

DWAIT BHATT

✉ dhbhatt@ucsd.edu

☎ (858) 319-6716

🌐 [linkedin.com/in/dwait-bhatt](https://www.linkedin.com/in/dwait-bhatt)

🌐 dwaitbhatt.com

SUMMARY

Robotics graduate student at UCSD with 3 years of AI R&D experience at Samsung Research and ISRO. Seeking to conduct research in reinforcement learning, especially reward learning to tackle the value alignment problem.

SKILLS

Relevant Coursework: Robot Reinforcement Learning, Probabilistic Reasoning, Information Theory, Visual Learning, Deep Generative Models, Sensing & Estimation in Robotics, Recommender Systems, Linear Systems Theory

Programming Languages: Python, C++, Matlab

Libraries: PyTorch, Keras, Numpy, Pandas, Robosuite, OpenCV, Open3D

EDUCATION

University of California, San Diego

MS in Electrical & Computer Engineering - Intelligent Systems, Robotics & Control

Expected Graduation: June 2024

San Diego, California

Birla Institute of Technology and Science, Pilani (BITS Pilani)

June 2019

BE (Hons.) in Electrical & Electronics Engineering - CGPA: 8.29/10

Pilani, Rajasthan

EXPERIENCE

Existential Robotics Laboratory

January 2023 - Present

Graduate Researcher

San Diego, California

- Created a sim-to-real pipeline for transferring learned robosuite policies to a physical robot arm, using multiple sensors including a RealSense RGBD camera for tasks such as object pose estimation and hand-eye calibration. Successfully executed lift, pick-and-place, and stack policies on an xArm6 robot with sub-5mm error.
- Currently engaged in transfer learning across robot types by leveraging policies encoded to a latent space.

Samsung R&D Institute India

July 2019 - August 2022

Senior Machine Learning Engineer

Bangalore, Karnataka

- Spearheaded the development of a patented application launch time prediction model, from a python POC to an on-device implementation in C++, which was used to boost CPU for an optimal duration to make application launches 6% faster while extending battery life by 2 hours.
- Saved 10 days per quarter of manual work by creating a python tool to extract user-perceived launch time from app launch videos using a novel algorithm based on structural similarity between consecutive video frames.
- Authored a research paper based on this work and presented it at IEEE IJCNN 2022 held in Padua, Italy.
- Guided a team of four undergraduate students through a sequence prediction project as their mentor for Samsung's industry-academia collaboration program, PRISM.

Machine Learning Engineer

- Designed a reinforcement learning agent that trained on-device to control an Android smartphone's kernel tunables, reducing the decoding time of encrypted models by 10% on Samsung's flagship phones.
- Visualized the agent's performance and automated kernel tunable evaluation to identify an action set with the highest impact on model decryption time.

Indian Space Research Organisation (ISRO)

September 2021 - January 2022

Research Trainee

Ahmedabad, Gujarat (Remote)

- Implemented a deep reinforcement learning network in PyTorch trained using policy gradients to drop non-essential image patches from CIFAR10 data while maintaining classification accuracy of 90%. This work is being extended to satellite images for efficient poverty estimation from remote sensing imagery.

Pixxel

August 2018 - December 2018

Machine Learning Engineer

Pilani, Rajasthan

- Performed semantic segmentation of satellite imagery with a U-Net to identify roads and buildings with an IoU of 0.7.
- Applied classical image processing algorithms for water body extraction from multispectral satellite images.

PROJECTS

Musical Accompaniment Generation using Language Modeling | PyTorch | UCSD

April 2023 – June 2023

- Designed a novel architecture for accompaniment generation conditioned on a vocal track using language modeling.
- Achieved semantically meaningful generation (FAD 4.07) with minimal training in contrast to current large models.

Surface Reconstruction using Locally-Aware NeRFs | PyTorch | UCSD

April 2023 – June 2023

- Tackled the issue of missing local information in the NeRF architecture by introducing features from a Convolutional Occupancy Network. This enabled smoother surface reconstruction of complex geometries and large-scale scenes.

Curiosity-driven Robot Reinforcement Learning | PyTorch | UCSD

January 2023 – March 2023

- Introduced curiosity-based intrinsic motivation in robots for manipulation tasks via Random Network Distillation. Found that such exploration hurt the performance for robotic tasks in contrast to RND's success in playing video games.