

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 M.Tech in Computational and Data Science	<i>2024 – Present</i>
Lakshmi Narain College of Technology (LNCT) , Bhopal B.Tech in Computer Science and Engineering (AI & ML)	<i>2020 – 2024</i> <i>CGPA: 8.97</i>

Experience

Teaching Assistant, IISc <i>Data Engineering at Scale</i>	<i>Aug 2025 – Present</i>
<ul style="list-style-type: none">• 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 <i>Product Developer</i>	<i>Jan 2023 – Apr 2023</i>
<ul style="list-style-type: none">• 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 GitHub Link	<i>2025</i>
<ul style="list-style-type: none">• 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 Github Link	<i>2024</i>
<ul style="list-style-type: none">• 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 Github Link	<i>2023</i>
<ul style="list-style-type: none">• 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
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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.