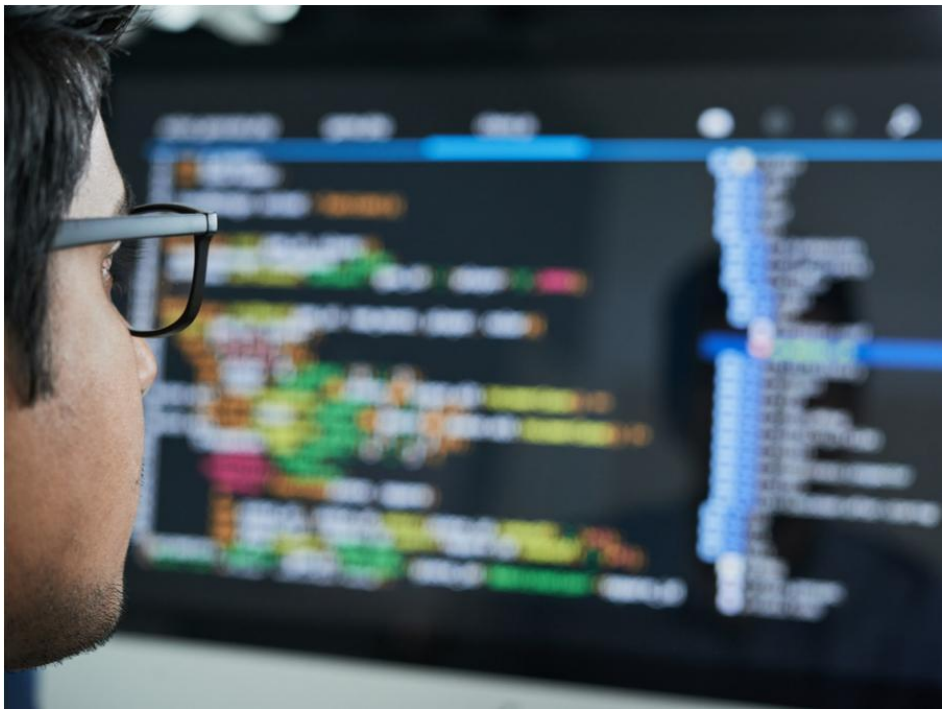
THE UNIVERSITY of ADELAIDE



Faculty of Engineering, Computer and Mathematical Sciences

BIO-INSPIRED COMPUTING FOR PROBLEMS WITH CHANCE CONTRAINTS

Up for a challenge? Join us to work on a research project with the School of Computer Science

At a Glance

Who can apply?

- Australian Citizens
- Onshore International students

Industry partner or funding body

- ARC Future Fellowship grant

Program of Study available

- Doctor of Philosophy (PhD)

Total annual stipend amount

- $28,597pa for 3 years with a possible 6 month extension

Start date

- As soon as possible

About the project

Bio-inspired algorithms have successfully been applied to a wide range of optimisation problems. Uncertainties in real-world applications can lead to critical failures of production schedules or safe critical systems. Chance constraints model such uncertainties and allow to limit the possibility of such failures. This future fellowship builds up the area of bio-inspired computing for problems with chance constraints. It develops high performing bio- inspired algorithms for stochastic problems where the constraints can only be violated with a small probability. The outcomes will lead to more effective and reliable optimisation methods for complex planning processes in areas of national priority such as mining and manufacturing.

Currently, around 20 researchers across several nationalities work in the Optimisation and Logistics group in the School of Computer Science.

The group collaborates with several of the major research institutions in Europe and the U.S. and has high international visibility.

In our theoretical research we analyze how bio-inspired computing methods and other search methods from the area of artificial intelligences work and show in a rigorous way how they are able to deal with different types of problems. Our theoretical research builds up a theory of bio-inspired computing and related search techniques that helps to develop new effective approaches based on theoretical insights. We also investigate problems in the areas of mechanism design and social choice and develop new approaches for dealing with game theoretic problems. Furthermore, we use artificial intelligence for the creation of digital art.

For more information, please visit http://cs.adelaide.edu.au/~optlog/

Eligibility criteria

- Excellent students with an interest in evolutionary computation and optimisation, who hold a Masters or Honours degree in Computer Science, Mathematics or Statistics would be especially suitable and encouraged to apply.
- Candidates with experience in the field of randomised methods, statistics and/or computational complexity of bio-inspired computation are highly sought after.
- Successful candidates will carry out theoretical or applied work on evolutionary algorithms, ant colony optimisation, and related bio-inspired computing methods for problems with stochastic constraints.
- Applicants with well-developed written and verbal communication skills will be considered favourably.
- Students applying for this scholarship should plan for a start date later than 31/07/2021.

Benefits

- Access to authorised travel and research project funds available
- Work alongside world leading researchers
- Our CaRST program: Free professional development to enhance your employability skills
- Exposure to industry networks and experts in the field
- No Tuition fees! These are waived for eligible candidates
- Access state of the art technology
- Become a field expert and make a real and contribute to solving global challenges
- Publish your contributions and impact our communities and society.

How to apply

- Complete an expression of interest and email together with a copy of your CV and transcripts and names and email address of 2 references
- Please submit by email in PDF format with subject 'PhD application: Bio-inspired computing for problems with chance constraints' to frank.neumann@adelaide.edu.au by 31 May 2021
- Once your initial eligibility assessment is approved, formally lodge an application for admission via the Adelaide Graduate Centre 'How to Apply' link. **Application dates are listed on the website.**

Researcher Profiles

- Use our Researcher Profiles to find out more about potential supervisors

More about ECMS

The Faculty of Engineering, Computer and Mathematical Sciences is home to world-class research institutes and centres, and internationally renowned academics at the cutting edge of research and discovery.

We are a thriving centre of learning, teaching and research in a vast range of engineering disciplines, computer science, machine learning and high-level mathematics as well as designing Human-centred, sustainable futures in our School of Architecture and Built Environments.

Many of our academic staff are leaders in their fields and graduates are highly regarded by employers.

Learn more about the Faculty of Engineering, Computer and Mathematical Science's Research capabilities at: https://ecms.adelaide.edu.au/research-impact

The University of Adelaide is an Equal Employment Opportunity employer. Women and Aboriginal and Torres Strait Islander people who meet the position requirements are strongly encouraged to apply.

FURTHER INFORMATION

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