

Md Shaifur Rahman

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github.com/shaifurcodes | dev.to/shaifurcodes | plasso.ai | plasso.ai/portfolio

SUMMARY

Computer Science PhD (2025) and startup founder with a strong systems R&D background and 4 granted US patents that directly contributed to securing seed funding. Proven expertise engineering end-to-end intelligent systems, bridging low-level firmware and RTOS with real-time software stacks and hardware-accelerated ML inference on resource-constrained hardware. Leveraged this full-stack depth to architect the core infrastructure and AI stack powering Plasso (plasso.ai) — bringing embodied AI from research to production.

TECHNICAL SKILLS

Robotics & Autonomy:	ROS 2, Nav2, MoveIt 2, Trajectory Optimization, Gazebo, Isaac Sim, MuJoCo Playground, URDF, BehaviorTree.CPP, OpenCV, Depth Estimation, PCL, LiDAR SLAM, EKF, UKF, IMU, Sensor Fusion, Wheel Odometry
Embodied AI & ML:	VLA, VLM, 3D Object Detection, Edge LLM Deployment, Gemma, SmolVLA, Llama.cpp, TensorRT, ONNX, ONNX Runtime, LeRobot, Imitation Learning, Reinforcement Learning, PyTorch, Hugging Face
Embedded & Systems:	C, C++, Python, Zephyr, FreeRTOS, Low-Level Firmware, PID, Latency Optimization, Linux, SPI, I2C, UART, CAN Bus
HW & Edge Compute:	NVIDIA Jetson Orin Nano, Jetson AGX, CUDA, 6-DOF SO-101 Robotic Arm, KiCad, RPLIDAR C1, IMX219 Cameras, Mobile Robot Power Systems
DevOps & Tooling:	FreeCAD, OpenSCAD, CI/CD, GitHub Actions, Hardware-in-the-Loop, Regression Testing, Docker

PROFESSIONAL EXPERIENCE

Plasso (plasso.ai) <i>Founder & CEO</i>	Seattle, WA <i>May 2026 – Present</i>
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- Architected an end-to-end embodied AI robotics platform as sole founder, executing full-lifecycle hardware/software co-design across mechanical assemblies, custom PCBs in KiCad, and low-level firmware in C/C++.
- Engineered a fully offline, zero-cloud-dependency edge AI stack on NVIDIA Jetson devices: local LLM inference via llama.cpp, RAG-based context retrieval, and imitation/reinforcement learning pipelines via Hugging Face for physical behavior training.
- Developed a production-grade real-time software stack with strict node lifecycle management, BehaviorTree.CPP for task orchestration, and automated CI/CD pipelines via GitHub Actions.
- Designed autonomous mobility architecture implementing multi-sensor fusion across LiDAR, IMU, wheel odometry, and stereo vision for indoor SLAM and navigation.

NEC Labs America <i>Research Intern — Embedded Systems & Localization</i>	Princeton, NJ <i>Jun 2019 – Apr 2021</i>
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- Led firmware and core algorithm development for NavigateIO, a zero-infrastructure 3D tracking platform for first responders, fusing UWB, IMU, LoRa, and visual odometry on ARM Cortex-M microcontrollers.
- Achieved sub-meter 3D positioning accuracy in multi-story NLOS environments using Qorvo/Decawave DW1000 UWB transceivers; novel drop-and-go anchor architecture enables deployment in under 60 seconds.
- Architected a resilient end-to-end embedded IoT stack with low-level sensor drivers (SPI, I2C, UART), real-time high-throughput data pipelines, and fault-tolerant system diagnostics.
- Co-invented 4 granted US patents (12,335,899 · 12,207,226 · 11,595,934 · 11,388,564) covering infrastructure-free RF tracking architectures, directly contributing to securing \$1M in seed capital.

Stony Brook University — Wireless & Networks Lab <i>Research Assistant (NSF-funded)</i>	Stony Brook, NY <i>May 2014 – May 2025</i>
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- **FSO-VR** (NSF #1815306, \$500K): Designed and prototyped a steerable Free Space Optics wireless link for AR/VR headsets using Galvo-mirror beam steering and real-time RSSI feedback; achieved 99.99% link availability at 8K VR bandwidth; led to a US patent.
- **FSONet** (NSF #1514017, \$720K): Built a 100m FSO backhaul prototype with custom tracking and pointing mechanism; validated resilience against fog and vibration; formulated near-optimal transceiver placement algorithm for 3D

urban topologies; published at ACM MobiCom 2017.

