Than Duc Huy

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Available for full-time position from Jul 2024

EDUCATION

Nanyang Technological University (NTU) Aug 2020 – Jun 2024 (Expected)

- **Bachelor of Engineering (Electrical and Electronics Engineering)**
  - Control, Automation, Robotics specialisation
- **Honours (Highest Distinction)** (Expected); Current CGPA: 4.88/5.00
- CN Yang Scholarship Recipient (Science & Engineering Research)
- Dean List: AY20/21, AY22/23

WORK / INTERNSHIPS / RELEVANT EXPERIENCE

Augmentus (SGInnovate Summation Apprenticeship Programme)
Robotics Software Developer Intern Jan 2024 – Present

- Developed and optimised robotic motion planning algorithms in **C#, Unity**
- Troubleshooted the no-code programming solution suite in office and integrated to client on-site.

Institute for Infocomm Research (I2R), A*STAR May 2023 – Jul 2023
Research Intern (Robotics) Sep 2022 – Nov 2022

- Improved laboratory capability by transferring Gelsight fabrication knowledge from KCL.
- Applied **Deep Reinforcement Learning** algorithms: TD3, PPO using Gelsight for regrasp tasks.
- Applied State Estimation techniques such as Kalman Filter, Factor Graph

King's College London (KCL), Robot Perception Lab
Visiting Research Student (Overseas Final Year Project) Dec 2022 – May 2023

- Project title: Tactile Regrasp of Objects with Dynamic Center-of-Mass using Reinforcement Learning
- Fabricated novel Gelsight vision-based tactile sensor including connected electronics and computer vision processing (OpenCV).
- Applied Deep Reinforcement Learning Algorithm: Offline DQN using Gelsight for regrasp tasks.
- Used **ROS**, **MoveIt** to control UR5 robot arm and Robotiq-2F gripper.

PROJECTS

MLDA@EEE Robotics Team Leader: Coordinating sub-teams, totaling 20 members
Participating in **ICRA 2024 BARN Robot Navigation Challenge** Sep 2022 – Present

- Programmed customised **Python**, **C++** nodes on **ROS** framework, utilised navigation packages (move_base, acml) and behavior_tree to control robot in a simulation environment in **Docker** container.
- Trained other members on ROS framework.

NTU- Design and Innovation Project**: Food Recipe Management App** (Team of 4) Aug 2022 – Nov 2022

- Programmed in **Java** to implement OOP Application.
- Incorporated **Github** workflow: raising issues, pushing commits, documenting on Github pages with UML diagrams.

Garage@EEE Project:
6 DOF Stewart Platform with Linear Actuator Aug 2021 – Jun 2022

- Built encoded linear actuators from standard linear actuators and electrical vernier callipers, keeping cost within budget compared to purchasing commercial encoded actuators.
- Debugged, reverse engineered the vernier calipers with logic analyser to interpret digital signals.
- Programmed in **C++** 6 microcontrollers for actuators PID control.
- Applied kinematics for parallel linkage, controlled using Bluetooth PS4 controller.

CNYSP Making & Tinkering Module: Team Leader (Team of 4)

6 DOF Controller for Robotic Arm Control May 2021 – Sep 2021

- Built 6 DOF controller with aluminium frame, encoders and robotic arm with Robotis Dynamixel servos.
- Applied **forward kinematics** concepts, DH parameters to define serial linkage controller; applied **inverse kinematics** to control servo motors.
- Performed calculation and visualisation with **Python**, used Bluetooth communication with ESP32.

CNYSP Research Module: **Characterise Time-of-Flight Sensor with Optical Fibre Waveguide** Jan 2021 – May 2021

- Constructed testing platform using off-the-shelf components and Arduino to create static and dynamic operating conditions.
- Characterised sensor behaviors with optical fiber waveguide to route light to drone exterior.

OVERSEAS EXCHANGE PROGRAM

King's College London, United Kingdom (KCL) Dec 2022 – May 2023

- Research Exchange for Final Year Project
- Gained insight into full-time research experience: proposed and discussed ideas with supervisors and other researchers, developing competency and independence in theorising and implementation in Robotics research.
- Collaborated with researchers from diverse backgrounds and appreciated various local cultural values.

LEADERSHIP / CO-CURRICULAR ACTIVITIES

Machine Learning and Data Analytics (MLDA@EEE)

Vice President of Academics (2023-2024)

Member of Academics Committee Aug 2021 – Jun 2024

- Coordinated with Academics committee members to organise 15+ workshops, instructing more than 150 NTU students on Machine Learning (ML) concepts such as CNN, RNN, Transformer, LLM, Prompt Engineering
- Communicated with MLDA Executive Committee and NTU Management staff to propose initiatives with long-term impact and provide the necessary technical details and support.
  - GPU server management for ML projects
  - ML demonstrations for public display and engagement
  - MLDA Robotics Team

Garage@EEE Makerspace

Head of Operations (2022-2023)

Member of Operations Committee Aug 2020 – Jun 2024

- Managed inventory and provided technical support for projects using Makerspace resources.
- Conducted internal training for interested members on machine usage: 3D Printer, Laser Cutter, PCB Miller.
- Repaired, upgraded machines (3D Printers) and used Arduino, Raspberry Pi to create custom automation (e.g., periodic heating of PLA filaments to prevent moisture).

SKILLS / INTERESTS

- **Languages**: English, Vietnamese
- **Hardware Prototyping:**
  - Design: Fusion 360, SolidWorks, Altium Designer
  - Fabrication: 3D Printing, Laser Cutting, Oscilloscope, Logic Analyser
- **Hardware Platform**: Windows, Linux, Arduino, ESP32, NVIDIA Jetson, Raspberry Pi
- **Programming**: Python, C Language, C++, C#, Unity, Java, Docker, MATLAB,
- **Machine Learning & Reinforcement Learning**: Pytorch, OpenAI gym
- **Robotics**: ROS & Core Packages, State Estimation, Factor Graph, SLAM, Structure from Motion
- **Visual Design**: Adobe Photoshop, Illustrator, Premiere Pro, Procreate, Stable Diffusion (automatic1111 Web UI)
- **Community Engagement**: Monthly meet up with Machine Learning, ROS interest groups in Google Developer Groups (GDG)