Thai Binh Nguyen

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Summary

I am currently a Postdoctoral Research Associate at UNSW Canberra @ ADFA (University of New South Wales Canberra at the Australian Defence Force Academy) working on autonomous swarm intelligence for unmanned aerial systems (UAS), funded by the Defence Trailblazer program. With eight years of specialized experience in aerial robotics spanning agriculture, logistics, search and rescue, and security applications, I currently lead research on decentralized frameworks for drone swarms that enhance defence capabilities through autonomous responses to dynamic battlefield conditions.

Furthermore, my research in Robotics and Artificial Intelligence has made a significant international impact, as demonstrated by my publications in top-tier journals and presentations in prestigious conferences, such as Sensors (Q1), Journal of Intelligent & Robotic Systems (Q1), International Conference on Unmanned Aircraft Systems (ICUAS), and IEEE Robotics and Automation Letters (Q1, ranked #1 in Robotics top publication venues by the Google Scholar metric).

Currently contributing to Australia's sovereign defence capabilities through the collaboration between UNSW and Akula Tech on autonomous adaptive swarm intelligence, my research directly supports the Sovereign Defence Industrial Priorities (SDIPs) in autonomous systems development and battlespace awareness enhancement. This project aligns with AUKUS Pillar 2 objectives and represents a significant advancement in decentralized multi-agent robotics for critical applications including surveillance, search and rescue, and combat operations.

Education

Federation University Australia — May 2022 – Oct 2025
Doctor of Philosophy | Robotics & AI — *Churchill, Victoria, Australia*

Hanoi University of Science and Technology (HUST) — 2012 – 2017
Bachelor of Electronics & Communication Engineering (Honours) — *Hanoi, Vietnam*

Bac Ninh High School for The Gifted — 2009 – 2012
Specialized in Physics | Degree classification: Excellent — *Bac Ninh, Vietnam*

Academic Awards

- Henry Sutton PhD Scholarship (2020) for a stipend, an accommodation, and a full tuition fee at Federation University Australia.
- Nguyen Van Dao Scholarship for full bachelor's tuition fee at FPT University (2012).
- Third prize in The National contest for excellent high school students (subject: Physics, 2011 – 2012).

Experience

UNSW Canberra at ADFA — July 2025 – Present
Research Associate — *Northcott Dr, Campbell ACT 2612 (Full-time - On-site)*

› Developing a novel framework for heterogeneous drone swarms, enhancing Australia's sovereignty and defence capabilities by allowing autonomous swarms to respond adaptively to battlefield conditions.

Federation University Australia — June 2024 – June 2025
Research Associate — *Churchill, Victoria, Australia (Part-time - On-site)*

› Designed AI-based solutions for the autonomous, real-time koala detection system in forestry operations.

› Developed a platform for experimentation of coordination in robotic multi-agent systems on JaCaMo

Swoop Aero Nov 2022 – June 2023
Embedded Software Engineer *Port Melbourne, Victoria, Australia (Full-time - Hybrid)*

› Developed autopilot embedded software for cloud-based drone transport networks that delivered 1.6M+ individual items to serve 6.0M+ people across the globe.
› Conducting R&D for smart flight features, including autonomous vision-based takeoff and landing on a moving platform such as a ship's deck.

Realtime Robotics Jan 2022 – August 2022
Autopilot Lead Engineer *Vietnam (Full-time - Hybrid)*

› Led a multidisciplinary team to design and develop an AI-powered vision-based navigation system for UAVs, tailored for agricultural applications and search-and-rescue operations.

Viettel High Technology Industries Corporation September 2021 – January 2022
Autopilot software developer *Hanoi, Vietnam (Full-time - On-site)*

Viettel Aerospace Institute October 2017 – August 2021
Autopilot software developer *Hanoi, Vietnam (Full-time - On-site)*

› Researched and developed UAV autopilot software solutions, including guidance and control algorithms for various UAV configurations tailored for security surveillance missions.
› Researched and developed real-time flight simulation systems (SIL/HIL) using Matlab/Simulink and X-Plane.

Publications

- Please refer to my research portfolio and ORCID for more details and references, which are all first-authored by myself without other student co-authors. All journal articles are Q1.

Academic Conference Attendance

2024 International Conference on Unmanned Aircraft Systems (ICUAS) 4-7 June 2024
Oral Presenter *Chania, Crete, Greece*

› Title: "Online State-to-State Time-Optimal Trajectory Planning for Quadrotors in Unknown Cluttered Environments".

Projects

- Establishment of Intelligent Drone Laboratory, an indoor flight arena dedicated to the research and development of smart navigation in aerial robotics, including the testing of an experimental quadrotor.
- Brover - An entrepreneurial project to develop a market-ready autonomous ground robot equipped with multi-modal sensing (RGB-D cameras, thermal imaging, LiDAR, laser range finders) for intelligent environmental awareness. It is designed for commercial applications in agriculture, security and border protection, featuring an AI-powered voice communication interface and real-time perception capabilities.

Professional Certifications

- Remote Pilot Licence (RePL) issued by Civil Aviation Safety Authority (CASA)
- Aeronautical Radio Operator Certificate (AROC) issued by Civil Aviation Safety Authority (CASA)

Engineering Skills

- Programming languages: C/C++, Python, Matlab/Simulink, Java, C#, etc.
- Experienced and familiar with platforms, frameworks: ROS, Ardupilot, RTOS, Linux, Matlab, Android, AWS, X-Plane, Unity, .NET, and protocols: Mavlink, CAN, SPI, I2C, UART, etc.