Dhruv Giri Goswami

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EDUCATION

Carnegie Mellon University **Sep 2022 – May 2026**
Bachelor of Science in Artificial Intelligence with an Additional Major in Mathematics *Pittsburgh, PA*
Dean's List, High Honors
Relevant coursework:
Intro to Machine Learning, Probability, Multidimensional Calculus, Principles of Functional Programming, Principles of Imperative Programming, Matrix Theory, Differential Equations

EXPERIENCE

Teaching Assistant (15-251: Great Ideas in Theoretical Computer Science) **Jan 2024 – Present**
Carnegie Mellon University *Pittsburgh, PA*
- Taught recitations, held office hours, and led review sessions for a 300+ person class.
- Topics covered: automata, Turing machines, graph theory, probability theory, randomized algorithms, approximation algorithms, time complexity, P vs. NP.

Robotics Research Intern **May 2024 – Jul 2024**
Advanced Remanufacturing and Technology Centre *Singapore*
- Co-authoring a paper titled "Multi-Agent Path Planning in Unpredictable Dynamic Environments," developing advanced path planning algorithms for navigating complex settings.
- Engineered a sophisticated simulation model to accurately represent transitions in reconfigurable robotic systems, enhancing system performance.
- Devised a comprehensive mathematical framework to describe robotic processes, adopted by 2+ ongoing projects, providing a foundation for future research and development.

Mathematics Researcher **Sep 2020 – Oct 2020**
Yale-NUS college *Singapore*
- Formalized a project focused on applying Group theory principles to codify Rubik's Cube solutions. Mapped and streamlined the impact of 12 established algorithms through Group operations.
- Produced a 10% more efficient methodology for solving the Rubik's Cube through algorithmic analysis.
- Received positive feedback from the supervising professor. Read Testimonial.

Military Explosives Dog Trainer and Handler **Sep 2020 – Jul 2022**
Singapore Armed Forces *Singapore*
- Executed 20+ operations with a team of 6 professionals within the Explosive Ordnance Disposal unit to prevent bomb threats.
- Promoted to Corporal First Class with responsibilities for training and upkeep of a platoon of 25 peers.
- Trained 23 dogs in Explosives detection. Selected to represent platoon for inter-platoon showcase competition.
- Commended for leadership and dedication. Read Testimonial.

PROJECTS

Apps created **Jul 2023**
- C0VM: Designed and implemented a virtual machine to execute programs written in C0, a specific subset of the C language utilized at CMU.
- Tetris: Created a Tetris game from scratch using Python and leveraged Python's integrated graphics package, Tkinter.
- Chess: Devised and developed a complete chess user interface using Python, ensuring full adherence to all chess rules.

CodeForCorona, Head Organiser **May 2020**
- Conceptualized, planned, and coordinated a large-scale virtual hackathon, engaging 300+ participants to collaboratively address global challenges arising from the COVID-19 pandemic.
- Facilitated the creation of 100+ projects, including a fake news buster, safe route calculator, and Covid-19 simulation game.

TECHNICAL SKILLS

Languages: Python, C/C++, SML, JavaScript, HTML, CSS, MATLAB
Frameworks: React, Node.js, ReactAPI, FastAPI, PyTorch, TensorFlow
Developer Tools: Git, Docker, TravisCI, Google Cloud Platform, VS Code, AWS, Google Colab
Libraries: pandas, NumPy, Matplotlib