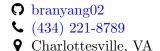
Brandon Yifan Yang

Curriculum Vitae

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EDUCATION

University of Virginia

Charlottesville, VA

B.S. in Computer Science; Major GPA: 3.98/4.00; Cumulative GPA: 3.91/4.00

August 2021 - May 2025

• Relevant Coursework: Machine Learning (ML), Reinforcement Learning (RL)*, Natural Language Processing (NLP)*, Probabilistic ML*, Human-Robot Interaction*, Optimization, Data Structures & Algorithms, Theory of Computation, Computer Systems Organization, Software Engineering *Graduate-level courses.

RESEARCH EXPERIENCE

Research Assistant, Learning and Interactive Robotics, University of Virginia Charlottesville, VA

Advisor: Prof. Yen-Ling Kuo

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- o Interpretable Vision-Language-Action Models via Skill Conditioning
 - * Researching Vision-Language-Action (VLA) models with a focus on action interpretability for robotic manipulation tasks.
 - * Developing SkillVLA, a novel VLA model that aims to improve long-horizon language-conditioned robotic policies and interpretability by grounding action outputs with synthesized subgoal instructions and a learned skill library.

Research Assistant, University of Maryland

College Park, MD

Advisor: Prof. Jia-Bin Huang

May 2024 - September 2024

- o Semantically Aware 3D Gaussian Splatting
 - * Researched methods to enhance general robotic scene understanding through 3D Gaussian Splatting (3DGS) by injecting semantically aware language embeddings into 3DGS scenes. This approach aims to improve language-conditioned robotic interaction with objects by enabling more accurate and stable 3D representations.
 - * Investigated video segmentation techniques, including SAMv2, to ensure temporal consistency in the integration of 2D training data into 3D scenes, facilitating reliable 3D embeddings for robotic perception and interaction tasks.

Research Assistant, Collaborative Robotics Lab, University of Virginia

Charlottesville, VA

Advisor: Prof. Tariq Iqbal

May 2022 - May 2024

- o Grounded Location for Object Manipulation (GLOMA)
 - * Developed zero-shot image-editing model grounded by language instructions for object relocation and manipulation tasks, designed for downstream robotic applications using goal-conditioned RL and Behavioral Cloning (BC).
 - * Integrated language grounding with visual perception by using bounding box guidance from pre-trained language models, enabling precise object relocation without external supervision and improving baseline performance by 65%.
 - * Collected and annotated custom dataset for fine-tuning pre-trained language and vision models.
- Centralized multi-agent RL for Collaborative Tasks
 - * Developed long-horizon on/offline centralized MARL for robotic bolt screwing tasks.
 - * Designed and optimized custom reward functions in multi-agent framework for task completion and agent collaboration, improving task success rate by 20%.

* Deployed and tested custom simulated environments in IsaacGym for training and evaluation.

Honors

Audience's Choice Award (Top 3 of 28)

October 2024

University of Virginia Large Language Model (LLM) Workshop

University of Virginia Research Computing Exhibition Finalist (Top 5 of 25)

April 2024

University of Virginia Research Computing

Dean's Engineering Research Scholarship (\$5000 stipend)

May 2023

University of Virginia School of Engineering and Applied Science

Entrepreneurship Cup Winner (Received \$1000 in funding)

November 2023

University of Virginia Darden School of Business

Dean's List

University of Virginia

Talks & Presentations

• Interpretable Vision-Language-Action Models via Skill Conditioning

October 2024

o University of Virginia Large Language Model (LLM) Workshop, Charlottesville, VA

• Using Synthetic Data and Sparse Autoencoders To Interpret Large Language Models

o University of Virginia Research Computing Exhibition, Charlottesville, VA

April 2024

• GLOMA: Grounded Location for Object Manipulation

o University of Virginia Fall Engineering Research Expo, Charlottesville, VA

October 2023

o University of Virginia Spring Thornton Society Dinner, Charlottesville, VA

September 2023

o University of Virginia Summer Research Symposium, Charlottesville, VA

July 2023

• Robot Tool Grasping with AprilTag

o University of Virginia Engineering Open House, Charlottesville, VA

November 2023

o University of Virginia Engineering Open House, Charlottesville, VA

November 2022

Teaching Experience

Teaching Assistant

Machine Learning

University of Virginia

August 2024 - Present

• Authored comprehensive and interactive course notes to support student learning and understanding.

- Collaborated with course staff to develop and grade assignments, exams, and projects.
- Mentor 20 students throughout semester-long ML projects, providing guidance on research methodology and implementation.

Teaching Assistant

University of Virginia

Theory of Computation

Jan 2024 - May 2024

• Held weekly office hours, one-on-one tutoring, and review sessions to assist students with course material.

Lab Lead Teaching Assistant

University of Virginia

Computer Systems Organization

Jan 2023 - May 2023

- Led and co-lectured weekly lab sections on computer systems topics with interactive activities for 70+ students.
- Supervised and coordinated a team of 6 TAs to facilitate effective learning and lab management.
- Held office hours and whiteboard sessions to provide additional support for students.

SOFTWARE PROJECTS

- notie-markdown: Developed open-source React component for Markdown rendering using TypeScript. Used notie-markdown to create course notes and blog posts on computer science and ML topics.
- SmartOH: Developed AI-assisted office hour queueing system, built with Python, PyTorch, and TypeScript. Placed 3rd overall at VTHacks11 (Hackathon held at Virginia Tech) (3/393).
- Voy: Collaborated with 7 non-profits to develop Voy, a volunteer and driver management platform using Python and TypeScript; received \$1000 in funding from UVA's Entrepreneurship Cup.

Programming Skills

- Languages: Python, C/C++, CUDA, Java, JavaScript, TypeScript, HTML/CSS
- ML + Robotics: PyTorch, TensorFlow, OpenCV, MuJoCo, ROS, IsaacGym, Habitat, RLBench, Maniskill
- Other Tools & Frameworks: Git, Docker, Slurm, Linux, LATEX, React, Node.js, Express, Django