

SOUMYA RANI SAMINENI

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SUMMARY

Second year PhD student at Arizona State University with 3+ years of professional experience, including over 2 years of research experience in Artificial Intelligence (AI), Reinforcement Learning (RL), Large Language Models (LLMs), Machine Learning (ML) and Robotics.

EDUCATION

Arizona State University, Tempe Ph.D., Computer Science and Engineering Advisors: Prof. Subbarao Kambhampati	2024-2029 CGPA: 4.0/4.0
Indian Institute of Science, Bangalore Master of Technology, Computer Science and Engineering. Advisors: Prof. Shalabh Bhatnagar & Prof. Shishir Kolathaya 🏆 Awarded A+ grade for M. Tech thesis.	2019 – 2021 CGPA: 8.5/10
National Institute of Technology, Warangal Bachelor of Technology, Civil Engineering	2012 – 2016 CGPA: 8.55/10

RESEARCH & WORK EXPERIENCE

Graduate Researcher , School of Computing and Augmented Intelligence, ASU	Aug'24 - Present
<ul style="list-style-type: none">Associated Lab: Yochan under Prof. Subbarao Kambhampati.Topic: Reinforcement Learning, Reasoning & Planning abilities of LLMs.Projects: Post training LLMs with RL, Inference Time Scaling, Agentic LLMs & Latent RL for LLMs.	
Machine Learning Research Engineer , Quantiphi Analytics, India	July'23 - Aug'24
<ul style="list-style-type: none">Developed an RL solution for flexible job shop scheduling using graph attention networks.Co-authored a patent on System and method for intelligent scheduling of manufacturing jobsTools Used: TensorFlow, Python, Plotly, Dash, Google Cloud Platform	
Research Fellow , Microsoft Research, India	Feb'22 – July'22
<ul style="list-style-type: none">Mentors: Tanuja Ganu & Akshay Nambi, Project: VasudhaContributed to RL Framework in Decision Management Platform for renewable energy monetization.Optimized for use cases like carbon arbitrage, demand matching, bidding and profit maximisation.Tools Used: Python, Scikit, Pandas, Data Science, PyTorch, MLOps (Microsoft Azure).	
Solution Leader , Brane Enterprises, India	July'21 – Feb'22
<ul style="list-style-type: none">Developed a controller for quadrupedal locomotion by designing lightweight C++ libraries optimized for microcontroller deployment inspired from MIT Cheetah's pattern modulation & impedance control.Implemented communication protocols such as CAN and UART for efficient data exchange.Improved controller latency to microseconds compared to milliseconds reported in the original paper.Tools Used: C++ Design Patterns, YONO, ROS, OpenCV, Docker and TensorFlow Serving.	
Graduate Researcher , Computer Science & Automation, IISc Bangalore	March'20 – July'21
<ul style="list-style-type: none">Associated Labs: Stochastic Systems Lab, Prof. Shalabh & Stochastic Robotics Lab, Prof. Shishir.Developed DeMo RL Algorithm, achieving a 30% improvement in sample efficiency in simulations.Demonstrated a twofold performance gain in real-world experiments on 2R Link and quadruped.Accepted at ICRA 2022, NeurIPS Deep RL & Offline RL Workshops 2021.Tools Used: Python, TensorFlow, OpenAI Gym, RL Libraries: RLLib & Stable Baselines.	
Assistant Executive Engineer , Government of Telangana, India	June'18 – July'19
<ul style="list-style-type: none">Civil Engineer at Inspection & Quality Control, Roads & Buildings Department.Directed progress of major infrastructure projects, with high quality standards across half of the State.	

RESEARCH PROJECTS

Analytical study on LLM MDP, Post Training of LLMs with GRPO & SFT Under Review at ICLR'26

- Analysed key assumptions in RLVR based post training of LLMs and its similarity to Iterative SFT.
- Post-trained **Qwen 2.5**, **LLaMA 3.2**, and **DeepSeek R1** using **GRPO** and **Iterative SFT** on **GSM8K**.
- Identified length increase as a post training effect of structural assumptions in LLM MDPs.
- Tools Used: [PyTorch](#), [Verl](#), [vLLM](#), [Amazon AWS](#), [Hugging Face Transformers](#).

Efficiency of VLM generated rewards in Inverse Reinforcement Learning

Aug'24 - Jan'25

- Developed an Inverse RL Framework to compare VLM generated rewards with ground truth.
- Demonstrated 70% efficiency of VLMs in discriminating the RL policy and expert demonstration.
- Tools Used: [TensorFlow](#), [Python](#), [GPT-4V](#), [Clip](#), [Meta world](#).

Inference Time Scaling of LLMs using Rollouts

In progress

- **Mentors:** [Prof. Bertsekas](#)
- In contrast to Tree of Thoughts, used MCTS Rollouts at every time step in inference.
- Implemented Rollouts with LLMs as base policy and a verifier at inference stage of LLMs.
- Tools Used: [Python](#), [PyTorch](#), Dataset: [Game of 24](#).

Agentic LLMs approach for solving Grid world problems

In Progress

- Developed Multi Agent LLM Framework with agents iteratively processing clues & refining solutions.
- Tools Used: [Python](#), [PyTorch](#), Dataset: [Logic based Grid Puzzles](#).

PUBLICATIONS & PATENTS

1. RL in Name Only? Analysing the Structural Assumptions in RL post-training for LLMs

Samineni S.R, Kalwar D, Valmeekam K, Stechly K, Kambhampati S. [arXiv](#)

NeurIPS 2025, LAW: Bridging Language, Agent, and World Models for Reasoning and Planning workshop.

2. Local Coherence or Global Validity? Investigating RLVR Traces in Math Domains.

Samineni S.R, Kalwar D, Gangal V, Siddhant Bhambri S, Kambhampati S. [arXiv](#)

NeurIPS 2025, 5th Workshop on Mathematical Reasoning and AI.

3. Stop Anthropomorphizing Intermediate Tokens as Reasoning/Thinking Traces!

Kambhampati S, Stechly K , Valmeekam.K, Saldyt L, Bhambri S, Palod V, Gundawar A, **Samineni S.R**, Kalwar D, Biswas U. [arXiv](#)

NeurIPS 2025, Workshop on CogInterp: Interpreting Cognition in Deep Learning Models

4. US Patent 2024: System and Method for Intelligent Scheduling of Manufacturing Jobs

Dagnachew Birru, Anirudh Deodhar, Achint Chaudhary, **Soumya Rani Samineni**. [US20240319718A1](#)

5. Dynamic Mirror Descent based Model Predictive Control for Accelerating Robot Learning.

Samineni, S.R., Mishra U, Goel P Kunjeti C, Lodha H, Singh A, Sagi A, Bhatnagar S, Kolathaya S. International Conference on Robotics and Automation (ICRA) 2022. [DOI](#) [website](#)

CERTIFICATIONS & SHORT-TERM ACADEMICS

2023 **Applied Data Science** with Python specialisation certificate from University of Michigan

2021 **TensorFlow Developer** certificate from DeepLearning.AI

2020 Winter School on **Hybrid Cloud** by IBM Research India & IISc Bangalore

2019 Summer School on **Machine Learning and Computer Vision**, IIIT Hyderabad

ACHIEVEMENTS

2021  Secured a **Student Research Grant** from Robert Bosch Centre for Cyber Physical Systems, at IISc in recognition of the excellence demonstrated in my M. Tech project.

2018  Secured a rank of **136** among **107,893** aspirants in GATE, Computer Science & Engineering.

2012  Secured an All-India Rank of **6062** in **IIT JEE'12** with a **98.67** percentile.