OSCAR TIN YIU LAI

Australian Citizen

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PERSONAL STATEMENT

I am an enthusiastic individual who persuades to exceed expectations. Collaboration and working as a team always help me to think in a new angle. I am interested in solving complex challenges while developing an elegant solution and algorithm. The world of abstract thinking brings the beauty of simplicity. To me, engineering is about simplifying complexity.

EDUCATION

University of Sydney, Camperdown, NSW 2006   Mar 2018 – Present

Doctor of Philosophy *in Engineering & Information Technologies*

▷ Research interests: Machine learning in field Robotics on Reinforcement Learning
▷ The aim is to develop reinforcement learning (RL) agent that can learn policies directly from high-dimensional sensory inputs, and makes value judgement based on both spatial and temporal scale by estimating total rewards that an agent can expected with minimal human interference.

University of Sydney, Camperdown, NSW 2006   Mar 2013 – Nov 2017

B. Civil Engineering *in Structural* & B. Science *in Computer Science (Honours Class I)*

▷ Civil Engineering specialised in Structural, core studies included:
  - Steel Structural Behaviour   - Geotechnical Techniques   - Fluid Behaviour
  - Reinforce Concrete Design   - Site Surveying   - Project Management
▷ Computer Science major core studies included:
  - Algorithm Complexity & Development   - Language / Compiler Implementation
  - Object-Oriented Software Design   - Artificial Intelligence

Cherrybrook Technology High School, Cherrybrook, NSW 2126   Jan 2006 – Dec 2012

HSC Subjects in: - English   - Engineering   - Mathematics   - Mathematics Ext.1
                      - Japanese   - Chemistry   - Physics

▷ First in school in *Mathematics, Engineering.*
▷ HSC Band 6/E4 in in *Mathematics, Mathematics Extension 1, Engineering, Japanese*

WORK & EXPERIENCE

University of Sydney Library   Aug 2018 – Present
Peer Learning Advisor   *Sydney, Australia*

· Provide roving peer to peer support to students from a range of disciplines
· Facilitate workshops, services, forums and online communities to engage and help students
· Prompt innovation technology, e.g., 3D printer, digital carving machine, recording studio, and VR

National Institute of Informatics   Jan 2019 – Mar 2019
Invited Researcher   *Tokyo, Japan*

· Invited to an Unmanned aircraft system Traffic Management (UTM) lab to work on a deep learning based computer vision model, designed for drone-assisted applications like search & rescue or surveillance
· Developed a working prototype that can perform simultaneous human detection and activity recognition real-time using only the onboard camera and processing power

University of Sydney – ITAS
Indigenous Tutorial Assistance Scheme Tutor
Apr 2016 – Oct 2018 (Seasonal)
Sydney, Australia

· Helped indigenous students whose in Indigenous Tutorial Assistance Scheme (ITAS)—an academic initiative of the Commonwealth Government's tutorial support scheme
· Provided academic supports for their understanding of academic concepts, assignments and exams
· Rehired throughout different semesters *(Apr – Jul 2016; May – Jul 2017; Apr – Oct 2018)*

AECOM
Internship - Geotechnical Intern
Dec 2016 – Feb 2017
138 Shatin Rural Committee Road, Hong Kong

· Worked in a geo team that mainly focus on ELS (Excavation Lateral Support) and site monitoring
· Tasks included checking force balance/rotational moments within struts, designing different stages within an excavation, providing temporary work for structural support
· Scheduled laboratory triaxial test of on-site drillholes, to obtain soil properties and site profile
· Used PLAXIS to obtain diaphragm walls forces, and SLOP/W & SEEP/W for modelling soil behaviour
· Involved in projects such as HK Metro Station Excavation, HK Airport Sub-sea Tunnel monitoring, etc.

