Contact Details
+61 410 092 367
Kelvin.Hsu@sydney.edu.au
Kelvin's LinkedIn

KelvinHsu

Machine Learning PhD Candidate and Engineer

View my transcript

Professional & Research Experience

11/2014 - 07/2017

Associate Software Engineer (Machine Learning) Data61, CSIRO (Formerly NICTA)
Machine Learning Research Group, *Engineering & Technology Development*
Project: *Big Data Knowledge Discovery* (*Link 1*) (*Link 2*)

- Developed and implemented Gaussian process (GP) based active sampling technique
- Main contributor to a GP **python** library for regression and classification problems
- Developed and applied Gaussian Process techniques to active learning of information
  See my ACRA 2015 paper here and *my honours thesis here*
- Assists research in Bayesian Optimisation and Automatic Machine Learning
- Implements state-of-the-art ML algorithms with modern tools such as **Tensorflow**

"Kelvin's active sampling work has **made feasible** *the simulation work currently undertaken by Ecologists at Macquarie University, which would otherwise cost expensive computing resources and many months in time." (Link)*

-**Dr. Simon O'Callaghan**, Senior Research Engineer

11/13 - 02/14

Software Engineering Intern (Space Science) CSIRO Astronomy & Space Science
Project: *Astronomical Source Finding - Interactive Data Visualisation*

- Developed & released an **interactive data visualisation software** in **python**
  Intuitive for analysing radio astronomical data with *Duchamp*
- Produced & released modular parameter tracking software for *Duchamp*
- Collected and reduced astronomical data on my trip to *ATCA*
  Further analysed and deduced inter-galaxy interactions from HI radio emission data

"Kelvin has built a very impressive graphical interface that allows astronomers to make better sense, more quickly, of the results of their Duchamp search. It was a complex task, requiring **understanding of the various data structures and strong python programming skills***." (Link)*

-**Dr. Matthew Whiting**, Research Scientist (Computing) & Manager

11/12 - 03/13

Research Scholar (Medical Physics) The Institute of Biomedical Engineering and Technology

- Facilitated research in an emerging medical imaging technology
- Simulated ultrasound response of bio-tissues under magnetic stimulation
- **Verified** the physical processes involved as originally proposed (MATLAB)
- **Demonstrated** possibility of performing tumour treatments without direct physical contact

"He took this project well in his stride, requiring little supervision and assistance. He was **able to solve problems** *on his own and by liaising with industry supervisors. In my experience this is fairly rare with engineering students who have not been exposed to research." (Link)*

-**Dr. Alistair McEwan**, Senior Lecturer & Research Project Supervisor

Teaching Experience

02/13 - Now **Tutor** School of IT, AMME, Business Analytics, Mathematics & Statistics (University of Sydney)

- ENGG1801 (MATLAB Programming, 2013 - 2018): *Tutor Excellence Recommendation*
  See anonymous student comments on my *LinkedIn*
- AMME3500 (Control Systems, 2016), AERO4701 (Satellite Technology, 2016)
- COMP5318, QBUS6002, & QBUS3820 (Machine Learning & Data Science, 2017 - 2018)
- QBUS6810 (Statistical Learning, 2018), QBUS6820 (Business Risk Management, 2017)
- **99% positive student evaluations**, 1% neutral, citing clear and engaging style of teaching

"Kelvin is a very **motivated** *individual who enjoys the work that he is engaged in – not just tutoring, but also his academic studies and research projects that he has been involved with." (Link)*

-**Dr. Jason Chan**, ENGG1801 Course Coordinator & Lecturer

Education

2016 - 2019 **Doctor of Philosophy (Machine Learning)** University of Sydney

- Advisor: Fabio Ramos, Collaborator: Richard Nock, ANU & Data61
- **Bayesian Inference in Implicit Models using Conditional Kernel Embeddings**
- **One sentence** research question: How can we still efficiently infer uncertainties in our model and perform inference when the model cannot even be expressed explicitly?
- Experienced in: Statistical Learning, Bayesian Inference, Kernel Methods, Gaussian processes, Bayesian Optimisation, Active Learning, Reinforcement Learning, Neural Networks, and Deep Learning
- Link to our *paper* to be submitted and *appendix*

2011 - 2015 **Bachelor of Engineering (Mechatronic & Space Engineering) & Bachelor of Science (Advanced Mathematics)** University of Sydney

Science Majors: (Applied) Mathematics, Financial Mathematics & Statistics
Graduated with First Class Honours* and the University Medal** (Overall Average: 90) *Link*

Achievements & Awards

- University of Sydney Academic Merit Scholarship & Prize (2011 - 2015)
- Dean's List of Excellence in Academic Performance (2011 - 2015)
- Top 3 Presenter for Honours Thesis (2015)

Projects

- UAV (Drone) Safety Subsystem with *Flirtey* (2014)
- CubeSat Development under QB50 regulations; Lead Presenter at *AIAA* (2014)
- Project Leader in Star Tracker Development with PIC18 microcontroller (2014)
- Research Leader in Physics Talent Program on Solar Energy (2014)
- State and National Finalist in Engineers Without Borders Challenge (2011)

(* Research resulted in publication, ** Recognized for First Rank in Honours Degree)

Miscellaneous

Tools: Operating System - Linux, Windows, and Mac, Languages - Python, MATLAB, and C

Hobbies: You can find me busking on the streets of Sydney on weekends with our acoustic band. I sing and play the guitar and keyboard. We also perform at weddings, cafes, and various social events.