

Chris VailCV Engineer

Education

MEng Design Engineering
Imperial College London

2018-2022

Graduated with first class honours, awarded Dean's list award for academic achievement twice.

Proven multidisciplinary engineer with the ability to learn fast and thrive in ambiguous start-up environments. Projects range from advanced robotics to urban agriculture and MedTech

Modules included: Machine Learning, Optimisation, Additive manufacture, Robotics research, Entrepreneurship and Product Design

Projects

Procedural Scene Generation for Robotic Disassembly of Waste Electronics

Masters project developing robotic system to complete first stages of disassembly using entirely synthetic training data made using Blender

Photorealistic procedural scene generation pipeline used to train Mask-RCNN and 6D pose estimation models with high accuracy

System was able to localise screw heads to within 1.8mm using only RGB-D images

Used deep reinforcement learning (Soft actor-critic) for object manipulation / reorientation

Proposed scalable system for data generation using distributed ledger technology

IoT Hydroponic System for Urban Agriculture

Founded start up looking at sustainably growing edible plants in underutilised office space

Developed proof of concept automated hydroponic system with cloud monitoring, edge AI and a functional web application

Lead product validation, generating specifications from customer interviews

Created proof of concept pipeline for gauging plant health based on RGB images using Yolo v8

Trained PPO model to control environmental conditions to maximise plant growth

Model Free Control of Continuum Robots

Trained an LSTM model to predict commands for 12 motors to control a highly non-linear robot in 3D space

Achieved control within 5mm, comparable with advanced classical control algorithms.

Experience

Computer Vision Engineer
PolyMetrix

Jul 22 - Current

Computer Vision Lead of sub-millimetre 3D scanning app built in Swift and Rust

Wrote high performance algorithms for 3D point clouds to create a live reconstruction and meshing pipeline on an iPhone

Lead technical discussions with multiple stakeholders to ensure timely product delivery

Automated Test Engineer
Cambridge GaN Devices

Apr 21 - Sep 21

Lead the design and build of automated PCB testing system using Python, SvelteKit and AWS

Programmed high voltage testing equipment to automatically characterise next generation GaN devices, reducing engineering time by up to 95%

Created UI to allow variable control of test parameters based on the project, managing conflicting views among stakeholders

Teaching Assistant
Imperial College London

Oct19 - Apr 21

Selected to assist in delivering and refining the first year maths course, effectively communicating complex solutions

Requested to assist marking coursework for a third year robotics module after graduating.

Engineering Intern
Cable Consulting International

Oct 17 - Aug 21

Developed a novel program to simulate transient stresses on high voltage DC cables, to inform the court on a multi-million pound lawsuit

Skills

Python (inc Numpy, Pandas, OpenCV and Open3D)

Machine Learning (inc PyTorch, SciKit Learn)

High performance software (C, Rust)

3D Modelling / Rendering (Blender)

Web Development (inc. TS and SvelteKit)

Amazon Web Services

Docker

Technical communication (inc Adobe CC)

Human centric design / product development