Five PhD student positions in the PERSWADE Center
(https://www.uts.edu.au/perswade)

$27,082 min per annum – Tax Free Scholarship Award, and a tuition waiver fee for qualified candidates.

Three Open Topic Positions

Center on Persuasive Systems for Wise Adaptive living (PERSWADE) is seeking outstanding PhD candidates who have transdisciplinary background and are passionate about turning scientific knowledge into action.

The research can focus on one of the following topics, depending on your interests and skills:

- Systems of systems, network of networks – how uncertainty propagates across scales in systems?
- Dynamics of public opinion in a changing environment – how analyzing social media we can understand behavior and preferences and how can we influence them?
- Standards and documentation -- how do we make our models and modeling process (including participatory modeling) reproducible, how can we learn from it, and how can we make such standards adopted by the modeling community?
- Networks and cascades of power – if the rich get richer and the poor get poorer, how can the system change?
- Optimization of socio-technical systems – what can we achieve if behavior change is one of the control parameters, which can be changed along with design and performance of supply systems?

Particular applications will be tailored to the interests and passions of the student, but will be concerned with such topics as resource scarcity, climate change, food security, energy efficiency, health and healthcare, etc.

Two Thematic PhD Positions

PhD1 'Disasters and urbanization': Natural disasters impact individuals, communities and cities across Australia on a regular basis. Bushfires, storms and floods may have catastrophic consequences, especially in urban and sub-urban areas with high density of population and properties. The growing frequency and severity of these hazards and the booming population trends call for smart urban expansion strategies, which support socio-economic resilience and minimize expected losses. Engagement of various stakeholders and search for synergies between private and public adaptation actions becomes central in the agenda of the Australian government, calling for the development of economic tools to quantify the impact of adaptation actions at various levels. While individual level actions – such as purchasing insurance, hazard-proofing a house and relocating to a safer place – reduce expected damages and improve resilience, this autonomous adaptation has limits. To be able to assess where these limits are, how they change over time, and how public policies can enhance autonomous adaptation, we need to quantify aggregated impacts of autonomous adaptation. This PhD project will develop a computational spatial agent-based model that traces the impacts of public and private adaptation to climate-driven hazards. This simulation model will

serve as an aggregation vehicle to trace changes in damages across scales as individuals and communities dynamically adapt to natural hazards. We focus on the impact on the housing sector since losses to real estate constitute the largest share of the direct damage from catastrophic events such as bushfires, storms and floods.

PhD2 'Housing bubbles and economic expectations': Housing markets are vital in supporting and redistributing wealth. Given unprecedented urbanization one could expect increase in property and land prices that potentially undermine inequality. At the same time, housing markets are known to experience sudden crashes raising the question about macro and microeconomic forces shaping economic bubbles. Price expectations of heterogenous economic agents and their interactions along the economic and social networks drive markets dynamics from the bottom up. At the same time, macroeconomic cycles also influence the housing sector. This PhD project will develop computational agent-based models to study economy as an adaptive complex system, focusing on housing markets in particular.

University of Technology Sydney School of Information, Systems and Modeling addresses complex environmental, societal and engineering issues by merging quantitative and qualitative methods. It explores the interfaces between people and systems to improve the effectiveness of enterprises, management and policy making through innovation in technology and communication.

Desired qualifications and skills

Depending on the particular topic that you choose to explore, we expect you to have a combination of some of the following skills:

- expertise and prior experience in social computing research, particularly with conceptual modeling of users' behavior on social media platforms;
- solid knowledge of simulation modeling, experience in system dynamics, social network analyses, Bayesian modeling or agent based modeling;
- design and analyses of surveys, good statistical skills;

Besides, all candidates should have:

- Excellent master's degree or bachelor's degree with honors in applied computer science, quantitative social sciences or environmental sciences;
- Practical experience with socio-environmental applications;
- Programming skills and experience with visualization and usability techniques;
- Excellent written and spoken English;
- Ability to work independently as a researcher and effectively in a team.

The scholarships carry a basic remuneration of $27,082 tax-free and waivers of the full-time research student fees. There are no restrictions on the nationality of the applicants and the selection will be based on the candidate's qualifications and experience.

How to apply

Interested candidates should follow the application procedure listed on the University of Technology Sydney's web pages: https://www.uts.edu.au/research-and-teaching/research-degrees/applying-uts/how-apply

and apply following this link:

https://msa.uts.edu.au/eStudent/S1/eApplications/eAppLogin.aspx?f=UTS.WAP.LOGIN.WEB.

Before the formal application please send: (1) a cover letter with your motivation to pursue PhD, (2) one page description of your research idea along the lines of the above-mentioned topics and (3) your CV with a list of publications and names of three referees to the emails below. For the Open topic positions please contact Prof. Alexey Voinov - Alexey.Voinov@uts.edu.au

For the Thematic positions please contact Prof. Dr. Tatiana Filatova - Tatiana.Filatova@uts.edu.au.

Positions will be open until filled. To be eligible for starting in July 2020, please apply before December 15, 2019. The positions will remain open until filled. Please check UTS application deadlines here (https://www.uts.edu.au/research-and-teaching/research-degrees/applying-uts/application-deadlines**).**