

# Brandon Yifan Yang

## Curriculum Vitae

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📍 Charlottesville, VA

## EDUCATION

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- **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*
- **University of California San Diego** San Diego, CA  
*M.S. in Computer Science* *Expected 2027*
- **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

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**Research Assistant, Learning and Interactive Robotics, University of Virginia** Charlottesville, VA  
*Advisor: Prof. Yen-Ling Kuo* *Aug 2024 - Present*

- **Interpretable Vision-Language-Action Models via Skill Conditioning**
  - \* Leading project on Vision-Language-Action (VLA) models with focus on action interpretability for robotic manipulation tasks by integrating skill-conditioned action priors.
  - \* Developing *SkillVLA*, a novel VLA model aiming to improve long-horizon language-conditioned robotic policies and interpretability by grounding action outputs with synthesized subgoal instructions and learned skill library.
  - \* Delivered Oral Lightning Talk at 2024 UVA LLM Workshop, earning Audience Choice Award (top 3 out of 28 presentations).
  - \* Participating in weekly reading groups with 10+ members to discuss recent advancements in robotics, ML, and NLP.

**Research Assistant, University of Maryland** College Park, MD  
*Advisor: Prof. Jia-Bin Huang* *May 2024 - September 2024*

- **Semantically Aware 3D Gaussian Splatting**
  - \* Researched methods to enhance robotic scene understanding using 3D Gaussian Splatting (3DGS) in collaboration with MIT, injecting semantically aware language embeddings to improve accuracy and stability in 3D representations.
  - \* Developed approaches enabling downstream language-conditioned robotic interaction with objects, leveraging enriched 3DGS scenes for more precise and stable robotic behaviors.
  - \* Investigated video segmentation techniques (SAMv2) to maintain temporal consistency when integrating 2D training data into 3D scenes, ensuring reliable 3D embeddings for robotic perception and interaction.

**Research Assistant, Collaborative Robotics Lab, University of Virginia** Charlottesville, VA  
*Advisor: Prof. Tariq Iqbal* *May 2022 - May 2024*

- **Grounded Location for Object Manipulation (GLOMA)** [[code](#)]
  - \* Led team of 3 to develop 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.
- \* Presented poster at 3 conferences and symposiums.
- o **Centralized multi-agent RL for Collaborative Tasks** [\[code\]](#)
  - \* Developed long-horizon on/offline centralized MARL for robotic bolt screwing tasks with team of 4 (1 grad + 3 undergrads).
  - \* 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

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- 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

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- Interpretable Vision-Language-Action Models via Skill Conditioning** [\[slides\]](#)  
o University of Virginia Large Language Model (LLM) Workshop, Charlottesville, VA *October 2024*
- Using Synthetic Data and Sparse Autoencoders To Interpret Large Language Models** [\[poster\]](#)  
o University of Virginia Research Computing Exhibition, Charlottesville, VA *April 2024*
- GLOMA: Grounded Location for Object Manipulation** [\[poster\]](#)  
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

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- Teaching Assistant** University of Virginia  
*Machine Learning* *August 2024 - Present*
- o Authored comprehensive course notes with interactive visualizations to support student learning and understanding. [\[link\]](#)
  - o Collaborated with course staff to develop and grade assignments, exams, and projects.
  - o Mentored 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

*Computer Systems Organization*

University of Virginia

*Jan 2023 - May 2023*

- Led and co-lectured weekly lab sections on computer systems topics with interactive activities for 70+ students.
- Supervised and coordinated 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

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**notie-markdown** [[code](#), [course notes](#), [blog posts](#)]: 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** [[code](#)]: 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

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**Programming Languages**: Python, C/C++, CUDA, Java, JavaScript, TypeScript, Bash, HTML/CSS

**ML + Robotics**: PyTorch, TensorFlow, OpenCV, MuJoCo, ROS, IsaacGym, Habitat, RLBench, Maniskill

**Other Tools & Frameworks**: Git, Docker, Slurm, Linux, L<sup>A</sup>T<sub>E</sub>X, React, Node.js, Express, Django