Trung Dang

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EDUCATION

University of Massachusetts Amherst — Expected Dec 2025
B.S. in Computer Science, Mathematics, and Physics — GPA: 4.0 / 4.0 (Dean's List)

Relevant Courses: Machine Learning, Computer Vision, Advanced Robots Dynamics, Search Engines, Statistics, Computation Theory, Abstract Algebra, Linear Algebra.

SKILLS

Languages: Python, Java, C++, Julia, JavaScript, SQL.
Tools / Packages / Framework: PyTorch, TensorFlow, Keras, OpenCV, Docker, FastAPI, Git, Microsoft Azure, Google Cloud Platform, MongoDB, ExpressJS, React/React Native, NodeJS.

EXPERIENCES

Dynamic and Autonomous Robotic Systems Lab — Amherst, MA
Undergraduate Research Assistant — Jan 2024 - Present

- Designed end-to-end reinforcement learning policies for humanoid and guide-dog locomotion using NVIDIA Isaacgym simulation, reducing energy expenditure 12% over 200 hours compared to default controls.
- Integrated a perception module to efficiently reconstruct intricate elevation maps of up to 1.15m from depth camera and lidar.
- Developed a navigation module to select from 5 discrete locomotion skills that outperform hard-coded trajectories by 15%.
- Enabled dynamic stair-climbing up to 22cm and across slopes of 0.4 gradient via imitation learning with the DAgger algorithm.

VinBigData, VinGroup JSC — Hanoi, Vietnam
Machine Learning Developer Intern — May - Sep 2023

- Developed YOLOv5 neural network using CSPDarknet53 for 95%+ real-time object detection from cameras for L3 conditional driving autopilot.
- Programmed rapid random tree planner using model predictive control for dynamic rerouting in dense traffic, with over 90% scenario success maintaining lane boundaries up to 50kph.
- Integrated perception, planning and control using ROS achieving unattended intersection navigation and lane changes in extensive closed track testing.

FPT Smart Cloud — Hanoi, Vietnam
Software Engineer Intern — Jan - May 2023

- Built generative Text-To-Speech models to improve mean opinion score by 10% by transfer learning with VITs and FastPitch2 algorithms using PyTorch, NVIDIA NeMo library, and LJSpeech dataset.
- Implemented zero-shot multi-speaker models to synthesize up to 60 seconds of speech on the VCTK datasets.
- Integrated model into CSAT voice-bot service to make 20,000+ daily customer service calls.

University of Massachusetts Amherst — Amherst, MA
Teaching Assistant — Dec 2022 – Present

- Coordinated lab sections, graded assignments, and hosted weekly office hours to assist 200+ students for 5 semesters.

PROJECTS

MuZero O An Quan

- Developed a PyTorch implementation of Google DeepMind's MuZero for O An Quan using a 34-layer residual network.
- Achieved 96%-win rate versus baseline model in under 1000 self-plays.
- Leveraged hyperparameter grid search to automatically select hyperparameters, which increased win rate by 5%.

MIT Battlecode 2024

- Achieved the longest winning streak and a 7/100 international ranking in MIT Battlecode 2024.
- Applied Bellman-Ford algorithm for vision-based pathfinding to find optimal paths for 10 units per turn in game map sizes up to 60x60 units, outperforming competitors' A* and Dijkstra through 12% faster route calculation on average.
- Implemented weighted quadratic scoring based on Lanchester Laws of Attrition to evaluate over 80-unit engagements per move and reducing losses by 24% compared to baseline heuristics.

UChicago Trading Competition 2024

- Designed a trading algorithm to consistently make $30,000 per round using market making methods and ETF arbitrage.
- Derived price series prediction model on non-chronological data using weighted sliding window and potential energy estimation.
- Optimized the Markowitz portfolio management model to improve the annualized Sharpe ratio from 1.5 to 2.2.

AWARDS & HONORS

2023 **UMass CICS Dean's International Scholarship,** awarded to top international student in computer science.

2021, 2022 **Vietnam Mathematical Olympiad**, top 25 nationwide and International Mathematical Olympiad training camp finalist.