Simran Bagaria

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Education

University of Washington Seattle, WA
Combined Bachelors/Masters of Science in Computer Science - ***GPA: 3.92/4.0*** *Sep. 2022 – June. 2025*

Technical Skills

Languages: Java, Python, JavaScript, HTML/CSS, SQL
Tools/Frameworks: PyTorch, NumPy, HuggingFace, ROS, Spring, React.js, Express.js, Node.js, MongoDB, Hibernate
Relevant Coursework: Machine Learning (ML), Natural Language Processing (NLP), Artificial Intelligence (AI), Systems for ML, Computer Vision, Distributed Systems, Databases, Data Structures and Algorithms

Experience

Software Engineer August 2025 - Present
J.P. Morgan Chase Bank *Seattle, WA*

AI/ML and Robotics Research Assistant Mar 2024 – June 2025
WEIRD Lab, University of Washington - Advised by Prof. Abhishek Gupta *Seattle, WA*

- Researched **Sim2Real transfer** methods to bridge simulation-trained policies with real-world robotic systems, including publishing a paper
- Trained multiple **manipulation** tasks in simulation, such as **peg insertion** and **generalized grasping**, using methods like **domain randomization** to ensure robust Sim2Real transfer
- Utilized state-of-the-art deep reinforcement learning algorithms such as **SAC, PPO** in **PyTorch** along with physics simulators such as **IsaacSim**, **IsaacGym**, and **Mujoco**

Software Engineering Intern June 2024 – Aug 2024
J.P. Morgan Chase Bank *Seattle, WA*

- Spearheaded the development of a photo upload **mobile application from scratch**, using **Spring, Java, Hibernate,** and **React.js** and streamlining the Commercial Real Estate Loans process
- Improved team efficiency by reducing photo upload time by **95%**, cutting over **30 minutes per loan application**, and saving **2,300** hours annually

CSE Teaching Assistant Sep. 2023 – Present
University of Washington *Seattle, WA*

- CSE 455: Computer Vision

Projects

Generalized Robotic Grasping System | *PyTorch, Python, IsaacSim* September 2024 – June 2025

- Developed a **general-purpose robotic grasping framework** using **grasp-pose supervision** and **geometric priors**, achieving **82.6% grasp success** across 2,300 diverse objects
- Designed and conducted a large-scale study of **vision-conditioned grasping policies**, comparing 5 visual backbones (R3M, DINOv2, CNN) on zero-shot generalization across 100 unseen objects
- Showed that **manipulation-pretrained encoders** (R3M) with **end-to-end fine-tuning** significantly outperform frozen or scratch-trained models, improving grasp accuracy by up to **35% over baseline**

StrategyQA: NLP Project for Implicit Reasoning Questions | *Python, HuggingFace* Jan. 2024 – Mar 2024

- Collaborated in a team of three to design and implement a pipeline for answering implicit reasoning questions
- Leveraged **ML/NLP** expertise, utilizing **PyTorch** and **Huggingface** models like **BERT** and **T5** to generate accurate predictions
- Achieved **12th** place in the SARI score category on the Allen AI Leaderboard, outperforming **200**+ submissions

Publications

Rapidly Adapting Policies to the Real-World via Simulation-Guided Fine-Tuning
Patrick Yin*, Tyler Westenbroek*, **Simran Bagaria**, Kevin Huang, Ching-An Cheng, Andrey Kolobov, Abhishek Gupta
International Conference on Learning Representations (ICLR), 2025