SOUMYA RANI SAMINENI

CURRICULUM VITAE

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RESEARCH INTERESTS

Reinforcement Learning, Deep Learning, Robotics, Stochastic Approximation & Optimisation.

EDUCATION

Indian Institute of Science, Bangalore — 2019 – 2021
Master of Technology, *Computer Science and Engineering.* — CGPA: **8.5**/10
Advisors: Prof. Shalabh Bhatnagar & Prof. Shishir Kolathaya
Awarded **A+** grade for M. Tech thesis.

National Institute of Technology, Warangal — 2012 – 2016
Bachelor of Technology, *Civil Engineering* — CGPA: **8.55**/10

RESEARCH & WORK EXPERIENCE

Machine Learning Research Engineer, — July 2023 - Present
Quantiphi Analytics — Bangalore, India
- Designed and implemented Reinforcement Learning solution for Nurse Scheduling Problem (NSP).
- Implemented heuristic based Genetic Algorithm for NSP as Multi Objective Optimisation in PyMoo.
- Created visualisation of Multi Objective Solutions for MVP using Plotly & Dash.

Research Fellow, — Feb 2022 - July 2022
Microsoft Research, India — Bangalore, India
- **Mentors:** Tanuja Ganu & Akshay Nambi, **Project:** Vasudha
- Developed an RL framework for Encortex, a Decision Management Framework for Smart Grid Utility.
- Tackled various use cases such as carbon arbitrage, demand matching, bidding and profit maximisation.

Solution Leader, — July 2021 - Feb 2022
AI Labs, Brane Enterprises — Hyderabad, India
- Developed a lightweight C++ controller for onboard computation on STM Controller for quadrupedal locomotion by leveraging insights from MIT Cheetah's pattern modulation and 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.

Graduate Researcher, — March 2020 - July 2021
Computer Science & Automation (CSA), IISc Bangalore — Bangalore, India
- **Associated Labs:** Stochastic Systems Lab, Prof Shalabh & Stochastic Robotics Lab, Prof. Shishir.
- Made novel contribution by integrating RL with Dynamic Mirror Descent MPC for data efficiency.
- Trained RL with data collected from DMD MPC & in turn bootstrapped DMD MPC with RL policy.
- Introduced DeMo RL framework, capable to represent existing Mb-Mf approaches for diverse choices.
- Conducted regret analysis of DeMo RL with bounds on Neural Network's approximation errors.

Assistant Executive Engineer, — June 2018 - July 2019
Government of Telangana — Warangal, India
- Civil Engineer at Inspection & Quality Control, Roads & Buildings Department for State Government.
- Directed progress of major infrastructure projects, with high quality standards across half of the districts.

PUBLICATIONS

- **DeMo RL:** Dynamic Mirror Descent based Model Predictive Control for Accelerating Robot Learning. **Samineni, S.R**.*, Mishra, U.A*, Goel P, Kunjeti C, Lodha H, Singh A, Sagi A, Bhatnagar S, Kolathaya S. (*equal contribution)
  - In International Conference on Robotics and Automation (ICRA) 2022. DOI website
  - Presented at 2nd Offline Reinforcement Learning workshop @ NeurIPS 2021. [link]
  - Presented at Deep Reinforcement Learning workshop @ NeurIPS 2021. [link]

- Policy Search using Dynamic Mirror Descent MPC for Model Free off policy Reinforcement Learning. M.Tech Thesis, arXiv

CERTIFICATIONS & SHORT TERM ACADEMICS

2023 **Applied Data Science** with Python Specialisation Certificate from the 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 & POSITIONS OF RESPONSIBILITY

2022 **S**elected participant for **Amazon Research Days**- 2022, held in Bangalore, India.
2021 **S**ecured a **Student Research Grant** from Robert Bosch Centre for Cyber Physical Systems, IISc in recognition of the excellence demonstrated in my M. Tech project.

2019 **C**ontributed to publicity on social media for "**Meet the Stars**", a Deep Tech Startup Event, at IISc.
Received Udacity- **Secure & Private AI challenge scholarship** from Facebook.

2018 🏆 Secured a Rank of **136** out of **107,893** candidates in GATE - Computer Science & Engineering.
Attained the **Google India Challenge** scholarship for Mobile Web Specialization.

2017 **Member, Committee on Forensic Investigations**, Forensic Engineering Division, ASCE.

2016 **Associate Member**, American Society of Civil Engineers (ASCE).
Secretary, Civil Engineering Association, NIT Warangal.

2015 **Executive Member**, **Youth Red Cross**, NIT Warangal chapter, organized camps & conducted campaigns promoting “blood donation to save lives & organ donation to live again."

2014 **R**eceived an appraisal for user interface at **Code Fun Do**, a student hackathon held by Microsoft.
Winner in technical event Concreting Concrete at Technozion’14, technical fest of NIT Warangal.
Sub-Core, organised games with theme **‘Angry Birds’** at Spring Spree’14, cultural fest of NIT W.

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

2009 🎗 Stood as **District Topper** for scoring **91.3**% in 10th Grade.

SKILLS

Languages	Python, C/C++ & Java.
Frameworks	PyTorch, TensorFlow, Keras, Stable Baselines, RLlib, PyMoo, Plotly, Dash.

COURSEWORK

AI & ML	Topics in Stochastic Approximation, Advanced Topics in Robot Learning & Control Reinforcement Learning, Computational Methods of Optimisation, Machine learning
Theory	Online Learning, Design and Analysis of Algorithms, Combinatorics
System	Compiler Design & Computer Architecture.