WeiQin Chuah

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About me

I am a highly motivated and dedicated Ph.D. graduate from RMIT University, Australia, with a background in Engineering and Computer Science. Currently, I hold the position of a post-doctoral researcher at the same institution, where my research is centred on domain generalization, representation learning, and geometric computer vision. My research findings hold practical relevance across diverse domains, including medical imaging, fault detection, robotics, augmented reality, and autonomous driving.

Professional Experience

- **RMIT University / Ford Motor Company** — Melbourne, Australia
  Research Assistant (Deep Learning, Computer Vision) — *Oct 2022 - Current*
  Research and development of an intelligent and automated visual inspection system for self-piercing rivets.
- **RMIT University / Bondi Labs** — Melbourne, Australia
  Casual Researcher (Deep Learning, Computer Vision) — *Sept 2022 - Oct 2022*
  Research and development of an intelligent and automated visual inspection system for vet-assistive technology.
- **RMIT University** — Melbourne, Australia
  Mechatronics Engineering Intern (Machine Learning, Image Processing, Sensor Fusion) — *Dec 2017 - Feb 2018*
  Research and development of an intelligent cow screening and cleaning system
- **Aubot** — Melbourne, Australia
  Mechanical Engineer Intern (Mechanical Design) — *Apr 2017 - Oct 2017*
  Research and development of a 6 degree of freedom assistant robotic arm, Jeva

Publications

- **Single Domain Generalization via Normalized Cross-correlation Based Convolutions**
  IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024
  WQ Chuah, R Tennakoon, R Hoseinnezhad, D Suter, A Bab-Hadiashar

- **An Information-Theoretic Method to Automatic Shortcut Avoidance and Domain Generalization for Dense Prediction Tasks**
  IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI) 2023
  WQ Chuah, R Tennakoon, R Hoseinnezhad, A Bab-Hadiashar, D Suter

- **Towards Building a Vet-Assist System: Animal pose estimation and counting walking steps**
  Australasian Conference on Robotics and Automation (ACRA) 2022
  WQ Chuah, A Bab-Hadiashar, R Tennakoon, F Zambetta, R Hoseinnezhad, J Hall, J Marshall, S Smith, M Stevenson

- **ITSA: An Information-Theoretic Approach to Automatic Shortcut Avoidance and Domain Generalization in Stereo Matching Networks**
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2022
  WQ Chuah, R Tennakoon, R Hoseinnezhad, A Bab-Hadiashar, D Suter

- **Semantic Guided Long Range Stereo Depth Estimation for Safer Autonomous Vehicle Applications**
  IEEE Transactions on Intelligent Transportation Systems (T-ITS) 2022
  WQ Chuah, R Tennakoon, R Hoseinnezhad, D Suter, A Bab-Hadiashar

- **Deep Learning-Based Incorporation of Planar Constraints for Robust Stereo Depth Estimation in Autonomous Vehicle Applications**
  IEEE Transactions on Itelligent Transportation Systems (T-ITS) 2021
  WQ Chuah, R Tennakoon, R Hoseinnezhad, A Bab-Hadiashar

- **Machine Vision-Enabled Traffic Controller for Safer and Smoother Traffic Flow Around Construction Sites**
  IEEE Intelligent Transportation Systems Conference (ITSC) 2019
  WQ Chuah, R Tennakoon, R Hoseinnezhad, A Bab-Hadiashar

- **State Transition for Statistical SLAM Using Planar Features in 3D Point Clouds**
  Sensors, Volume 19, Issue 1614, 2019
  AK Gostar, C Fu, **WQ Chuah**, MI Hossain, R Tennakoon, A Bab-Hadiashar, R Hoseinnezhad

Teaching Experience

Post-graduate

- **Computational Machine Learning** — RMIT University
  Tutor / Lab Demonstrator — *2021 - 2022*

- **Deep Learning** — RMIT University
  Tutor / Lab Demonstrator — *Semester 2 2022*

Under-graduate

- **Machine Learning** — RMIT University
  Tutor / Lab Demonstrator — *2021 - 2022*

- **Digital Fundamentals** — RMIT University
  Lab Demonstrator — *Semester 1 2021*

- **Mechatronics Principle** — RMIT University
  Teaching Assistant — *Semester 1 2020*

Education

- **Royal Melbourne Institute of Technology (RMIT)** — Melbourne, Australia
  PhD (School of Engineering) — *Feb 2019 - Oct 2022*
  Thesis: Passive visual depth estimation in the deep learning era.

- **Royal Melbourne Institute of Technology (RMIT)** — Melbourne, Australia
  BSc (Engineering), Adv. Manufacturing and Mechatronics (First Class Honours) — *Mar 2014 - Nov 2018*

Projects

- **RMIT University** — Melbourne, Australia
  Wide Baseline Stereo Data Collection (Data acquisition, System Integration) — *May 2019 - April 2020*
  Real-time driving imageries data collection using multiple cameras, LiDAR and GPS sensor.

- **RMIT University** — Melbourne, Australia
  Mechatronics Final Year Projects (Computer Vision, Robotics) — *Mar 2017 - Oct 2018*
  Development of Statistical SLAM Using Planar Features in 3D Point Clouds

Skills Summary

- Languages: Python, C++, MATLAB, Bash
- Frameworks: Pandas, Scikit, OpenCV, TensorFlow, Keras, PyTorch
- Tools/Software: Docker, GIT, Jupyter, Carla, CATIA, Solidworks
- Platforms: Linux, Windows, macOS, Arduino, AWS

Extracurricular Experience

- **High Powered Rocket Team - HIVE RMIT** — Jun 2018 - Mar 2019
  Recovery Systems Team Leader
  Develop a reliable rocket recovery system to allow sufficient drag and counteract the force of gravity for minimizing the landing impact. Our team won the first place in the Australian Universities Rocket Competition in the 30,000ft category in 2019.

- **RMIT Mates Program** — Feb 2016 - Oct 2016
  Volunteer Mentor
  Provide practical advice, social interaction and general academic guidance to newly-arrived international, regional or rural/remote students in their first semester of study at RMIT University.

- **RMIT Student Learning Advisor Mentors (SLAMs)** — Mar 2016 - Jul 2016
  Volunteer Mentor
  Provide academic advice and share strategies with students on time management and study planning to achieve outstanding results.

Referees

Available upon request.