the way people experience the world. While VR is primarily associated with gaming and entertainment, it's also proving to be a powerful tool for enhancing cognitive and physical function, reducing social isolation, and improving overall quality of life. By using VR technology, people can now travel to new places, revisit cherished memories, and connect with loved ones in ways that might not be possible in the physical world. In this talk, I'll present the benefits of immersive VR and its use cases for physical and cognitive well-being. Current trends and challenges to ensure everyone can have safe access and use of VR technology.

Biography:

Dr. Kiran Ijaz is a Lecturer of Human-Computer Interaction at the University of Sydney. Her work focuses on Emerging Technologies design and development to support human flourishing and wellbeing. She is passionate about digital health technologies and their potential to support physical activity and mental wellbeing.

Enhancing Financial Inclusion for Smallholder Farmers with Blockchain Technology

Speaker: Malni Kumarathunga (Candidate ID: 19192143)

Abstract:

Smallholder farmers constitute about 70% of the global farming population and play a crucial role in global food production and security. Despite their significant contributions, smallholder farmers face numerous challenges in traditional agri-food systems, including limited market access, financial constraints, and lack of resources and technology. With an average annual income of just \$2000 from agriculture, they belong to the world's poorest populations. Financial inclusion is crucial for boosting productivity and improving the livelihoods of these farmers while mitigating food insecurity in developing economies. Yet, they are often excluded from formal financial institutions due to several barriers. The root causes behind these barriers are identified as lack of income and lack of proof of income and identity.

However, financial inclusion alone cannot generate benefits if there is a glaring absence of markets for farmers to sell their produce at higher rates to generate better income. When accessing existing marketing channels, farmers face numerous challenges, such as, unavailability of markets, price volatility, middleman intervention, lack of trusted buyers, information asymmetry, and high marketing and transaction costs. While digital markets have evolved to address these challenges, farmers still receive low rates for their harvest due to deficiencies in these markets. One key challenge is the lack of trusted buyers, which limits marketing options. Therefore, this research developed a novel market model, the Digital Trust Transformative Market (DTTM) model, that supports three markets: a spot market, a smart contracts market, and a smart futures contracts market, all in one platform, utilizing blockchain technology. The model offers a structured approach to establishing trust between farmers and unknown buyers, enabling farmers to generate higher incomes while addressing all the root causes of financial exclusion. Therefore, this research reveals how blockchain technology can revolutionize financial inclusion for smallholder farmers, paving a pathway for upgrading their livelihoods and alleviating poverty.

Persistent Homology and Musical Harmonic Complexity

Speaker: Riccardo Gilblas

Abstract:

Persistent Homology is one of the main tools in Topological Data Analysis. Given a set of data points, one can build an abstract mathematical object (a filtration of simplicial complexes) associated to it, which encodes some of the topological and geometrical properties of the data set. In order to extract features it, persistent homology provides a set of barcodes associated to the filtration, which can be further analysed with Machine Learning techniques. In this seminar, we will briefly introduce persistent homology and we will see an application to the modelling of the harmonic complexity of a musical piece.

Biography:

Master Degree in Mathematics at the University of Padua and University of Bordeaux in 2020. Master Degree in Piano Performance at the Conservatory “C. Pollini” of Padua in 2021. Since 2020, PhD candidate at the University of Padua and the University of Strasbourg, working on Math-Music research under the supervision of Luisa Fiorot and Moreno Andreatta. Currently visiting MARCS Institute under the supervision of Andrew Milne.