Brooklyn Huynh

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Robotics and AI postgraduate with hands-on experience across autonomous navigation, computer vision, machine learning and multi-agent systems. Combines practical laboratory work with research-oriented development of intelligent robotic systems.

EDUCATION

MSc Robotics and Artificial Intelligence — Jan 2026 – Expected Jan 2027
University of Aberdeen, School of Engineering

MSc Applied Artificial Intelligence - Distinction — Sep 2024 – Jan 2026
Aston University, United Kingdom

Pre-master's Program — Sep 2023 – Jul 2024
Aston University, United Kingdom

BA English Linguistics — Sep 2018 – Sep 2022
Ton Duc Thang University, Vietnam

EXPERIENCE

Robotics & AI Laboratory Assistant | *University of Aberdeen, School of Engineering* — Apr 2026 – Present

- Assemble and test robots, sensors, actuators and electronic control boards, assiting the development and maintenance materials for teaching and research purposes.
- Support AI and robotics teaching by preparing laboratory materials, hardware demonstrations and experimental setups, helping students translate theoretical concepts into working robotic systems.
- Assist the professors and academic staffs with experimental preparation, hardware integration and troubleshooting, reducing setup issues and improving the readiness of robotics demonstrations and laboratory activities.
- Conduct computer-vision experiments on physical robots, integrating cameras and perception pipelines to investigate how visual information can be used for robot sensing and decision-making.
- Contribute to robotics projects involving autonomous navigation, swarm robotics and human–robot interaction, gaining hands-on experience across embedded systems, sensing, control and AI.

Independent Doctoral Research Engagement — Explainable AI (Remote) | *University of Aberdeen* — Sep 2026 – Present

- Engaged with an ongoing PhD research regarding Explainable AI and the significance of Feature Selection using Feature Weighted Self-Organising Maps, under the supervision of Nwaebuni Odega and Dr. Andrew Starkey.
- Studied the research methodology and worked towards independently replicating aspects of the published work to develop practical understanding of XAI techniques and experimental approaches.
- Gained insight into explainable feature selection and the trade-offs between model interpretability, computational efficiency, data requirements and predictive performance.

Marketing Assistant | *Broadcast Communication* — Feb 2022 – Aug 2022

- Supported marketing, event coordination and community engagement activities, contributing to campaigns involving technology, education and social-impact initiatives.
- Supported a volunteer initiative that delivered free water-filtration devices to 135 households in Can Gio District, helping coordinate community-facing activities and communications.
- Organised and accompanied an Amazon Web Services event for AWS Can Gio Mangroves Supporters Day, supporting event delivery, public engagement and awareness activities.
- Moderated the Alienware Vietnam private community of 3,400+ members, monitoring discussions, collecting user feedback and evaluating product reviews to identify recurring customer interests and concerns.

PROJECTS

Autonomous Navigation: SLAM & Maze Solving with Ultrasonic Sensing

- Designed and implemented a complete autonomous-navigation system using a single ultrasonic sensor, wheel encoders and yaw feedback to perform localisation, mapping and navigation without ROS or external SLAM libraries.
- Developed a probabilistic occupancy-grid SLAM pipeline with differential-drive calibration, frontier-based exploration, 360° scanning and pose-graph analysis to construct and refine maps of an unknown environment.
- Implemented risk-aware A* path planning and PID heading control, combining global planning with reactive obstacle avoidance and recovery behaviours for physical robot navigation.
- Analysed localisation, scan-matching and path data to identify failure modes and improve the reliability of the autonomous-navigation pipeline.