- **SpecSense** (NSF #1642965, \$800K): Developed crowdsensed spectrum occupancy mapping using RTL-SDRs and spatial interpolation; designed temporal clustering for time-varying maps; published at IEEE INFOCOM 2017.

Stony Brook University

Teaching Assistant

Stony Brook, NY

Aug 2013 – May 2014

- Guided students in Software Development, Theory of Database Systems, and Wireless & Mobile Networks; provided mentorship and project supervision.

Philips Research North America

Research Intern — IoT

Briarcliff, NY

Jun 2015 – Aug 2015

- Integrated the open-source OpenAirInterface (OAI) EPC stack to encapsulate and route high-density smart city street lighting data over LTE network infrastructure.

Bangladesh University of Engineering and Technology

Lecturer, Computer Science

Dhaka, Bangladesh

May 2009 – Jun 2013

- Delivered courses on VLSI Design, AI, Theory of Computation, Operating Systems, Database Systems, and Micro-processor Design; served as Cisco CCNA 1–4 Trainer.
- Consulted on the Central Bank of Bangladesh automation project and Bangladesh’s first machine-readable passport system.

EDUCATION

Stony Brook University

Ph.D., Computer Science

Stony Brook, NY

May 2025

- Dissertation: “License-free Use of RF and Infrared Spectrum” — Advisors: Prof. Himanshu Gupta & Prof. Samir Das
- Dept. Fellowship (2013–2014); ACM SIGCOMM, MobiSys & IEEE SMARTCOMP Travel Grant recipient

Stony Brook University

M.S., Computer Science — GPA 3.78/4.0

Stony Brook, NY

Dec 2017

Bangladesh University of Engineering and Technology

B.S., Computer Science — GPA 3.92/4.0 (Dean’s List every semester)

Dhaka, Bangladesh

Mar 2009

US PATENTS

US 12,335,899 · US 12,207,226 · US 11,595,934 · US 11,388,564 — Infrastructure-free RF tracking and localization system for first responders (NavigateIO).

SELECTED PUBLICATIONS

200+ citations, h-index 7 – Google Scholar: <https://tinyurl.com/296y5zw2>

1. **Rahman** et al. “DynoLoc: Infrastructure-free RF Tracking in Dynamic Indoor Environments.” *Under revision, IEEE Trans. Mobile Computing*, 2026.
2. **Rahman** et al. “FSONet: A Wireless Backhaul for Multi-Gigabit Picocells Using Steerable FSO.” *ACM MobiCom*, 2017.
3. **Rahman** et al. “SpecSense: Crowdsensing for Efficient Querying of Spectrum Occupancy.” *IEEE INFOCOM*, 2017.
4. **Rahman** et al. “FSO-VR: Steerable Free Space Optics Link for Virtual Reality Headsets.” *ACM WearSys*, 2018.
5. Curran, **Rahman** et al. “Rethinking Virtual Network Embedding in Reconfigurable Networks.” *IEEE SECON*, 2018.
6. Gupta, **Rahman**, Curran. “Spectrum Allocation via Pathloss Estimation in Crowdsensed Shared Spectrum Systems.” *IEEE DySPAN*, 2019.
7. **Rahman** et al. “Creating Spatio-temporal Spectrum Maps from Sparse Crowdsensed Data.” *IEEE WCNC*, 2019.
8. **Rahman**, Naznin. “Efficient Routing in a Sensor Network Using Collaborative Ants.” *Springer ICSI*, 2016.

PROJECTS

Praxis — Open-Source Robotics Learning Platform

github.com/shaifurcodes/praxis-robotics

- Built a fully integrated zero-cloud-dependency LLM/VLA/VLM-enabled mobile manipulation platform: Yahboom 2WD chassis with 520 DC motors, LeRobot SO-101 arm with wrist camera, dual IMX219 front cameras, LiDAR, and Yahboom 10-axis IMU — all interfaced to NVIDIA Jetson Orin Nano Super 8GB.
- Implemented end-to-end task execution pipeline: voice commands via Bluetooth parsed by a local Gemma 4 E2B LLM, action grounding via SmolVLA, OpenCV-based object detection, LiDAR SLAM for mobility, and imitation/RL-trained arm control for pick-and-place.