



THE UNIVERSITY
of ADELAIDE



Faculty of Engineering, Computer and Mathematical Sciences

APPLICATION OF COMPUTER VISION TECHNOLOGIES FOR SIMULTANEOUS LOCATION AND TRACKING

Up for a challenge? Join us to work on a research project in conjunction with Codan and the Playford Trust

At a Glance

Who can apply?

- Australian Citizens
- Australian Permanent Residents

Industry partner or funding body

- Codan <https://codan.com.au/>
- Playford Trust <https://playfordtrust.com.au/>

Program of Study available

- Doctor of Philosophy (PhD)

Total annual stipend amount

- \$38,000pa (2021 rates if Commonwealth RTP scholarship secured)

Start date

- Plan for a start date of no later than May 2021.

About the project

Codan has formed a Research & Technology group to focus on core and emerging technologies related to the

field of Situational Awareness. Initial focus for this group will be the development of dissimilar technologies to support GPS-denied ranging, location, tracking and navigation. Ultimately the intent is to de-risk technology components suitable for product development and then to integrate technologies in order to develop a hybrid non-GPS solution based upon visual, inertial and radio frequency data.

Your aim is to build a real-time 3D reconstruction technology for localization to be used in GPS denied positioning. This will involve capturing stereo camera images with an acceptable level of uncertainty in real-time environment and generating real-time position by

analysing and understanding the images.

You will lead all the processes from data collection, cleaning, and pre-processing to training models and deploying them to software and/or hardware systems.

Responsibilities

- Understanding research objectives and developing models that help achieve them and metrics to track their progress.
- Analysing the Vision systems that could be used to solve a given problem and ranking them by their success probability.
- Data storage and retrieval from various types of documents such as word, excel, PDF, images, videos, etc.
- Exploring and visualizing data to gain a deeper understanding.
- Defining data and algorithm validation strategies. Verifying and validating data, its quality, and ensuring it via data cleaning.
- Supervising the data acquisition process if more data is needed.
- Defining data augmentation pipelines.
- Training models and tuning their hyperparameters.
- Analysing the errors of the model and designing strategies to overcome them.
- Deploying models to hardware and/or software applications.

Eligibility criteria

- The ideal candidate will be passionate about computer vision, deep learning, and artificial intelligence in general, and stay up-to-date with the field's latest developments.
- Excellent students with knowledge and experience in stereovision, feature extraction, object detection and tracking, machine learning (LR, SVM), neural networks (CNN)

- Experience in a Deep Learning framework such as Tensorflow or Pytorch is essential and experience in applying Deep Learning on visual and/or geometric data is a must.
- People with skills in Python (scikit-learn, pandas, numpy, SciPy), C++, PyTorch/TensorFlow/Keras and OpenCV would be especially suitable and encouraged to apply.
- Applicants with well-developed written and verbal communication skills will be considered favourably.
- Students applying for this scholarship should plan for a start date as soon as possible.
- Be willing to provide your personal details to Codan by way of a Student Deed Poll.

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 to tat-jun.chin@adelaide.edu.au
- Once you have an academic reference from your University, lodge an application through the Playford scholarships website

<https://playfordtrust.com.au/project/codan-playford-trust-phd-scholarships/>

- Once you are accepted, formally lodge an application for admission and scholarship via the Adelaide Graduate Centre 'How to Apply' [link](#).

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

For a confidential discussion contact:

Name: [Prof. Tat-jun Chin](#)

School of Computer Science – Australian Institute for Machine Learning

The University of Adelaide SA 5005 Australia

TELEPHONE +61 8 8313 6188

EMAIL tat-jun.chin@adelaide.edu.au

WEBSITE adelaide.edu.au

CRICOS 00123M