SREEVISHAKH VASUDEVAN

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EDUCATION

Arizona State University August 2024 - May 2026(Expected)
MS in Computer Science *GPA: 4.0/4.0*
Advisor : Ransalu Senanayake
Relevant coursework : Foundations of Machine Learning, Artificial Intelligence, Knowledge Representation, Natural Language Processing (NLP), Data Structures and Algorithms, Data Visualization.

College of Engineering Trivandrum August 2017 - June 2021
BTech in Electronics and Communication Engineering *CGPA : 8.33/10*
Relevant coursework : Digital Signal Processing, Microcontrollers, Embedded Systems, Soft Computing, Probability, Differential Equations, Information Theory, Linear Algebra and Complex Analysis.

RESEARCH INTERESTS

Reinforcement Learning, Bayesian Optimizations, Vision Language Action Models, Failure Detection and Mitigation, Natural Language Processing, Generative AI, Explainability

EXPERIENCE

Research Assistant August 2024 - Present
LENS Lab ASU

- Co-authoring a survey paper unifying strategies for data selection and augmentation to improve training efficiency and accuracy across robotics, LLMs, and multimodal learning systems.
- Utilized **Proximal Policy Optimization (PPO)** to develop a **Reinforcement Learning** framework that identifies and quantifies failure mode probabilities in robotic manipulation policies (*RSS25 OOD Workshop*).
- Devised a **Bayesian Optimization** method to determine optimal camera placement during training, ensuring the resulting robot policy performs effectively across diverse viewing angles during testing (*ICML25 EXAIT Workshop*).
- Leveraged **H100 GPU**s to accelerate training and optimization of reinforcement learning policies for robotic systems, achieving high efficiency and scalability.

Machine Learning Engineer April 2022 - July 2024
LifeSignals

- Conducted research and implemented a **transformer** model to predict future patient risk scores based on vital sign measurements with an accuracy of 80% leading to better patient prioritization in emergency care wards.
- Designed a **U-net** architecture to classify and identify beat locations in ECG signals with 96% accuracy.
- Collaborated to develop a noninvasive and cuffless method to obtain blood pressure measurements using ECG and PPG waveform data which had a 20% improvement in availability and accuracy over existing methods.
- Developed a debugging tool for in-house and **MIMIC** datasets, leading to 5x faster algorithm testing.
- Created an algorithm to remove PPG baseline noise, improving SPO2 and BP estimation accuracy by 8%.

Machine Learning Engineer September 2021 - March 2022
Deloitte USI

- Built and deployed ML pipelines to automate leave approval predictions and flag payroll anomalies, reducing manual workload and improving error detection accuracy by 23%.
- Implemented automated data pipelines for generating HR reports and an interactive dashboard to monitor and manage team workloads, improving resource allocation efficiency by 35%.

PUBLICATIONS

- **Sreevishakh Vasudevan**, Som Sagar, Ransalu Senanayake, Strategic Vantage Selection for Learning Viewpoint-Agnostic Manipulation Policies. *ICML Workshop on Exploration in AI (EXAIT)*, 2025.
- Som Sagar, Jiafei Duan, **Sreevishakh Vasudevan**, Yifan Zhou, Heni Ben Amor, Dieter Fox, Ransalu Senanayake, From Mystery to Mastery: Failure Diagnosis for Improving Manipulation Policies. *RSS Workshop on Out-of-Distribution Generalization in Robotics*, 2025.

SELECTED PROJECTS

Wayfinder : A Robot Guide for the Visually Impaired January 2024 - April 2024

- Developed an intelligent robot guide for the visually impaired, integrating LiDAR, depth sensing, and GPS for autonomous navigation and obstacle avoidance.
- Trained a camera-agnostic robot arm policy using RGB images and Bayesian optimization for object pick-and-place tasks, achieving reliable performance across varying viewpoints.

Study Coach (Graph RAG, LLM Finetuning) December 2024 - March 2025

- Built an intelligent study planning assistant using **Graph-based Retrieval-Augmented Generation** (Graph RAG) to model task dependencies and enhance response grounding.
- Fine-tuned large language models with task-specific feedback and graph-structured inputs, improving contextual relevance and schedule alignment.

Automated Stock Trading (RL, Reward Modeling) November 2024 - January 2025

- Built a robust reinforcement learning (RL) trading system leveraging **DQN**, **Proximal Policy Optimization** (PPO), and **Advantage Actor-Critic** (A2C) algorithms to optimize and refine trading strategies.
- Formulated a multi-reward function with diverse technical indicators, utilizing **Multi-Layer Perceptron** (MLP) and **Long Short-Term Memory**(LSTM) models, resulting in a 23% improvement in decision-making accuracy.

Preference Diffusion (Stable Diffusion, Clustering) August 2024 - November 2024

- Enhanced clarity of generated images from fuzzy prompts in Stable Diffusion models by implementing **Direct Preference Optimization** (DPO), reducing output uncertainty by 15%.
- Designed and implemented a feedback mechanism using real-time minimal human input and **Gaussian Mixture Modeling** (GMM) on **CLIP embeddings** to refine Direct Preference Optimization (DPO), achieving a 20% increase in user satisfaction by aligning generated images more closely with user preferences.

TECHNICAL SKILLS

Programming Languages: Python, C, C++, MATLAB

Frameworks and Libraries: PyTorch, BoTorch, TensorFlow, Scikit-learn, Keras, NumPy, Stable-Baselines, Diffusers, Transformers, NLTK, Pandas, Beautiful Soup, Plotly, Gymnasium

Tools and Platforms: Git, VS Code, MuJoCo, Robosuite, RLBench, IsaacLab, ROS

Database & Cloud Services: MySQL, Firebase, AWS