Anikait Singh

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Education

Stanford University *Palo Alto, CA*

PhD in Computer Science Sept. 2023 - Present

Rotation Advisors: Professor Chelsea Finn, Professor Stefano Ermon

Research Focus: Methods for decision making that are able to leverage diverse data sources and enable scaling.

University of California, Berkeley *Berkeley, CA*

Bachelor of Arts in Computer Science Aug. 2019 - May. 2023

GPA: 3.986, **Technical GPA:** 4.0 Highest Distinction in General Scholarship

Selected Coursework: Machine Learning, Deep Learning, Deep Reinforcement Learning, AI, Probability/Random Processes, Convex Optimization, Natural Language Processing, Information Theory, Graduate Probability Theory, Statistical Speech Recognition, Databases, Data Structures, Algorithms, Computer Architecture, Robotics, Python, Internet Arch.

Organizations: UPE, UCB Sikh Student Association, Berkeley Legends

Publications

[1] **A Workflow for Offline Model-Free Robotic Reinforcement Learning**
Aviral Kumar*, **Anikait Singh***, Stephen Tian, Chelsea Finn, Sergey Levine [Paper] [Talk]
Conference on Robot Learning (CoRL), 2021 (***Oral*** Presentation). *(Acceptance rate: 6.5%)*

[2] **Offline RL With Realistic Datasets: Heteroskedasticity and Support Constraints** [Paper]
Anikait Singh*, Aviral Kumar*, Quan Vuong, Yevgen Chebotar, Sergey Levine
Conference on Neural Information Processing Systems (NeurIPS), 2023

[3] **Pre-Training for Robots: Offline RL Enables Learning New Tasks from a Handful of Trials** [Paper]
Aviral Kumar*, **Anikait Singh***, Frederik Ebert*, Yanlai Yang, Chelsea Finn, Sergey Levine
Robotic Science and Systems (RSS), 2023 *(Acceptance rate: 20.6%)*

[4] **Robotic Offline RL from Internet Videos via Value-Function Pre-Training** [Paper]
Chethan Bhateja*, Derek Guo*, Dibya Ghosh*, **Anikait Singh**, Manan Tomar, Quan Vuong,
Yevgen Chebotar, Sergey Levine, Aviral Kumar

[5] **Should I Run Offline Reinforcement Learning or Behavioral Cloning?** [Paper] [Blog]
Aviral Kumar*, Joey Hong*, **Anikait Singh**, Sergey Levine
International Conference on Learning Representations (ICLR), 2022. *(Acceptance rate: 32.2%)*

[6] **Cal-QL: Calibrated Offline RL Pre-Training for Efficient Online Fine-Tuning** [Paper]
Mitsuhiko Nakamoto*, Yuexiang Zhai*, **Anikait Singh**, Yi Ma, Chelsea Finn, Aviral Kumar, Sergey Levine
Conference on Neural Information Processing Systems (NeurIPS), 2023

[7] **RT-2: Vision-Language-Action Models Transfer Web Knowledge to Robotic Control** [Paper]
Google DeepMind Robotics
Conference on Robot Learning (CoRL), 2023.

[8] **Open X-Embodiment: Robotic Learning Datasets and RT-X Models** [Paper]
Google DeepMind Robotics
Under Submission to IEEE International Conference on Robotics and Automation (ICRA), 2024.

[9] **A Mobile Application for Keyword Search in Real-World Scenes** [Paper]
Shrinivas Pundlik*, **Anikait Singh***, Gautam Baghel, Vilte Baliutaviciute, Gang Luo
IEEE Journal of Translational Engineering in Health and Medicine (IEEE), 2019.

Experience

Google DeepMind Robotics *Mountain View, CA*

Mentor: Quan Vuong and Jialin Wu Apr. 2023 - Present

- Worked on learning vision-language-action models that leverage internet scale data to boost generalization and enable emergent semantic reasoning for robotic manipulation.
- Trained models to enable better few-shot (in-context) learning to allow for better generalization to new objects, skills, and embodiments. Utilized Retrieval as an approach to automatically construct shots to prompt new behaviors.
- Empirically studied how PeFT methods can be leveraged to enable efficient adaptation of pre-trained VLMS.

X, the moonshot factory *Mountain View, CA*

Mentor: Lam Nyguen and Grace Brentano Dec. 2022 - Apr. 2023

- Worked on an early-stage project looking at using Reinforcement Learning for Supply Chain Management.
- Devised methods to represent high-dimensional action spaces to make decision-making in these settings easier and more efficient.
- Collaborated with partners such as Uniqlo/Fast Retailing to understand how their retail company is structured and how methods can be developed for them to have better inventory management.

Robotics AI & Learning Lab *Berkeley AI Research*

Advisors: Prof. Sergey Levine, Prof. Chelsea Finn, Prof. Aviral Kumar Feb. 2020 - May 2023

- Research is focused on learning good representations on data from large diverse data sources that show good generalization on tasks not seen before and enable rapid learning
- Another large focus is developing methods/frameworks that allow Offline RL to be practically used by ML Practitioners to tackle challenging sequential decision problems
- Fortunate to work with Professor Sergey Levine, Professor Chelsea Finn and Aviral Kumar in this research and publish in several conference venues

Silver Visual Neuroscience Lab *Helen Wills Neuroscience Institute*

Advisors: Prof. Michael Silver, Liz Lawler Sep. 2019 - Feb. 2020

- This work focused on analyzing CNN activations on Stimuli Images to model how patients with Binocular Rivalry construct represenations of their environment.
- We utilized stimuli images from a subset of ImageNet with various augmentations to construct these stimuli.
- Research was focused on understanding how the brain constructs representations of the environment and how these representations are modified by cognitive processes such as attention, expectation, and learning

Teaching Experience

CS 285: Deep Reinforcement Learning	Teaching Assistant: Fall 2022, Fall 2023
CS 188: Intro to AI	Teaching Assistant: Spring 2022
CS 61B: Data Structures and Algorithms	Deep Dive Instructor: Fall 2022
CS 61A: Intro to Python	Tutor: Spring 2021
CS 70: Discrete Mathematics and Probability	Reader: Spring 2021

Awards and Honors

2022	**CRA Outstanding Undergraduate Researcher Award Finalist**: UC Berkeley
2019 - Present	**Dean's List**: UC Berkeley
2020 - Present	**UPE**: UC Berkeley CS Honors Society
2019-2020	**SkyDeck Hotdesk Incubator**: Berkeley SkyDeck Fund
2019	**CalHacks 6.0 Fellowship**: UC Berkeley
Jan. 2020	**Apriorit Computer Science Scholarship**

Technical Skills

Programming	Python, Java, C/C++, MySQL, MongoDB
Frameworks	PyTorch, JAX, TensorFlow, Docker, NumPy
Languages	English(Native), Hindi, Punjabi, Spanish
Misc	Office, LaTeX

Projects

Deep Criminalize Sketch Artist *Skydeck/CalHacks*

- Designed Sketch-Artist application using React-Native that allows police to instantly render a realistic, searchable image based on a witness description in any language using a Generative Adversarial Neural Net.
- Winners of CalHacks 6.0 Fellowship and recieved oppurtunity to work in the SkyDeck HotDesk Incubator
- Initial Adoption by UC Berkeley Police Department

Supervision Search *Schepens Eye Research Institute*

- Created a mobile application to help visually-impaired patients localize where words are present in a cluttered environment
- Utilizes OCR + Levenshtein Distance to enable efficient and intuitive search in crowded, diverse environments
- Added specialized audio cues and additional assistive features for aiding with with localization