

# OSCAR TIN YIU LAI

Australian Citizen

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U13 4-8 Mildred Ave, Hornsby, NSW 2077

## PERSONAL STATEMENT

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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

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**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 *Mathematics, Mathematics Extension 1, Engineering, Japanese*

## PUBLICATIONS

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

## AWARDS & SCHOLARSHIPS

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**University of Sydney Postgraduate Awards (UPA)**

Mar 2018

*Scholarships Office*

*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**

Mar 2018

*Department of Education and Training*

*Australian Government*

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

### **School of Information Technologies High Honour Roll**

Apr 2016

*School of IT 2016 Awards Ceremony*

*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**

Jun 2014

*School of Civil Eng. - Intro. to Eng. Disciplines (ENGG1800)*

*University of Sydney*

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

### **Distinguished Achievers Award**

2012

*2012 Higher School Certificate (HSC) in NSW*

*Cherrybrook Technology High School*

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

### **High School Academic Award**

2012

*Year 12 Academic Award Ceremony*

*Cherrybrook Technology High School*

- Academic Awards for ranking 1<sup>st</sup> in *Mathematics*, and *Engineering Studies* in the entire school

## **WORK & EXPERIENCE**

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### **University of Sydney Library**

Aug 2018 – Present

*Peer Learning Advisor*

*University of Sydney, Camperdown, Sydney*

- Provides 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

### **University of Sydney – ITAS**

Apr 2016 – Present (Seasonal)

*Indigenous Tutorial Assistance Scheme Tutor*

*University of Sydney, Camperdown, Sydney*

- Help indigenous students whose in Indigenous Tutorial Assistance Scheme (ITAS), an academic initiative of the Commonwealth Government's tutorial support
- Academic supports for their understanding of academic concepts and assignments
- Rehired throughout different semesters (*Apr – Jul 2016; May – Jul 2017; Apr 2018 - Present*)

### **AECOM**

Dec 2016 – Feb 2017

*Geotechnical Intern*

*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
- Schedule laboratory triaxial test of on-site drillholes, to obtain soil properties and site profile
- Use PLAXIS to obtain diaphragm walls forces, use SLOP/W and SEEP/W for modelling soil behaviour
- Involved in projects such as HK Metro Station Excavation, HK Airport Sub-sea Tunnel monitoring etc.

### **City University of Hong Kong**

Dec 2015 – Dec 2016

*Part-time Voluntary Research Helper*

*Tat Chee Avenue, Kowloon, Hong Kong*

- Worked remotely on research project titled *Daylighting simulation in Hong Kong Buildings*

- Used Matlab to simulate the indoor lighting profile under different structural layouts

### **Meinhardt (C&S), Hong Kong Limited**

*Structural Team Trainee*

Dec 2015 – Feb 2016

*33-35 Wong Chuk Hang Rd, Hong Kong*

- Work on amendments from building department, updates CAD files of draftings
- Modelling collision impacts, performing calculation via ETABS, SAFE etc. against building standards
- Work as a group to check calculation of safety measure; eg. connections and member capacity checking
- Create 3D models of structural interior or temporary work via software like Sketchup and Navisworks
- Been involved in projects such as Ocean Park tender, Boiler upgrades, HK airport hangar design etc.

### **University of Sydney – Club & Societies**

*Voluntary uni club executive*

Mar 2013 - Nov 2017

*University of Sydney, Camperdown, Sydney*

- Organizing, planning, and leading social activities that are targeted towards uni students
- Supervising and holding official meetings with other club executives
- Communicating with uni coordinators and professor whenever needed

### **Cherrybrook Technology High School**

*Private tutor*

Nov 2012 - Aug 2013

- Provide private tutor twice a week to high school students taking Maths & Physics
- Develop lessons, activities to teach students with improved studying skills and test scores

## **PERSONAL STRENGTHS**

### **Key Skills**

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

### **Language**

Fluent in *English, Cantonese*  
Intermediate in *Mandarin, Japanese*

## **TECHNICAL STRENGTHS**

### **Computer Languages**

C/C++, MATLAB, Java, Python, PostgreSQL, HTML, JavaScript, CoffeeScript, jQuery, Lisp, Haskell, ProLog, ANTLR4

### **Professional Applications**

Abaqus FEA, MatLab, AutoCAD, ETAB, SAFE, PLAXIS, SLOP/W, SEEP/W, Google Sketchup, Navisworks

### **General Software & Tools**

Word, Excel, PowerPoint, Publisher, iWork, L<sup>A</sup>T<sub>E</sub>X, Adobe Photoshop, Illustrator

### **Operating Systems**

Linux, MacOS X, Windows, Robot Operating System (ROS)

### **Miscellaneous**

Software configuration management, strong verbal and written communication skills, excellent troubleshooting and debugging skills, exceptional problem solving skills