AKHOURY SHAURYAM

akhouryshauryam@gmail.com ◇ LinkedIn ◇ GitHub ◇ Portfolio

ABOUT

I am a Final Year Grad Student at Chennai Mathematical Institute, pursuing my Master's in Computer Science. I am highly motivated and have a passion for Probability Theory, Formal Methods and Optimization. With a strong aptitude for problem-solving, I am constantly seeking out new challenges to enhance my skills.

EDUCATION

M.Sc Computer Science, Chennai Mathematical Institute 2023-
Relevant Coursework: Algorithmic Game Theory, Advanced Machine Learning, Online Convex Optimization, Financial Modeling Using Python, Stochastic Processes, Mathematical Logic, Economics, Interactive Theorem Proving, Intro to Generative AI, Quantum Information Theory, Quantum Algorithmic Thinking.

B.Sc Mathematics and Computer Science, Chennai Mathematical Institute 2020-2023
Relevant Coursework: Natural Language Processing, Computer Vision, Reinforcement Learning, Foundations of Machine Learning, Constraint Solving and Deep Learning (SMT), Theory of Computation, Complexity Theory, Design and Analysis of Algorithms, Advanced Programming, Probability Theory.

EXPERIENCE

Operations Research Scientist Dec 2024 -
Lyric.tech *Remote*

- Developing Clustering Algorithm using MIQCQP to meet demands and criteria.
- Learning Optimization in the context of Supply Chain automation.

Quantitative Research Intern March 2024 - November 2024
True Beacon *Bengaluru, Karnataka*

- Engaging in factor model research to evaluate the applicability of various research papers in the context of Indian markets.
- Working on a tool to quantify active management for a Mutual Fund portfolio.
- Enhanced pre-existing models by implementing regression and other analysis to find best weights.

Research Intern May 2024 - July 2024
Masaryk University & Technical University of Munich *Brno, Czech Republic*

- Collaborating with Professor Jan Kretinsky on the synthesis of winning policies using semantic learning.
- Utilizing semantic labeling of games to create heuristics for Linear Temporal Logic (LTL) synthesis.
- Developing innovative methods to enhance the efficiency and accuracy of policy creation.

Computer Vision Intern February 2023 - June 2023
Trumpf Metamation *Chennai, Tamil Nadu*

- Fine tuned robot precision using Image Processing for edge detection of metal sheets using MATLAB and OpenCV2, wrote code for Raspberry Pi to guide the robot to pick the sheets from the correct position and orientation
- Wrote code to find qr-like marks on a metal sheet to find height and its bend angle.

PROJECTS

RAFT Consensus Protocol Verification **M. K. Srivas and M. Praveen**

- Working in collaboration with Supra Research to verify RAFT consensus protocol using UCLID5

Exploiting Almost-Linear Substructures in DNNs for Abstraction-Refinement **M. K. Srivas and K. Madhukar**

- Worked on a new tool for safety verification of ReLU activated DNNs.
- Testing a novel method for Abstraction-Refinement in Neural Network for property verification using ReLuplex, an analogue for Simplex.

AttentionGAN: Unpaired Image-to-Image Translation **Kavita Sutar**

- Read the paper on AttentionGAN and Implemented the code for Multi-Domain Image-to-Image translation on various different tasks.
- Created report and presentations along with working code

Verification of Deep Neural Networks **M. K. Srivas**

- Verified ACAS XU Neural Network using ReLUplex. Abstracted the ReLU network using Inc/Dec classifications.
- Implemented Marabou to find coarse bounds and verified ACAS XU's properties

OTHER PROJECTS

- **Property Ownership on the Blockchain** Worked on a custom contract for maintenance of property database in Solidity to test it on a live server using Ganache and Truffle
- **Val Recolor** Built a video editing tool in Python using OpenCV and PIL that selects preferred parts of a video by color and recolors it according to input (Example and Code)
- **Snake RL vs GA** Training models to play Snakes through 2 methods, Reinforcment Learning and Genetic Algorithm, then running a simulation between the best candidates. (Ongoing)
- **T-Minus-X** Designed and Developed a game based on the theme 'Out of Control'. All resources were built by scratch. Ranked 1034 out of 6000+ entries Link
- **Nanashi** An Android game I designed and developed where I aimed to make an arcade endless runner, revolving around a mechanic that would work with one input hand.

SKILLS

Languages	Python, C++, Julia, Haskell, OCaml, Java, R, MATLAB, LaTeX
Libraries	TensorFlow, OpenCV, PyTorch, Z3, numpy, nltk, Qiskit
Tools	Git, Jupyter Notebook, Google Colab, VS Code, WSL

ACHIEVEMENTS

- JEE Advanced (2020) Mathematics 130/132
- ICPC Regionals Rank 21 Chennai Site (2025)
- ICPC Regionals Rank 51 Chennai Site (2024)
- Simon Marais Mathematics Competition [SMMC] (2023) - 4th All India Rank - 38th Golbal East
- Specialist on Codeforces
- Madhava Mathematics Competition [MMC] (2023) - 6th All India Rank
- Regional Mathematical Olympiad [RMO] (2018, 2019)
- Awarded Shriram Scholarship with full tuition fee waiver and stipend (2020, 2023)
- KVPY-SA (2020) Stage-1
- AMC 12A and 12B Honor Roll of Distinction and 3rd Rank in India (2020)
- SAT (2019) Mathematics 800/800

POSITIONS

Teaching Assistant

Topics in Formal Methods and Machine Learning	Jan 2025 - April 2025
Software Verification and Analysis	August 2024 - November 2024
Natural Language Processing	August 2024 - November 2024
Topics in Formal Methods and Machine Learning	August 2023 - November 2023

PRESENTATIONS AND TALKS

- Single-Minded Case in Combinatorial Auction Slides
- Understanding the Raft Consensus Algorithm Slides
- Safe Reinforcement Learning Via Shielding Slides
- Strategy Repair in Reachability Games Slides
- A Generalized Online Mirror Descent with Applications to Regression Slides
- Verifying Safety Properties in Deep Reinforcement Learning. Slides
- Explained Nisheeth Vishnoi's Gradient Descent derivation and utilization on different types of Convex Functions.
- Wrote and Presented Non-Trivial contracts written in Solidity for English Auction and Crowd Funding Slides
- AttentionGAN for Multi-Domain Image-to-Image traanslation Slides