

TEERATHAM (TJ) VITCHUTRIPOP

(804)-928-4949 | tv9fm@virginia.edu | tjvitchutripop.github.io
232 Harrison, Charlottesville, VA 22904

EDUCATION

University of Virginia, School of Engineering and Applied Science
B.S. Computer Science and B.A. Philosophy | GPA: 3.884

Charlottesville, VA
Expected May 2024

Relevant Coursework: Machine Learning; Robotics for Software Engineers; Linear Algebra; Probability; Statistics; Multivariable Calculus; Algorithms; Program and Data Representation; Non-Classical Logic

RESEARCH EXPERIENCE

Carnegie Mellon University, Robotics Institute

Pittsburgh, PA

RI Summer Scholar (RISS) – Robots Perceiving and Doing (R-PAD) Lab

Jun. 2023 – Present

Advised by **David Held**

- Proposed and developed novel unsupervised architecture, *TaskSeg*, for segmenting task-relevant objects in robot manipulation tasks through video demonstrations.
- Applied optical flow on video demonstration frames to generate pseudo-label masks used to train a segmentation model for a downstream robot manipulation policy.
- Performed comparative experiments with a model trained on ground truth data, showing comparable results (~5% mIoU difference on most tasks), and ablation studies on different flow aggregation methods.

University of Virginia, Link Lab

Charlottesville, VA

Research Assistant – Collaborative Robotics Lab

Aug. 2021 – Present

Advised by **Tariq Iqbal**

- Proposed and developed novel deep reinforcement learning algorithm, *LASSO*, to tackle dynamic goal manipulation tasks using an autoencoder and contrastive learning-based architecture, addressing the representation learning bottleneck of RL algorithms and improving upon state-of-the-art performance.
- Conducted experiments in custom OpenAI Gym MuJoCo environments to benchmark task performance.
- Developed behavior trees in ROS using PyTrees for robotic control in human-robot demonstrations.

PUBLICATIONS & PRESENTATIONS

T. Vitchutripop, J. Wang, and D. Held, *TaskSeg: Task-Specific Object Segmentation Through Demonstration*, 2023 RISS Working Papers Journal [[paper](#)] [[video](#)] [[poster](#)]

M. S. Yasar, **T. Vitchutripop**, and T. Iqbal, *LASSO: Learning Latent Policies via State Space Modeling* (submitted)

Poster Presentation

Robotics Institute Summer Scholar Showcase, Carnegie Mellon University

August 2023

TaskSeg: Task-Specific Object Segmentation Through Demonstration [[poster](#)]

Oral Presentation

Undergraduate Engineering Research and Design Symposium, University of Virginia

April 2023

LASSO: Learning Latent Policies via State Space Modeling [[slides](#)]

Oral Presentation

ACC Meeting of the Minds Conference, Virginia Tech (*1 of only 5 selected to represent UVA*)

March 2023

LASSO: Learning Latent Policies via State Space Modeling [[slides](#)]

HONORS & GRANTS

Robotics Institute Summer Scholar (RISS) [NSF REU Program] (*7.8% acceptance rate*)

June 2023

Robotics Institute, Carnegie Mellon University

Louis T. Rader Outstanding Undergraduate Research Award

May 2023

Department of Computer Science, University of Virginia

Best Oral Presentation (*1st place*)

April 2023

2023 Undergraduate Engineering Research and Design Symposium, University of Virginia

SKILLS & LANGUAGES

Programming Languages: Python, Java, C++, C, JavaScript, TypeScript, Assembly**Machine Learning and Robotics Frameworks:** PyTorch, TensorFlow & Keras, OpenAI Gym, MuJoCo, ROS, OpenCV, Scikit-Learn, NumPy, Pandas, PyTrees, PyTorch Lightning, RLBench**Other Tools and Frameworks:** GitHub, Bitbucket, Docker, Weights and Biases, Singularity, Slurm, Visual Studio Code, JupyterLab, Linux, React, Node.js, Airtable, Excel, MATLAB, Autodesk Fusion 360**PROFESSIONAL EXPERIENCE**

National Science Foundation

Alexandria, VA

Policy and Data Science Intern – UVA-MIT Policy Internship Program

June 2022 – Feb 2023

- Contributed towards efforts to publish and open-source innovation and entrepreneurship application data for the NSF Engines program, developing data cleaning pipelines, data visualization prototypes, and a public-facing database for collaboration in Airtable used by 5000+ users and featured in multiple publications [e.g., [Forbes](#), [Heartland Forward](#), [SSTI](#)].
- Leveraged state-of-the-art large language models and natural language processing techniques to extract entities from records and reports, unveiling companies/startups spun off from NSF-funded research.

Interop.io (formerly Cosaic)

Charlottesville, VA

Software Engineering Intern

June 2021 – Aug. 2021

- Designed headless UI unit tests for React components (increasing coverage from 0% to 50%) and end-to-end regression tests for 2 different parts of the product.
- Refactored existing legacy React components, converting them to TypeScript for build-time type safety and importing them into Storybook to support modular testing.

TEACHING EXPERIENCE

CS 2120 Discrete Mathematics and Theory 1, University of Virginia

Charlottesville, VA

Teaching Assistant

Feb. 2021 – Present

- Planned and co-lectured classes on quantifier logic and entailment to 100+ students.
- Guide and support students on course content during in-class activities, office hours, and after lectures.
- Strategize with professors and other teaching assistants about optimal ways to deliver class content.

STS 3020 Science and Technology Policy for Interns, University of Virginia

Charlottesville, VA

Teaching Assistant

Aug. 2022 – May 2023

- Supported instructor in program recruitment and course design + operations.
- Coordinated and moderated alumni guest speaker panels.
- Developed and maintained UVA Policy Internship Program [website](#).

LEADERSHIP & SERVICE

HooHacks, University of Virginia

Charlottesville, VA

Marketing Committee Co-Chair

Sept. 2020 – Present

- Lead committee members and collaborate with HooHacks executive board on planning marketing campaign and strategy for HooHacks, UVA's premier student-run hackathon with 1000+ participants.
- Established stronger relationships with organizations for underrepresented groups in STEM and minority serving institutions to make events more inclusive.

Charlottesville Debate League (CDL), University of Virginia

Charlottesville, VA

Teacher (2020-Present) | Head Teacher (2022)

Sept. 2020 – Present

- Mentored 30+ middle school students on extemporaneous speaking and public forum debate.
- Discuss with teachers on best ways to implement curriculum and maintain high student engagement.
- Analyze effective teaching strategies with other CDL teachers at 10+ schools.