Kautuk Astu

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About

I am a graduate research student with a strong foundation in frameworks, drones, distributed and scalable systems, and hands-on experience in research and development across domains like Gazebo simulation, Drones-as-a-Service, and machine learning. I am deeply interested in bridging AI-driven optimization and system-level design, and enjoy working on projects that combine algorithmic rigor with practical engineering. Currently seeking opportunities in research, data systems, and AI-driven automation.

Education

Indian Institute of Science (IISc), Bangalore *2024 – Present*
M.Tech in Computational and Data Science

Lakshmi Narain College of Technology (LNCT), Bhopal *2020 – 2024*
B.Tech in Computer Science and Engineering (AI & ML) *CGPA: 8.97*

Experience

Teaching Assistant, IISc *Aug 2024 – Present*
Data Engineering at Scale

- Guided 50+ students in lab sessions and project implementation.
- Conducted hands-on sessions on distributed storage and processing using HDFS and Apache Spark.

AICTE IDEA Lab, Bhopal *Jan 2023 – Apr 2023*
Product Developer

- Developed embedded programs and integrated hardware components for product prototypes.
- Implemented machine learning algorithms to enhance product features and security.
- Performed system-level analysis and optimization of embedded system performance.

Research & Technical Projects

AeroCluster: Distributed Drone Swarm Management System *2025*
GitHub Link

- Designed a fault-tolerant ROS2-based distributed system for drone swarm coordination.
- Implemented master-drone selection, heartbeat monitoring, load balancing, and crash recovery.

ChampSim Branch Predictor Evaluation *2024*
Github Link

- Evaluated and compared bimodal, g-share, perceptron, and TAGE predictors using Cloudsuite benchmarks.
- Implemented a hybrid G-Share + TAGE predictor under a 64KB hardware storage constraint.

Optical Character and Format Recognition *2023*
Github Link

- Developed a web application to extract tabular data from images while retaining layout.
- Utilized CNN models (Keras) for OCR and Streamlit for frontend visualization.

Technical Skills

- Languages: Python, C, C++, SQL
- Frameworks: PyTorch, TensorFlow, Keras, Streamlit, ROS2
- Tools: Docker, Apache Spark, Apache HDFS, Git, Linux
- Domains: Drones, Machine Learning, Systems Simulation, Distributed Systems, Scalable Systems

Achievements

- GATE 2024: Achieved AIR 515 (Computer Science).
- Science Exhibition 2019: Winner, 47th Kendriya Vidyalaya Regional Science Exhibition.
- Chess Champion 2018: Winner, Regional-level Chess Tournament.