2007, Krishna Hostel
IIT Madras
Chennai, Tamil Nadu, IN - 600036
ee25s018@smail.iitm.ac.in | laxminarayana.nikhil@gmail.com
Webpage : https://n1x1l.github.io/
Github : https://github.com/n1x1l
+91 85277 43909

Nikhil Laxminarayana

Graduate Student, Electrical Engineering, IIT Madras

Education

Indian Institute of Technology Madras, Chennai, India
Master of Science, by Research, Electrical Engineering, *Jul' 25 - Jul' 27 (Expected)*
GPA: 8.67/10 (First Term)

Indian Institute of Information Technology Kalyani, West Bengal, India
Bachelor of Technology, Electronics and Communication Engineering, *Jul' 21 - Jul' 25*
GPA: 9.45/10 (Overall), Rank 2

Research Interests

Deep Learning, Diffusion Models, Optimisations
Computer Vision, Image Processing, Problem Solving, Statistical Inference

Awards & Achievements

Awarded the **HTRA Scholarship** by the EE Deptt. at IIT Madras.
SIH 2024 Finalist representing **IIIT Kalyani** at **IIT Gandhinagar**.
Founding Member of the IEEE Student Branch at **IIIT Kalyani**.
Secretary of the inaugral edition of StatusCode0, **IIIT Kalyani**'s annual hackathon.
Secretary of the Robotics Club at **IIIT Kalyani**.
Management Lead of the Developers Student Club at **IIIT Kalyani**.

Research Projects

Throughput Maximisation in Cooperative Underlay Radios
Supervisor : Prof. Pratik Chakraborty *Jan '23 - Aug '25*

- Analytically derived the joint secure-reliable outages under various CSI-availability regimes in cooperative cognitive underlay radio framework.
- Analytical results for statistically optimal power allocation under the presence of an active eavesdropper were derived and tested against simulation results.
- Upto 40% improvement in effective throughput with instantaneous power control as compared to statistically-optimal power control were observed.
- *Part of the work submitted as Bachelors Thesis at IIIT Kalyani, currently under review at TVT.*

Classifying Medical Images with Quantum SVMs and Hybrid Neural Networks
Supervisor : Self *May '23 - Aug '24*

- Developed a variational model for an SVM kernel, based on a unitary transform emulated by a quantum circuit.
- Performed a comparative study of various vector encoding schemes.
- The results outperform classical neural-network based architectures on the benchmark datasets by 10%.

Throughput Improvements in AmBC Systems under CSI-based Co-phasing
Supervisor : Prof. Shankar Prakriya, EE, IIT Delhi *May '15 - Jul '15*

- Part of the work done during Summer Internship under Prof. Shankar Prakriya at IIT Delhi during Summer '24.
- Studied the effective secrecy throughput of ambient backscatter systems under CSI knowledge based cophasing to counter passive eavesdropper.

Academic Projects

spack: A Simple Pipeline for Audio Classification using KAPre
Supervisor : Prof. Oishila Bandhopadhyay *Oct '24*

- Developed a pipeline for training classifiers over a diverse dataset to classify instrument samples using frequency domain feature extraction with the help of KAPre for real-time Melspectrogram extraction with CNN-based feature extractors to classify audio samples.
- Devising solving strategies to reduce verification time on existing backends like CBMC

Course Projects

Comparison of various reward optimisation strategies in multi-armed bandits
Course : Probability | Supervisor : Prof. Venkatesh Ramaiyan *Oct '25 - Nov '25*

- Compared algorithms like Explore-then-exploit, ϵ-greedy and UCB in a probabilistic reward in a multi-armed bandits setting.

Additional Information

Languages: C, C++, Python, Bash, Verilog, LaTeX, Assembly (x86, MIPS) MATLAB.
Courses at IITM: Applied Linear Algebra, Probability, Deep Learning for Imaging, Modern Computer Vision, Image Signal Processing.
Self Taught:
Hobbies: Table Tennis, Badminton, Football, Reading and Debating