Computer Vision for a Swarm of Hexapod Robots · *University of Aberdeen Lab*

- Designed and integrated a multi-robot hexapod platform combining camera-based computer vision, leg/contact sensing, embedded controllers and swarm coordination to investigate cooperative robotic behaviour.
- Developed perception and sensor-processing approaches enabling individual robots to respond to their surroundings while contributing to coordinated swarm movement.
- Integrated actuators, electronic control boards and leg sensors to investigate gait adaptation and more reliable locomotion over uneven terrain and stair-like obstacles.
- Implemented swarm behaviours allowing multiple robots to coordinate movement rather than operating solely as independent units.
- Combined physical robot experimentation with computer-vision and sensor data to evaluate how perception can improve locomotion, obstacle negotiation and multi-robot coordination.

Flappy Bird AI with NeuroEvolution of Augmenting Topologies (NEAT)

- Built an environment in which neural-network agents learn to play Flappy Bird through neuroevolution rather than conventional gradient-based training.
- Implemented population-based evolution using selection, mutation, crossover and fitness evaluation, allowing network topologies to evolve as well as their connection weights.
- Designed collision detection, game-state inputs, fitness functions and generation-level evaluation to provide agents with measurable feedback during learning.
- Iteratively tuned evolutionary parameters and input representations to reduce stagnation and encourage agents to learn useful navigation behaviour.
- Produced an evolved controller using a compact neural architecture with one hidden node, demonstrating that useful behaviour could emerge from a relatively small, evolved network.

Therapy Dialogue Quality Analysis with Natural Language Processing

- Developed an NLP-based analytical system for evaluating the quality of therapeutic dialogue and identifying linguistic characteristics associated with supportive and effective responses.
- Built a text-processing pipeline incorporating data preprocessing, linguistic feature extraction and machine-learning analysis to transform conversational text into measurable features.
- Investigated patterns in therapist–patient dialogue to identify language characteristics associated with different levels of conversational quality.
- Combined quantitative model analysis with interpretable linguistic features, allowing predictions to be related back to observable properties of the original dialogue.
- Investigate how machine-learning techniques can support the analysis of sensitive human communication while retaining an interpretable link between language patterns and model outputs.

AI-Powered Piano Tutor

- Developed a computer-vision tutoring system capable of detecting hand and fingertip positions from a camera feed and mapping detected positions to piano keys.
- Implemented visual tracking and key-detection logic to convert physical hand movements into machine-readable note events.
- Compared detected note sequences against reference MIDI performances from the MAESTRO dataset to identify incorrect notes, timing deviations and performance inconsistencies.
- Developed feedback mechanisms to provide users with information about note accuracy, rhythm and hand positioning, transforming visual observations into actionable practice guidance.

Autonomous Multi-Drone Swarm Coordination · *University of Aberdeen Lab*

- Design a multi-agent robotics framework for coordinating autonomous drones, focusing on formation control, communication, collision avoidance and task allocation.
- Develop decentralised coordination concepts in which individual drones use local observations while contributing to a shared swarm objective.
- Investigate multi-agent decision-making strategies for maintaining formations and dynamically responding to changes in the environment.
- Integrate swarm-planning concepts with robotics simulation and control logic to evaluate how autonomous agents can coordinate without relying on a single central controller.

TECHNICAL SKILLS

Programming: Python, C, C++, R, SQL, JavaScript, MATLAB, Git, Linux, Arduino, AWS

AI / ML: PyTorch, TensorFlow, Keras, scikit-learn, OpenCV, OCR, neuroevolution (NEAT), NLP, reinforcement learning, deep learning, explainable AI (xAI)

Robotics & Engineering: SLAM, occupancy-grid mapping, PID control, Arduino, ROS, ROS2, Fusion 360, multi-agent coordination, sensor fusion, embedded systems

CERTIFICATION

Modern Robotics: Foundations of Robot Motion - Northwestern University (Coursera) | 2026
Modern Robotics: Robot Manipulation and Wheeled Mobile Robots - Northwestern University (Coursera) | 2026
AWS Cloud Practitioner Essentials - Amazon Web Services (Coursera) | 2026
Intro to Cloud Computing Course - Codecademy | 2023

LANGUAGES

Vietnamese — Fluent | English — IELTS 7.5 | French — B1

REFERENCES

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