

Zhongxuan Li

Portfolio: Dieselmarble.github.io
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EDUCATION

- **Imperial College London** London, United Kingdom
Integrated MEng in Electrical and Electronic Engineering; GPA: 3.7
Thesis: Blind Signal Separation based on Sparsity
Core Courses: Algorithm and Data Structure, Artificial Intelligence, Machine Learning, Communications, Control Theory, Optimisation, Signal Processing, Digital&Analogue Electronics, Theory of Probability
July 2015 - June 2019

EXPERIENCE

- **Huawei - Optical Business Product Line** Shenzhen, China
Research Engineer (Full-time)
October 2019 - Present
 - **Robotics:** Worked as a full-stack engineer, developed and built robots for different using purposes. In depth understanding and practical experience with SLAM, route planning and optimal control.
 - **Large-scale Network Optimisation:** Solved optimisation problems in very large scale ODN and WDM networks, built work-leading performance network planning software.
 - **CCSA Representative:** Delegated Huawei at China Communications Standards Association, successfully conducted several ICT standardisation projects, including the industrial optical bus protocol.
- **Ocado Technologies - 10X Research Team** Hatfield, United Kingdom
Research Engineer (Internship)
March 2018 - September 2018
 - **Logistic Robots:** Worked towards patented tote transporting robots, developed robot swarming control algorithms.
 - **Linear Motor Design:** Researched in linear PMSM (permanent magnetic synchronous motor), designed the future logistic system equipped with linear motor. Conducted electromagnetic finite element analysis and motor FOC control.
- **Robot Intelligence Lab - Imperial College London** London, United Kingdom
Undergraduate Research Assistant
June 2018 - September 2017
 - **Robot De-Niro:** Independently developed a multi-joint dexterous hand for a Baxter robot in laboratory.
 - **Robot Control GUI:** Programmed a robot controller GUI with QT and C++.

RELATED PROJECTS

- **Service Robot:** Built a domestic service robot from scratch, performing tasks such as grasp and handover objects, switch lights and guest reception. Used techniques such as semantic-SLAM and deep neural networks to achieve 'like-human' intelligence.
- **Data Center Robot:** Built a robot with AGV and 6-axis arm for IT server room maintenance and inspection. Devised locomotion and manipulation algorithms for dexterous tasks such as plug and unplug fibers.
- **2D Floor Plan Recovery:** Used mobile phone IMU to measure the 2D layout of rooms to centimeter accuracy level, developed robust inertial navigation, Kalman filtering and loop closure algorithms under different noisy levels.
- **ODN Network Optimisation:** Developed algorithms for Huawei's SmartODN network planner, devised a fusion algorithm combined both heuristics and linear programming, achieved top performance among rival products.
- **AR-HUD:** Worked in the head-up display project, focused on computer vision, developed object-detection, road-segmentation, distortion-correction and depth-estimation algorithms.
- **Ultra-low Latency Industrial PON(Passive Optical Network) Research:** Worked towards improving the existing PON in order to meet field-level industrial bus-line performance. Collaborated with CAICT(China Academy of Information and Communications Technology), writing a national standardization white paper to be published in late 2022.

PATENTS

- **A method for automatic generation of floor plan based on wireless communication and IMU:** Submitted, (April '22)

SKILLS SUMMARY

- **Programming Languages:** C++, Python, Java, MATLAB, FPGA(Verilog), HTML/CSS,
- **Languages:** English, Chinese Mandarin
- **Robotics:** ROS, RL (DQN, DDPG, etc), Optimal Control (LQR, MPC), SLAM, Planning (A*, RRT*, etc)
- **Libraries:** PyTorch, Tensorflow, PyData Stack (numpy, pandas, sklearn, etc), cvxopt, Cbc(COIN-OR)
- **Soft skills:** Public speaking, Leadership