

RIKU MURAI

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EDUCATION

Imperial College London

October 2019 - Present

PhD in Computing. Co-supervised by: Prof. Paul H.J. Kelly, and Prof. Andrew Davison.

Imperial College London

September 2015 - July 2019

Master of Engineering, Computing, First Class Honours

Overall Percentage: 85.55

PUBLICATIONS

Riku Murai, Sajad Saeedi, Paul H.J. Kelly, **High-frame-rate Homography and Visual Odometry by Tracking Binary Features from the Focal Plane**, Autonomous Robots, Journal, 2023

Aalok Patwardhan, Riku Murai, Andrew J. Davison, **Distributing Collaborative Multi-Robot Planning with Gaussian Belief Propagation**, IEEE Robotics and Automation Letters (RA-L), Journal, 2022

Riku Murai, Joseph Ortiz, Sajad Saeedi, Paul H.J. Kelly, Andrew J. Davison, **A Robot Web for Distributed Many-Device Localisation**, IEEE Transactions on Robotics (T-RO), 2022, conditionally accepted.

Edward Stow, Abrar Ahsan, Yingying Li, Ali Babaei, Riku Murai, Sajad Saeedi, Paul H.J. Kelly, **Compiling CNNs with Cain: focal-plane processing for robot navigation**, Autonomous Robots, Journal, 2022

Hao-Ya Hsueh, Alexandru-Iosif Toma, Hussein Ali Jaafar, Edward Stow, Riku Murai, Paul H.J. Kelly, Sajad Saeedi, **Systematic comparison of path planning algorithms using PathBench**, Advanced Robotics, Journal, 2022

Alexandru-Iosif Toma, Hao-Ya Hsueh, Hussein Ali Jaafar, Riku Murai, Paul H.J. Kelly, Sajad Saeedi, **PathBench: A Benchmarking Platform for Classical and Learned Path Planning Algorithms**, 18th Conference on Robots and Vision (CRV), 2021, Best Robotics Paper

Edward Stow, Riku Murai, Sajad Saeedi, Paul H.J. Kelly, **Cain: Automatic Code Generation for Simultaneous Convolutional Filters on Focal-plane Sensor-processors**, Languages and Compilers for Parallel Computing (LCPC), 2020

Riku Murai, Sajad Saeedi, Paul H.J. Kelly, **BIT-VO: Visual Odometry at 300 FPS using Binary Features from the Focal Plane**, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020

Matthew Z. Wong, Benoit Guillard, Riku Murai, Sajad Saeedi, Paul H. J. Kelly, **AnalogNet: Convolutional Neural Network Inference on Analog Focal Plane Sensor Processors**, arXiv, 2020

EXPERIENCES

Magnit Global @ Meta, London, United Kingdom

February 2023 - June 2023

External Research Collaborator for Meta AI in the FAIR team.

Meta AI, Montreal, Canada

August 2022 - December 2022

Research Scientist Intern in the FAIR team.

Imperial College, London, United Kingdom

October 2019 - Present

Graduate Teaching Assistant

- Robotics, Advanced Computer Architecture, Compilers.

- Second Year Laboratory: Pintos (OS), C++ Concurrency, WACC (Compiler)

uniain co, ltd, Tokyo, Japan

June - September 2017, April - September 2018

Software Engineering Intern as a full-stack engineer at a start-up.

ACADEMIC ACTIVITIES

Workshop Organisation – “On- and Near-sensor Vision Processing, from Photons to Applications (ONSVP)”, IEEE International Conference on Robotics and Automation (ICRA), 2021, Co-organised together with Sajad Saeedi, Julien Martel and Paul H. J. Kelly.

Workshop Contribution – Demo of a Robot Web for Distributed Many-Device Localisation, at “Workshop on Distributed Graph Algorithms for Robotics”, IEEE International Conference on Robotics and Automation (ICRA), 2023.

Reviewer (Journal) – IEEE Transactions on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L).

Reviewer (Conference): IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

SCHOLARSHIPS AND ACADEMIC ACHIEVEMENTS

Robotics Forum - Amazon PhD Prizes for Outstanding Achievement in Robotics – Winner of category Mid-stage PhD student.

PhD Student Position – A fully funded PhD position at Imperial College London.

The Centenary Prize – Awarded annually to a final year undergraduate student for outstanding overall performance.

Distinguished Project – Awarded to final year projects which are outstanding in terms of technical achievement and presentation.

Dean’s List 2nd - 4th Year – Awarded to top 10% of the students.

G-RESEARCH Ltd Prize – Awarded annually to up to ten non-final year students of the departments of Computing.

Palantir Forward Group Project Prize – Awarded to the outstanding third-year group project for software engineering excellence applied to solve an important real-world problem.

EXTRA-CURRICULAR

AI FIND, Entrepreneur First – Third place in the final pitch of the three-day program.

Hackathons

- 2020 Asia Open Data Challenge: Awarded total of \$6,500 with the following prizes: “Invincible Award”, “Enterprise Special Award”, “Mitsubishi-HERE Award”.
- HackSheffield 2017: Awarded the following prizes: “Amazon Web Services Award”, “SkyBet Award”, and “Ask4 Award”.
- GreatUniHack 2017: Awarded the following prize. “OcadoTechnology Award”.

Robocup Junior – 5 times winner of UK national competition. In the international finals: 1st place in Superteam 2015 and 3rd place in Superteam 2016.