

# ALEXANDER PITTARAS

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## Education

### Imperial College London

MEng Mechanical Engineering

First Class Honours; Dean's List (Top 10% of Cohort)

September 2021 – June 2025

London, England

### Reed's School

Secondary Education (A-Levels)

A-Levels: 4 A\* in Further Mathematics, Mathematics, Physics, Chemistry

September 2013 – June 2020

Surrey, England

## Work Experience

### FAC Technology

R&D Engineer

January 2026 – Present

London, England

- Designing and testing quadcopter UAVs, integrating mechanics, embedded systems, and PCBs.
- Developing proprietary composite panels and bespoke equipment and software for fabrication.
- Executing rapid prototyping, applying design for manufacturability (DFM) and system-level testing.

### Imperial College London

Undergraduate/Graduate Researcher

October 2023 – Present

London, England

- Authoring 4 academic papers based on non-destructive testing (NDT); developing final year thesis into publication.
- Conducting research on tribological performance and wear prediction using NDT test data.
- Collaborating with industry partners, including Apple and Schuler, to deliver solutions for metal forming requirements.

### Black & White Engineering

Mechanical Engineering Intern

July 2024 – August 2024

London, England

- Supported cooling layout design for Microsoft and Google data centres, integrating liquid cooling.
- Drafted AutoCAD piping layouts for 16-rack cooling system, reducing design iterations by 30%.
- Automated power usage effectiveness (PUE) reporting, reducing manual updates by 75%.

### Qualco

Data Science Intern

July 2023 – September 2023

Athens, Greece

- Developed linear and multivariate regression models in Python (scikit-learn), achieving an  $R^2$  score of 0.82.
- Analysed a 398-entry automotive dataset, reducing multicollinearity by 65% using VIF-based feature selection.
- Implemented scikit-learn solutions reducing model training time by 30% without sacrificing predictive accuracy.

## Projects

### Autonomous NDT Tribological Process Simulator | CAD, Python, TensorFlow, FEA, Sensors, Cloud

Present

- Developed novel automated tribological testing with fresh samples, high-temperature and thin-film lubrication.
- Led and coordinated full hardware design and integration across two external teams; managed the project budget
- Integrated machine learning and computer vision to predict friction coefficients and detect surface damage from images.
- Built cloud-based data pipeline (AWS) with custom dashboard for real-time tribological metrics.

### Natural Language Robotic Programming (Edu-Rob) | LLMs, ESP32, C++, Web Development

February 2025

- 2nd Place at ICHACK25 (750+ participants) in “No-Code/Low-Code Education” and “Best Use of Hardware.”
- Parsed natural-language commands with an LLM to generate and validate robot control code.
- Executed code on ESP32 microcontroller via Web Bluetooth and FastAPI with real-time feedback and error handling.

### Liquid Rocket (EuRoC) | Fusion360, FEA, CFD, CNC

October 2024

- Designed and manufactured critical liquid rocket components using Fusion 360, and CNC-machined moulds.
- Delivered first successful liquid-propellant rocket launch in EuRoC 3 km category.

### Autonomous Vehicle (Third Year Embedded C Project) | Embedded Systems, Sensors

December 2023

- Developed algorithms for a maze-solving vehicle with colour detection in Embedded C, responding to dynamic inputs.
- Placed 1st out of 37 teams by achieving the fastest completion time and meeting the no-interference reliability criterion.

### Compressed Gas-Powered Car (Second Year Project) | SolidWorks, CFD, Additive Manufacturing

June 2023

- Designed, simulated and constructed a CO<sub>2</sub>-powered vehicle in SolidWorks with CFD and 3D-printed casing.
- Led team to 1st place out of 40 teams, achieving 50+ m by optimizing aerodynamics, weight, and bearing performance.

## Technical Skills

**Programming:** Python (scikit-learn, TensorFlow, PyTorch), C, C++, SQL, MATLAB, HTML, VBA, Git/GitHub

**Engineering Tools:** SolidWorks, Fusion360, Onshape, ANSYS, ABAQUS, STAR-CCM+

**Other:** FastAPI, embedded systems (Arduino, ESP32, PICkit)