Maksymilian Mroczkowski

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EDUCATION

Imperial College London Oct 2023 - June 2026

BSc Biomedical Technology Ventures

• Relevant modules: Algorithms & Data Structures, Probability & Statistics, Linear Algebra, Machine Learning, Databases

SKILLS

Programming Languages: Python, C++, JavaScript, SQL, MATLAB

Programming Libraries: TensorFlow, PyTorch, Scikit-learn, Numpy, Matplotlib, Pandas, Keras, OpenCV, React

Technologies: Docker, Git, Jupyter Notebook, GitHub, Figma, HTML, CSS

RESEARCH EXPERIENCE

Purdue University **Data Science Intern** May 2025 - August 2025

• Selected as 1 out of 300 applicants for the Purdue Engineering SURF programme in the United States
• Improved on an in-house nnU-Net deep learning model in PyTorch, achieving a 12% increase in segmentation accuracy
• Built data pipelines in jupyter with Docker to segment 180 pancreatic MRI images stored in a SQL patient database
• Optimised nnU-Net segmentation with GPU acceleration (CUDA + TensorFlow), boosting segmentation speed by 1.5x

PROJECTS

Convolutional Neural Network for Medical Image Classification Code

• Leveraged TensorFlow and Keras to design, train, and evaluate a CNN designed for classifying brain tumors
• Built data pipelines in Jupyter to process 1000+ MRI images from Stanford medicine using OpenCV
• The CNN classified brain tumors with an accuracy of 98%

Automated Cell Subculture System Code

• Collaborated with a team of 4 engineers to create a device that reduces manual cell subculture by up to 5 minutes
• Designed the frontend on Figma based on survey feedback from 28 users and implemented it using React and Vite
• The backend was developed using Flask and Python. HTTP POST requests were sent between the backend and frontend

Medical Robotics Code

• Led a team of 3 to design and prototype a robotic arm capable of lifting ~150g with a reach of ~500mm
• Achieved a reach ~20% greater than the class average, placing first among 8 competing teams
• Collaborated with senior industry professionals to deliver well-documented, maintainable, and scalable code in C++

Image Processing Algorithm Code

• Developed a Python OOP library to parse, decode, and re-encode PNG images with CRC validation
• Implemented PNG filter algorithms (Sub, Up, Average, Paeth) and zlib-based decompression for pixel data
• Built functionality for channel-specific image saving (individual RGB channels)

PUBLICATIONS

Prompt injection attacks on vision-language models for surgical decision support DOI

• Published with the Translational Medical Image Computing lab at Purdue University
• This research aims to find the vulnerabilities in the usage of vision-language models in surgery

LEADERSHIP AND VOLUNTEERING

Department of Bioengineering Student Ambassador Sep 2024 - Present

• I represent the Imperial college London Department of Bioengineering in outreach and recruitment efforts
• Participated in open days, Q&A panels, and academic showcases involving hundreds of students from around the UK

In2scienceUK Mentor Nov 2024 - June 2025

• Mentored, guided, and supported first year university students
• Communicated with mentees on a regular basis, explained and taught technical concepts