

Matthys M. DU TOIT

Engineer | MSc Student in Artificial Intelligence | Imperial College London

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MSc Artificial Intelligence student at Imperial College London with a First-Class Engineering background. Combines strong research foundations in robotics & computational neuroscience (IEEE ICRA 2024 presentation) with practical engineering experience gained during a year-long machine learning placement at Prosus. Proficient in Python, PyTorch, and MLOps, with a track record of deploying ML pipelines and communicating complex technical concepts to diverse stakeholders. Passionate about NLP and eager to apply expertise in model reliability and interpretability to help deploy robust, state-of-the-art generative solutions at scale.

EDUCATION

Present September 2025	MSc Artificial Intelligence, Department of Computing, Imperial College London, LONDON, UK <ul style="list-style-type: none">> Specialized Computer Science Masters programme focused on intensive training in Python programming and mathematical fundamentals of AI and Machine Learning.> Modules include : Computational Neurodynamics, Deep Graph-based Learning, Reinforcement Learning, Probabilistic Inference, Deep Learning, Natural Language Processing.> Programme ends with a 4-month individual project that can be carried out as an internship in industry. <p>Python PyTorch Deep Learning Reinforcement Learning Machine Learning NLP LLMs Software Engineering</p>
July 2024 September 2019	MEng (Hons) Integrated Mechanical & Electrical Engineering, University of Bath, BATH, UK <ul style="list-style-type: none">> Program included a year-long industrial placement during third year of studies.> Modules included : Digital Systems Design, Signal Processing, Power Electronics, Control Engineering, Robotics Engineering, Computer Systems Engineering, Applied Machine Learning.> Thesis : <i>Exploring Novel Intuitive Brain-Computer Interface Paradigms for Decoding Manipulation Intent</i>> Final results : First-class honours. <p>Applied Mathematics Circuit Design Electronics Computer Systems Engineering Robotics MATLAB C++</p>

RESEARCH EXPERIENCE

Present December 2025	MSc Group Research Project Wicker Lab, Imperial College London, LONDON, UK <ul style="list-style-type: none">> <i>Uncertainty Quantification and Robustness Evaluation of LLMs</i> supervised by Dr Matthew Wicker.> Objective : To develop an open-source toolkit that automatically evaluates the epistemic uncertainty and adversarial robustness of Ai2's Olmo language model in response to a user's prompt. <p>LLMs Language Modelling Uncertainty Robustness Trustworthy AI GPU Clustering</p>
June 2025 October 2024	Visiting Researcher Neural Engineering Lab, Shanghai Jiao Tong University, SHANGHAI, China <ul style="list-style-type: none">> <i>Decoding Brain-Wide Population Dynamics Underlying Motor Behaviour</i> supervised by Dr Guangye Li.> Investigated low-dimensional latent dynamics (neural manifolds) of neural population activity across distributed cortical regions to enhance brain-computer interface (BCI) decoding performance.> Additionally, designed novel experimental paradigms to collect high-density Electrocorticography (ECoG) recordings from human subjects engaging in robotic interaction. <p>Computational Neuroscience Large-scale data analysis Signal Processing Brain-Computer Interfaces</p>
June 2024 January 2024	Master's Thesis University of Bath Institute for the Augmented Human, BATH, UK <ul style="list-style-type: none">> <i>Brain-Computer Interface for Intuitive Robotic Arm Control</i> supervised by Dr Dingguo Zhang.> Designed novel paradigm for achieving intuitive human-robot non-invasive interfaces by decoding manipulation intent directly from EEG signals during imagined interaction with a robotic arm.> Presented at ICRA 2024 conference in the NeuroDesign for Human-Robot Interaction Workshop. <p>Experimental Design EEG recording Signal processing Machine Learning Robotic arm control</p>
August 2023 May 2023	Humanoid Robotics Group Project Human-Robot Interaction Lab, University of Bath, BATH, UK <ul style="list-style-type: none">> <i>Motion Control & Kinematic Design of Humanoid Torso</i> supervised by Dr Uriel Martinez Hernandez.> Designed control systems architecture and kinematic model of a research-purpose humanoid robot torso by developing ROS (Robot Operating Software) code to facilitate full system integration.> Created a full physics simulation (digital twin) of the robot in the Gazebo environment. <p>C++ ROS Noetic Linux Gazebo Control Engineering Robotics Simulation</p>