Meinhardt (C&S), Hong Kong Limited
Internship - Structural Team Trainee
Dec 2015 – Feb 2016
33-35 Wong Chuk Hang Rd, Hong Kong

· Tasks includes modifying amendments for building department submission, updating CAD files of drafting, modelling collision impacts, verifying building standards calculations via ETABS & SAFE
· Worked as a group to check calculation of safety measure, e.g., connections and member capacity checking
· Created 3D models of structural interior or temporary work via software like Sketchup and Navisworks
· Involved in projects such as Ocean Park stadium tender, Boiler upgrades, HK airport hangar design

University of Sydney – Club & Societies
Voluntary uni club executive
Mar 2013 – Nov 2017
Sydney, Australia

· Organised, planned, and led social activities for uni students to facilitate student engagement
· Supervised and held general meeting and AGM with other club executives
· Communicated with uni coordinators, speakers, professors whenever needed

Cherrybrook Technology High School
Private tutor
Nov 2012 – Aug 2013
Sydney, Australia

· Provided private tutoring twice a week to high school students on Maths & Physics
· Developed lessons and activities to teach students with improved study skills and test scores

Awards & Scholarships

University of Sydney Postgraduate Awards (UPA)
Scholarships Office
Mar 2018
University of Sydney

· Designed to assist with general living costs and are awarded to students of exceptional research potential to undertake a higher degree by research at the university

Research Training Program (RTP) Scholarships
Department of Education and Training
Mar 2018
Australia Government

· Provides block grants to support both domestic and overseas students undertaking Research Doctorate and Research Masters degrees

University of Sydney Honour Roll
2017 University of Sydney Honour Roll
2017
University of Sydney

· Awarded to students of distinction through the conferral of graduates honours from the Faculty of Engineering and Information Technologies

School of Information Technologies High Honour Roll
School of IT 2016 Awards Ceremony

Apr 2016

University of Sydney

· Awarded to individuals with distinguish results in IT unit of studies in 2015

School of Civil Engineering Paddle Pop Stick Bridge Competition
School of Civil Eng. : Intro. to Eng. Disciplines (ENGG1800)

Jun 2014

University of Sydney

· Competition joint sponsored by *Robert Bird Group* and *Talis Civil Pty Ltd*, on designing and building a paddle pop stick bridge that has maximum structural efficiency (best strength-to-mass ratio)
· Won cash-prize: 2nd Prize \$450 (overall) + Best on Afternoon \$100 (class division)

Distinguished Achievers Award
2012 Higher School Certificate (HSC)

2012

Board of Studies, NSW Australia

· Certificates for *Distinguish Achievement* (highest level of performance) in HSC: awarded for *Mathematics*, *Mathematics Extension 1*, *Engineering Studies*, and *Japanese Beginners*

High School Academic Award
Year 12 Academic Award Ceremony

2012

Cherrybrook Technology High School

· Academic Awards for ranking 1st in *Mathematics*, and *Engineering Studies* in the entire school

Publications

Tin Lai, Fabio Ramos, and Gilad Francis. Balancing global exploration and local-connectivity exploitation with rapidly-exploring random disjointed-trees. In *Proceedings of The International Conference on Robotics and Automation (ICRA)*. IEEE, 2019 [arXiv, video]

F. Tahmasebinia, M. Niemelä, S.M. Ebrahimzadeh Sepasgozar, T.Y. Lai, W. Su, K.R. Reddy, S. Shirowzhan, S. Sepasgozar, and F.A. Marroquin. Three-dimensional printing using recycled high-density polyethylene: Technological challenges and future directions for construction. *Buildings*, 8(11), 2018 [article]

Tin Lai. Numerical modelling of structural behaviour of continuously reinforced concrete pavement. Bachelor's Honours Thesis, Oct 2017 [engrXiv]

Personal Strengths

Key Skills
Critical thinking in approaching challenges
Quick adaptation in unseen environment
Visualise complex problem w/ abstract thinking

Language
Bilingual in *English, Cantonese*
Basic in *Mandarin, Japanese*

Technical Strengths

Computer Languages	C/C++, Java, Python, Go, LaTeX, PostgreSQL, HTML, PHP, jQuery, JavaScript, CoffeeScript, MATLAB, R, VBA, Shell Scripts, Processing, Lisp, Haskell, ProLog, ANTLR4
Professional Applications	AutoCAD, MatLab, Google Sketchup, Weka, Strand7, Abaqus FEA, RAPT, ETAB, SAFE, PLAXIS, SLOP/W, SEEP/W, Navisworks
General Software & Tools	Microsoft Office suite, iWork, Adobe Photoshop, Illustrator
Operating Systems	Linux variants, MacOS X, Windows, ROS
Miscellaneous	Software configuration management, strong verbal and written communication skills, excellent troubleshooting and debugging skills, exceptional problem solving skills