BOXIANG (WILLIAM) FU

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EDUCATION

Carnegie Mellon University *2024 - 2026*
M.Sc. in Robotic Systems Development (GPA 4.0)

University of Melbourne *2019 - 2023*
B.Sc. in Mathematical Physics (*Rank: 2nd/2400+ [Proxime Accessit], First Class Honours, WAM 95.714*)
B.Com. in Economics and Finance (*Rank: 1st/1800+ [University Medalist], First Class Honours, WAM 95.105*)
Dip.Lang. in Chinese Studies (*Second Class Honours Division A, WAM 78.750*)

RESEARCH EXPERIENCE

Non-Rigid Multi-Perspective Camera Pose Estimation *Dec 2023 - Apr 2024*
Mobile Perception Lab, ShanghaiTech University *Shanghai, China*

- Offered mathematical and physics-based guidance to extend the static non-rigid multi-perspective camera pose estimation problem to the dynamic case involving all 6 degrees of freedom.
- Participated in building a dynamic physics-based deformation model of a non-rigid multi-perspective camera system using a convolutional neural networks. Primarily responsible for mathematical and physical derivations.

Quantum Proof of Work Algorithms *Nov 2022 - Feb 2023*
BTQ Lab, Macquarie University *Sydney, Australia*

- Proved the sufficient conditions for the existence of a Nash equilibrium payoff mechanism that incentivizes honest behaviour and penalizes cheating behaviour in a non-deterministic proof of work boson sampling consensus protocol.

Geothermal Energy: Economics and Technical Viability *Jan 2022 - Jan 2023*
The University of Melbourne *Melbourne, Australia*

- Determined the commercial viability of various sustainable hybrid energy projects in the Latrobe Valley region and developed a geothermal drilling cost estimation algorithm for drilling and building a generic bore hole and well.

PUBLICATIONS [Full List]

- Singh, D.; Muraleedharan, G.; **Fu, B.**; Cheng, C.; Newton, N.; Rohde, P.; Brennen, G. Proof-of-Work Consensus by Quantum Sampling. ArXiv Preprint 2024. https://doi.org/10.48550/arXiv.2305.19865
- **Fu, B.**; Beardsmore, G.; Webster, R. Economic Performance Indicators for a Geothermal Aquatic Center in Victoria, Australia. Energies 2023, 16, 2134. https://doi.org/10.3390/en16052134
- Research posters on quantum key distribution [1], lattice reduction with applications to cryptography [2], and Latrobe valley geothermal economic modelling [3]

PROJECTS [Full List]

- Currently the sensing lead at CMU's Lunar ROADSTER team supervised by Prof. Red Whittaker building a lunar rover for autonomous trial grooming and earthworking [Website]
- Implemented a 3D reconstruction algorithm from multi-view 2D detections using the eight-point epipolar geometry algorithm with bundle adjustment [Repo]
- Implemented and simulated an Extended Kalman filter and Particle filter for pose estimation [Repo]
- Implemented and simulated a cascaded and L-1 adaptive controller on a quadrotor drone [Repo]

AWARDS AND EDUCATIONAL ACHIEVEMENTS [Full List]

- Proxime Accessit (B.Sc.) (2023)
- Leaders in Communities Award (2022)
- School of Physics Laby Research Scholarship (2022)
- Melbourne National Merit Scholarship (2018)
- University Medal (B.Com.) (2021)
- Dean's Honours List (all year levels) (top 3%)
- School of Mathematics Vacation Scholarship (2022)
- Goda Firkins Academic Medal of Excellence (2017)

EXTRACURRICULAR ACTIVITIES

Physics Students' Society (University of Melbourne) *2021-2022*
Treasurer

Chinese Students and Scholars Association (University of Melbourne) *2019-2022*
Treasurer (2021-2022), Department of Organization and Events (2019-2021)

TECHNICAL COMPETENCIES AND PERSONAL INFORMATION

Languages	English (Bilingual), Chinese (Bilingual)
Programming & Software Skills	Python, C, C++, R, MATLAB, SAS, ROS2, LaTeX, CAD, PCB Design
Relevant Coursework	Robot Mobility, Manipulation, Estimation, Control, Autonomy; Systems Engineering; Computer Vision; Data Processing; Differential Equations; Vector Calculus; Analysis; Probability; Statistics; Linear Algebra; Electromagnetism; Classical Mechanics
Work Authorization	Australian citizenship, eligible for E-3 visa and does not require H-1B sponsorship