INDUSTRY EXPERIENCE

- September 2022** | **Machine Learning Engineer Intern | Prosus, AMSTERDAM, Netherlands**
October 2021 | *Year-long placement in the Prosus AI Team supervised by Dr Dmitri Jarnikov*
- > Primary project : **Semantic Product Search through Query Expansion** for Takealot, South Africa's largest online retail business. Trained word embedding NLP models including Word2Vec and GloVe to obtain semantic associations of queries and products via high-dimensional representations. Further information can be found in my blog post : (click here).
 - > Secondary project : **Automatic Quiz Generation using LLMs** for Skillsoft, an American education technology company. Fine-tuned OpenAI's GPT-3 model on the education platform's quiz datasets to autonomously generate questions with accurate answers that effectively test students' knowledge.
- Python PyTorch Git LLMs Cloud Computing (AWS) GPU Clusters HPC Environments
- July 2020** | **Software Engineering Internship | Bloomberg, LONDON, UK**
Student Summer Engineering Internship Programme at Bloomberg London Office
- > Contributed to API integration & database management of Bloomberg's mobile products and services.
 - > Collaborated with cross-functional teams to contribute to ongoing projects in areas such as data analytics, software development, and cloud computing.
- JavaScript React Docker API Integration (REST) Database Management (SQL)

TECHNICAL SKILLS & LANGUAGES

Programming Languages Python, C++, C, MATLAB, SQL, Rust (beginner)
Software Development Git, Bash, Docker, CUDA programming, AWS, Jira, Confluence, Bitbucket
Machine Learning Frameworks PyTorch, Scikit-learn, XGBoost, Hugging Face Transformers, JAX (beginner)

English ●●●●● Dutch ●●●●● French ●●●○○ Mandarin ●●●○○

HONOURS, AWARDS & ACHIEVEMENTS

- GLOBAL STUDENT INNOVATION CHALLENGE BEST PRESENTATION & POSTER AWARDS (I-CREATE 2024)** AUGUST 2024
[i-CREAtE 2024 Official Webpage](#)
International Conference on Rehabilitation Engineering and Assistive Technology, Shanghai, China. Awarded best presentation & poster awards for developing a robotic piano hand exoskeleton teaching assistant. Supervisor : Dr Dingguo Zhang.
- ICRA 2024 NEURODESIGN IN HUMAN-ROBOT INTERACTION WORKSHOP COMPETITION FINALIST** MAY 2024
[ICRA 2024 Official Workshop Webpage](#) [Workshop Poster](#) [Workshop Video](#)
IEEE International Conference on Robotics and Automation, Yokohama, Japan. Selected finalist (top 10) for my Masters Thesis research project : *Novel Intuitive BCI Paradigms for Decoding Manipulation Intention*. Supervisor : Dr Dingguo Zhang.
- OPENAI HACKATHON FOR CLIMATE CHANGE FINALIST & HIGHLY COMMENDED** NOVEMBER 2022
github.com/Robert-H-Gan/OpenAI_Sustainability_report_summarization [Demo Video](#)
Built an application for investment analysts that provides a quick and effective review of company sustainability reports by summarizing and distilling key information using GPT-3.

OTHER ACTIVITIES & ACCOMPLISHMENTS

- LEADERSHIP :**
- > Team leader of MSc Group Software Engineering Project : LLM Uncertainty Quantification Open-source Toolkit 2025
 - > Deputy Head Boy and Head of House at Harrow School 2019
- VOLUNTEERING :**
- > Social work summer intern at Lalela and iKhaya Le Themba Charities in Cape Town, South Africa 2019
 - > Duke of Edinburgh Gold Award : weekly volunteer at Woodlands School for children with special needs (London) 2018
- ACADEMIC :**
- > Awarded a double scholarship at Harrow School due to outstanding talent in both academics and fine art 2017
 - > Gold Award in UK Maths Trust (UKMT) Senior Mathematical Challenge 2017
- SPORT :**
- > Great Wall of China Half Marathon : revered as one of the most challenging and unique races in the world 2025
 - > T24 XTREM Triathlon, Île de Ré, France : 24-hour long triathlon with a team of 4 friends 2022
 - > University of Bath 1st Team Water Polo, National School Athletics (800m) and Cross-Country runner 2020
- OTHER :**
- > Motorcycle Trip across Northern Spain : Restored a 34 year old Honda Transalp motorcycle and travelled 4,000km off-road with a friend camping from Andorra to Galicia 2024