David Wu

Curriculum Vitae

Personal Details

Visa Status	New Zealand Citizen
Location	Melbourne, VIC, Australia
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Work Experience

Monash University March 2023 - Present

Research Fellow – Dept. Econometrics and Business Statistics, Full-time

- Modelled movement of patients between Victorian healthcare facilities using stochastic simulation and network analysis methods in Python.
- Implemented a data cleaning and processing tool using polars, published on pypi as hospinet.
- Report and presentation writing using Quarto and LaTeX.
- Organised seminars for the NUMBAT group, and tutored for courses in the department on reproducible data practices.

Te Pūnaha Matatini / Covid Modelling Aotearoa July 2020 - Feb 2023

Research Assistant, Casual

- Developed a bespoke Python package for stochastic epidemic simulation on bipartite networks to support the New Zealand Government's decision-making during COVID-19.
- Implemented of a novel non-Markovian event-driven simulation method for a system with over 5 million agents using high-performance computing.
- Statistical analysis and reporting with pandas and LaTeX.

University of Auckland Feb 2019 - June 2022

Teaching Assistant – Dept. Engineering Science, Part-time

- Developed teaching content, delivered tutorials, and performed administration for undergraduate-level laboratory sessions on numerical methods and software development practice in Python, MatLab, and C.

Orion Health Jan 2018 - Nov 2018

Software Engineer, Full-time

- Migrated Elasticseach and Ansible Tower instances on AWS.
- Implemented jumphost and internal workspace tooling.
- Contributed towards ongoing maintenance and automated deployment of Elasticsearch and Rhapsody (electronic health record interoperability platform) services on AWS.

Education

PhD Engineering Nov 2018 - Sept 2022

Dept. Engineering Science, University of Auckland

Thesis Topic: *Computational Methods in Epidemic Simulation, Inference and Uncertainty Quantification*

Modelled epidemic outbreaks of measles in Western Samoa and COVID-19 in New Zealand. Developed a procedure for prediction and statistical inference of misspecified dynamical system models. Explored methodology for inference of stochastic dynamics on networks using surrogate modelling.

BE(Hons) Engineering Science Class of 2017

University of Auckland

GPA: 8.55/9.00 (A/A+ average)

Thesis Topic: *Mechanistic Modelling of the Immune System's Impact on Health*

Courses in numerical methods for modelling physical systems, operations research and optimisation, and data analysis.

Skills

Languages	English, Cantonese Chinese, Mandarin Chinese
Programming	Python, bash, SQL, LaTeX, MatLab, C++, R
Software	AWS, MS Excel, Ansible, GIMP

Software

hospinet	Python port of HospitalNetwork R package that cleans a patient admission database and generates a temporal network of patient transfers.

Awards and Honours

2023	2nd Place, UN Datathon (Down Under Data Wizards team)
2020	New Zealand Prime Minister's Science Prize (Te Pūnaha Matatini COVID-19 group)
2018	University of Auckland Doctoral Scholarship
2015-2017	University of Auckland Faculty of Engineering Dean's Honours List
2016 S2	First in Course Award for MATHS340 (Real and Complex Calculus)