

Deeksha Prahlad

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Summary

Ph.D. student in Computer Science at Arizona State University with a research focus on agentic AI for cyber physical systems. My work explores deterministic systems, human-in-the-loop interactions, and the integration of embodied AI in safety-critical applications to ensure reliability and real-time responsiveness.

Education

PhD in Computer Science 08/2024 - current

Arizona State University, Tempe, AZ

Coursework: Real-time Embedded System, Knowledge Representation

M.S. Robotics and Autonomous systems, Artificial Intelligence 08/2022 - 05/2024

Arizona State University, Tempe, AZ

GPA: 3.77/4

Coursework: Artificial Intelligence, Artificial Neural Networks, Perception in Robotics, Embedded Machine Learning, Computer Architecture, Statistical Machine Learning, Data Visualization

B.E. Electrical and Electronics Engineering 08/2017 - 07/2021

BMS Institute of Technology and Management, Bengaluru, India

GPA: 8.59/10

Coursework: Control System, Digital Signal Processing, Object Oriented Programming with C++, Python, Power electronics, Digital System Design

Skills

Programming Languages: Python, C, R (basic), Git

Cloud Platform: GCP **Tools:** Pytorch, TensorFlow, OpenCV, Keras, Docker, ROS, MATLAB, Tableau, Arduino, IMU sensors, Raspberry Pi

AI and ML: VAE, LSTMs, Computer Vision (CNN, GANs), NLP, SciPy, NumPy, Pandas

Certification: Machine learning, Deep Learning, Generative AI, Reverse and complement nucleic acid sequences using R

Professional Experience

Graduate Research Assistant, Arizona State University, Tempe, Arizona 08/2024- current

Graduate Teaching Assistant, Arizona State University, Tempe, Arizona 08/2024- 12/2025

- Course 420 – Computer Architecture
- Course 230 – Computer Organization and Assembly Programming

Graduate Service Assistant, Arizona State University, Tempe, Arizona 08/2023- 12/2023

- Course 470/591 – Electric Power Devices

Research Intern, Arizona State University, Tempe, Arizona 05/2023- 08/2023

- Implemented reinforcement learning algorithms and physics-informed ordinary differential equation models to predict power grid trajectories with 40% higher accuracy.
- Achieved 98% accuracy rate and significant energy optimization.

Research Intern, Sri Shasha Prayathi Technologies Pvt. Ltd, Bengaluru, India 09/2021- 10/2021

- Achieved a 50% reduction in false positive rates, enhancing system reliability and minimizing unnecessary alerts.
- Demonstrated proficiency in MATLAB for signal visualization and data simulation, showcasing advanced skills in data analysis and representation.

Research Intern, Indian Institute of Science, Bengaluru, India 07/2020- 09/2020

- Literature survey on high voltage techniques in medical applications and conducted an in-depth analysis of data pertaining to 50 diseases and performed statistical data analysis.
- Employed Tableau to assess the effectiveness of virus elimination via electrical voltages, while conducting 10

simulations using MATLAB for further investigation.

Projects

Agentic Driving coach

11/2025- current

- Developed a reactor-MoC using Lingua Franca to enforce determinism in agentic AI-powered CPS.
- The model focused on determinism in the system, consisting of human-in-the-loop, AI agents, and dynamic environments.
- Designed an agentic driving coach as a case study for safety-critical CPS applications.

Personalizing LLM using RAG and KG

07/2024-03/2025

- Developed a RAG framework using knowledge graphs to reduce hallucinations in personalized LLM responses.
- Integrated structured personal data (calendar, contacts, location) for improved contextual understanding.
- Improved response accuracy and personalization compared to baseline LLMs with minimal latency overhead.

Key Point Detection

10/2023-12/2023

- Developed and trained an HRNET model using PyTorch, leveraging the COCO dataset, resulting in a 99% accuracy rate.
- Implemented training of a PyTorch-based HRNET model with a custom dataset, achieving an accuracy rate of 98%.
- Converted the trained model to Tensorflow Lite format and successfully deployed it on a Raspberry Pi running Ubuntu.
- Enabled real-time key point detection feedback, displaying results on the monitor.

Enhancing Large Language Models

09/2023-12/2023

- Optimized LLMs with BERT, actively enhanced the question and answering responses for conversational AI experiences using PyTorch and evaluated it using rouge metrics.
- Improved the efficiency of Llama and T5 models using the transfer learning technique from a pre-trained BERT model for text-to-text generation.

Learning Complex Dexterous Manipulation

01/2023-05/2023

- Employed deep reinforcement learning techniques (DAPG and DAPG++) for tasks like object relocation using Mujoco.
- Implemented behavioral cloning and natural gradient policy techniques, achieving a baseline success rate of 98% using PyTorch.
- Proximal Policy Optimization was added as an improvement to the code to improve the success rate to 99%.

Style GANs Translation

08/2022-12/2022

- Generated authentic images from facial sketches through Image-to-Image translation, providing a solution for limited dataset availability using GANs.
- Leveraged Google Colab GPU resources for model training and inference, significantly reducing training time by 30% using PyTorch.

Publication

- Prahlad, Deeksha, et al. "Agentic Driving Coach: Robustness and Determinism of Agentic AI-Powered Human-in-the-Loop Cyber-Physical Systems", In Proceedings of The 3rd International Workshop on Foundation Models for Cyber-Physical Systems & Internet of Things (FMSys '26), ACM, (To Appear).
- Prahlad, Deeksha, et al. "Personalizing Large Language Models using Retrieval Augmented Generation and Knowledge Graph." Companion Proceedings of the ACM on Web Conference 2025. 2025.
- Lee, Chanhee, et al. "Work-in-Progress: On-device Retrieval Augmented Generation with Knowledge Graphs for Personalized Large Language Models." 2024 International Conference on Embedded Software (EMSOFT). IEEE, 2024.
- Indira Ramarao, Deeksha P, "Applications of Artificial Intelligence with Reference to Hematology: A Review," International Journal of Advances in Engineering and Management (IJAEM), vol. 3, no. 10 Oct 2021, pp. 824–826, Oct. 2021.