L. T. MINH TRINH

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EDUCATION

University College London — London, United Kingdom
MEng in Mechanical Engineering — *Sep. 2023 - Present*

- Grade: First Class Honours (on track)
- Extracuricular: UCL Racing - Mars Rover team, Mechanical Engineering Society, AI Society.

The National Mathematics and Science College — Coventry, United Kingdom
A-Level — *Sep. 2021 - Jul. 2023*

- Grade: A*, A* and A (respectively in Maths, Further Maths and Physics)
- Awarded full academic scholarship 135% tuition for consecutive years of A-Level.

EXPERIENCE

Autonomous and Control Engineer — London, United Kingdom
UCL Racing - Mars Rover team — *Oct. 2023 - Present*

- Developed computer vision system for Mars rover competing in European Rover Challenge (ERC), fine-tuning EfficientNet for obstacle/terrain classification (85% accuracy) and implementing ArUco marker detection for autonomous navigation and collision avoidance.
- Built embedded control system bridging high-level autonomy with rover hardware, programming Arduino microcontrollers in C++ to handle motor drivers, sensor interfaces (I2C/SPI), and ROS2 communication protocols for real-time mobility control.

Research Intern — Hanoi, Vietnam
FPT Software — *Jun. 2024 - Aug. 2024*

- Designed and simulated 6-DOF robotic arm for automated sorting system, implementing analytical IK that achieved 100% solve rate within joint limits, enabling reliable multi-object sorting operations.
- Integrated pre-trained ResNet50 with depth camera pipeline in ROS2-Isaac Sim framework, extracting 3D coordinates from RGB-D data to enable vision-guided pick-and-place for automated sorting tasks.

PROJECTS

Summer Research (NeurIPS Workshop 2025 - Poster) — London, United Kingdom
Metacognitive Sensitivity for Test-Time: Dynamic Model Selection — *Jun. 2025 - Aug. 2025*

- Developed metacognitive framework for test-time model selection using contextual bandits (UCB/TS), improving SOTA image classifier accuracy by 10% and vision-language models (CLIP/ALIGN) by 2% without any fine-tuning.
- Accelerated Bayesian inference from CPU-bound PyMC to GPU execution using JAX/Pyro, achieving 3x speed-up for demonstrations and 5x for full-scale experiments, enabling real-time model selection.
- First-author poster **(accepted)** at NeurIPS 2025 Workshop: confidence-based metacognitive signals enable effective test-time adaptation across diverse architectures without gradient updates.

Research Project (Finance - RL) — London, United Kingdom
Adaptive Multi-Horizon Strategy Selector with Hierarchical RL — *Aug. 2025 - Present*

- Built adaptive trading system for 10-asset portfolio (2 ETFs, 8 stocks), using contextual multi-armed bandits to dynamically select between baseline strategies based on market conditions, achieving Sharpe ratio of 0.95 (vs. 0.75 buy-and-hold) and 25% max drawdown (vs. 34%) on 10-year backtest (2014-2024).
- Replacing static strategies with RL agents in a Hierarchical RL framework, where a contextual bandit meta-controller selects horizon-specific policies to adapt dynamically to shifting market regimes.

TECHNICAL SKILLS

Languages	Python, C/C++, SQL, MATLAB
Frameworks & Libraries	PyTorch, TensorFlow, JAX, Scikit-learn, NumPy/Pandas, RLlib
Tools	Docker, Git, Linux, ROS, OpenCV, Fusion 360, Isaac Sim/Lab