BRANDON YANG

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EDUCATION

University of Virginia, Charlottesville, VA

- ***B.S. Computer Science,*** *GPA: 3.9 / 4.0* ***May 2025***
- ***M.S. Computer Science,*** *GPA: 4.0 / 4.0* ***May 2026***
- **Awards**: UVA Dean's Engineering Research Scholarship (**Top 30** students)
- **Relevant Coursework**: ML, RL (G), NLP (G), Probabilistic ML (G), Human-Robot Interaction (G), Optimization, Data Structures & Algorithms, Theory of Computation (**TA)**, Computer Systems Organization (**Lab Lead TA**), Software Engineering

SKILLS

Programming: Python, Java, C/C++, JavaScript, TypeScript, HTML/CSS, Git, Bash
Tools: PyTorch, TensorFlow, OpenCV, ROS, Linux, Docker, HPC, SQL, LaTeX, Express, React, Flask, Django
Skills: Computer Vision, NLP, Robotics, ML/RL, AI Research, Software Development

EXPERIENCE

Co-founder & Software Engineer, *Voy,* Charlottesville, VA **Aug 2023 – Present**

- Spearheaded six-member team in designing Voy, a comprehensive volunteer and driver management system, serving as a 1PL solution for non-profit organizations and food banks and filling a critical market niche for medium-sized entities.
- Orchestrated the development lifecycle from requirements elicitation, conducting bi-weekly demonstration-based feedback sessions with **7** non-profit organizations, to deployment, incorporating **React**, **TypeScript**, **Python**, **AWS Lambda**, and **DynamoDB** for a responsive and scalable platform.
- Implemented a custom route optimization algorithm within the platform, enhancing operational efficiency by **20%.**
- Secured **$1,000** in funding as winners of the concept stage of the UVA Entrepreneurship Cup, affirming the project's innovation and potential for impact.

AI Research Intern, *UVA Link Lab,* Charlottesville, VA **May 2023 – Aug 2023**

- Led a team of three to develop GLOMA, an AI image editing tool that enhances diffusion models with spatial awareness, enabling dynamic object detection and manipulation within images via textual descriptions, resulting in **50%** increase in image feature similarity and **36%** improvement in image generation scores.
- Addressed spatial understanding gap in diffusion models by fine-tuning **LLama 2** language model with custom dataset, employing **Python**, **PyTorch**, and LoRA methodologies, achieving **80%** increase in accuracy for contextually relevant image generation.
- Implemented Goal-Conditioned Reinforcement Learning (**GCRL**) with GLOMA to generate goal images from human textual input, enhancing robotic comprehension of manipulation tasks and execution of human instructions.
- Invited to showcase research at multiple symposia and open house demonstrations, highlighting innovative approaches to spatial awareness in image generation and the practical applications of GLOMA in enhancing human-robot interaction.

Research Assistant, *Collaborative Robotics Lab,* Charlottesville, VA **May 2022 – Present**

- Innovated **5** new multi-agent robotics tasks in **IsaacGym** codebase, integrating over **40** modules using **Python**, **CUDA**, **PyTorch**, resulting in **50%** reduction in training time and **70%** leap in system scalability.
- Engineered Robot Tool-Grasping System, incorporating **deep learning**-based object detection algorithm using **AprilTag** and **ROS**, achieving **95%** accuracy rate in tool identification and selection, showcased demos at multiple workshops.
- Spearheaded research in Multi-agent Reinforcement Learning (MARL), developing Sequence Learning Algorithm that boosted offline MARL task efficiency by **20%**.

PROJECTS

Multi-Player Tetris AI | *Python, PyTorch* (GitHub, Technical Report)

- Spearheaded development of **state-of-the-art** multi-agent **AI system** for multiplayer Tetris, utilizing Centralized MARL and DQN, resulting in **87%** matches won, **19% higher** score, and **23%** more lines cleared than single-player agents.
- Led development of robust system using **Python** and integrated deep learning components with **PyTorch**, designed innovative reward functions, achieving **20% improvement** in training time.

Smart Office Hour Queue System | *Python, PyTorch, TypeScript* (GitHub)

- Co-developed **AI-driven** platform to optimize TA-student office hour interactions, implementing real-time data processing and user-friendly dashboards using **JavaScript** and **TypeScript**.
- Led development of AI Q&A and question similarity detection with **BERT** and **PyTorch**, which reduced student queue times by **40%** by allowing students with similar questions to be helped at once.
- Created pipeline for session summarization and TA feedback to students using **GPT-3** by generating LaTeX-formatted PDF.
- Won **3rd** place overall at VTHacks 11, the largest hackathon in Virginia.