Mollah Md Saif

Computer Science Graduate — AI/ML — Robotics

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Summary

Machine Learning enthusiast, seeking a challenging PhD position focused on intelligent systems research. Proven ability to design and implement innovative software solutions, demonstrated through developing AI-powered bio-informatics pipelines and sophisticated medical device software. Applied these skills extensively in robotics, culminating in published research on autonomous navigation (ICRA 2025) and leadership of a university rover team in international competitions. Proficient in Python, C++, ROS, and core AI/ML frameworks (TensorFlow, PyTorch, Keras). Eager to contribute advanced AI techniques and robust software engineering skills to cutting-edge research in a rigorous academic environment.

Education

BRAC University

Jan 2020 - Sep 2024

BS in Computer Science, Dhaka, Bangladesh

- o CGPA: 3.65/4.0
- o Research Focus: Computer Vision, Autonomous Systems, System Automation, IOT
- o Honors: VC's List for Academic Excellence (7 Semesters), Dean's List for Academic Excellence (1 Semester)

Notre Dame College 2017 – 2019

High School Diploma, Science, Dhaka, Bangladesh

Publication

Autonomous Navigation in Crowded Spaces Using Multi-Sensory Data Fusion

Accepted to: 2025 IEEE International Conference on Robotics & Automation (ICRA) [A* Conference]

Status: Presented in Atlanta, USA, May 2025

Experience

Embedded Systems and Software Engineer

Jul 2024 - Mar 2025

Sa.Ni.Corporate Srl, Rome, Italy (Remote)

- Developed hardware and software for medical baropodometry devices.
- Designed Windows automation tools (Powershell) for process streamlining.
- Optimized a C++ medical visualization application through reverse engineering.

Artificial Intelligence Intern

Jul 2023 - Jan 2024

Genofax®, Dhaka, Bangladesh

- Learned and implemented AI/Deep Learning Models (TensorFlow, Keras, Scikit-Learn) in healthcare systems, including feature engineering and data preprocessing for large-scale medical datasets.
- o Researched personalized healthcare, focusing on genetics, human nutrition, and microbiome-derived diagnosis.
- Developed an AI-enabled bioinformatics pipeline for taxonomic classification and profiling of bacteria.
- Designed and implemented big data processing pipelines for training machine learning models on AWS.
- Worked with conversational AI and chatbot development (Flask, Jinja).

Research Experience

Team Lead Nov 2021 – Jun 2023

BRACU Mongol Tori (University Rover Team)

- Led a 40-member team through the full lifecycle of designing, building, and competing internationally with a Mars rover simulation.
- Designed and implemented the rover's core software architecture using ROS, C++, and Python from scratch.
- Developed and optimized key software components, including control systems and inverse kinematics for robotic arm.
- Integrated autonomous science module and an RTK-GPS mapping system into the rover's WebUI.
- Engineered the autonomous navigation stack enabling waypoint traversal and obstacle avoidance using sensor fusion within the ROS framework.

Research Assistant

Jul 2022 - Oct 2022

Laboratory of Space System Engineering & Technology (LaSSET)

- Designed a microcontroller-based architecture and deployed optimized deep learning models for on-board image classification on a 2U CubeSat.
- Researched, selected, and integrated an industrial camera system for high-quality image capture and processing.
- Conducted in-depth analysis of multispectral cameras to evaluate their suitability for machine learning applications.

Projects

LangChain Chatbot API \(\mathbf{O} \) nekosaif/langchain-chatbot-api

Jan 2025

- Developed a production-ready chatbot backend API using Python, FastAPI, LangChain, and OpenAI GPT models.
- Implemented custom FAQ training functionality, supporting PDF, TXT, and CSV document loading and embedding.
- Utilized FAISS for efficient vector similarity search to retrieve relevant FAQ answers.
- Containerized the application using Docker for easy deployment and scalability.

Automated Installation Scripting © nekosaif/patient_entry_setup

Jul 2024 - Sep 2024

- Developed an automated installer for complex "PatientEntry" medical software with numerous dependencies.
- Authored PowerShell scripts for silent installation of the main application and prerequisites.
- Integrated pre-execution tasks (SQL cleaning) and program startup routines using converted Batch-to-EXE files.
- Packaged all components into a user-friendly Self-Extracting (SFX) archive configured for automated script execution upon extraction to the temp directory.

Multi-Agent Pathfinder for Optimal Path Selection of Multiple Fog Robot

Nov 2023 - Mar 2024

- Developed algorithms for efficient path generation, collision avoidance, and dynamic obstacle handling.
- Integrated YOLOv8 for real-time object detection and AR tags for precise robot localization using OpenCV.
- Explored reinforcement learning (DQN, PPO, MARL) for adaptive and scalable navigation in simulations.
- o Conducted simulations and real-world experiments, analyzed system performance, and documented findings.

Skills

Programming Languages: Python, C/C++, Java, R, Bash, PowerShell, SQL

AI / Data Science: TensorFlow, PyTorch, Scikit-learn, Keras, LangChain, Pandas, NumPy, NLP, Computer Vision, Deep Learning, Reinforcement Learning, Vector Databases (FAISS), Bioinformatics Pipelines

Embedded Systems / Robotics: ROS, Arduino, Raspberry Pi, ESP32, FreeRTOS, Embedded C/C++, Control Systems, Inverse Kinematics, Path Planning (CBS), Gazebo, Sensor Integration, PCB Design (Autodesk Eagle, Proteus), Circuit Design & Debugging, Power Electronics, Satellite Systems (CubeSat), LTSpice

Web Development: Flask, REST APIs, HTML5, CSS, JavaScript, PHP, MySQL, NoSQL

Software & Tools: Git, Docker, CI/CD, Windows Automation, Reverse Engineering, AWS, Agile Methodologies, Linux Professional: Team Leadership, Project Management, Technical Documentation, Critical Thinking, Communication

Honors & Awards

- 16th Place, University Rover Challenge, The Mars Society, Utah, USA (Jun 2023)
- o National Round Champion, KIBO Robot Programming Challenge, JAXA, Tokyo, Japan (Apr 2023)

Certificates & Training

- IBM Data Science Professional Certificate, IBM, Coursera (2025)
- o Python 3 Programming Specialization, University of Michigan, Coursera (2020)
- o Java Programming and Software Engineering Specialization, Duke University, Coursera (2020)

References

Dr. Md. Golam Rabiul Alam, PhD

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