Mollah Md Saif

Computer Science Graduate — AI/ML — Robotics

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Summary

Robotics 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
- CGPA: 3.65/4.0
- Research Focus: Robotics, Computer Vision, Autonomous Systems, IOT
- 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: To be 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.
- 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.
- 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 multidisciplinary team (40 members) in designing, building, and competing with a Mars rover at international competitions in the USA and India, while setting strategic goals, monitoring progress, conducting evaluations, and serving as primary rover operator during competition tasks.
- Designed and built rover's core software architecture from scratch using ROS, C++, and Python for robust communication and control systems, enabling seamless integration between rover subsystems.
- Developed critical control systems and implemented complex inverse kinematics algorithms for a 6-DOF robotic arm for precision manipulation, while also engineering power systems and PCBs using Autodesk Eagle.
- Implemented RTK-GPS mapping system via NTRIP connection and integrated autonomous science modules, improving navigation accuracy and field operations.

Projects

LangChain Chatbot API ⦿ *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.
- Configured for deployment on cloud platforms like Render, including health check endpoints.

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 WinRAR Self-Extracting (SFX) archive.
- Configured the SFX archive 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.
- Configured microcontrollers, and established reliable robot-server communication (REST APIs).
- Conducted simulations and real-world experiments, analyzed system performance, and documented findings.

Skills

Programming Languages: Python, C/C++, Java, R, Bash, PowerShell, SQL
AI / Machine Learning: TensorFlow, Keras, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, Computer Vision, Reinforcement Learning, Data Preprocessing, Feature Engineering, Bioinformatics Pipelines, Predictive Analytics
Embedded Systems / Robotics: ROS, Arduino, Raspberry Pi, ESP32, FreeRTOS, Inverse Kinematics, Path Planning (CBS), Multi-Agent Systems, Gazebo, Sensor Integration, Fog Computing, Autodesk Eagle, Satellite Systems (CubeSat).
Web Development: HTML5, CSS, JavaScript, PHP, Flask, Jinja, REST APIs, MySQL, Web Scraping
Software Development & Tools: Git, Docker, CI/CD, Windows Automation, Reverse Engineering, GUI Development (PyQt), Jupyter Notebooks, Linux (Ubuntu, Raspbian), AWS, Agile Methodologies

Honors & Awards

- **16th Place**, University Rover Challenge, The Mars Society, Utah, USA (Jun 2023)
- **National Round Champion**, KIBO Robot Programming Challenge, JAXA, Tokyo, Japan (Apr 2023)
- **9th Place**, International Rover Challenge, Space Robotics Society, Bengaluru, India (Jan 2023)
- **Champion**, AUST Rover Challenge, AUST Robotics Club, Dhaka, Bangladesh (Aug 2022)

Certificates & Training

- **IBM Data Science Professional Certificate**, IBM, Coursera (2025)
- **Electronics System and PCB Design**, IEEE Aerospace & Electronic Systems Society (2022)
- **Python 3 Programming Specialization**, University of Michigan, Coursera (2020)
- **Java Programming and Software Engineering Specialization**, Duke University, Coursera (2020)

References

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