Md Shaifur Rahman

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

SUMMARY

Computer Science PhD with 10+ years building end-to-end embedded and wireless systems. Inventor on 4 US patents; 8 peer-reviewed publications (200+ citations, h-index 7). Expertise spans real-time firmware in C/C++ (ARM Cortex-M, STM32, FreeRTOS/Zephyr), sensor fusion (UWB/IMU/LoRa), AI inference on edge hardware (Jetson Orin Nano, llama.cpp/CUDA), and full-stack system integration from hardware bring-up to production deployment. Founder & CEO of Plasso, an AI persona robotics startup.

TECHNICAL SKILLS

Languages	C, C++17 (expert), Python, ARM Assembly, Java, MATLAB; working knowledge of JavaScript, HTML
Embedded / HW	ARM Cortex-M (STM32, NXP), NVIDIA Jetson Orin Nano, Raspberry Pi, FPGA (Xilinx Arty A7/Vivado); SPI, I2C, UART, CAN, USB; JTAG/SWD; FreeRTOS, Zephyr
Radios & Sensors	UWB (Qorvo/Decawave), LoRa, Wi-Fi, FSO, USRP (GnuRadio), mmWave, RTL-SDR; IMU, LiDAR (RPLidar), cameras
AI / Edge	llama.cpp (custom CUDA 13.2 build), Whisper.cpp, Piper TTS, DistilBERT NLI, PyTorch, CUDA, cuQuantum, scikit-learn, TensorFlow
Robotics	ROS2, LeRobot (SO-ARM101 arm), sensor fusion, encoder-based odometry, SLAM concepts
Systems	Linux kernel programming, Docker, CMake, GCC, Git, REST API, MQTT, GnuRadio, NS-3, Zemax
Data	MySQL, Oracle, MongoDB, Qdrant (vector DB), ZenML

PROFESSIONAL EXPERIENCE

Plasso (plasso.ai) Seattle, WA
Founder & CEO *2025 – Present*

- Architecting an AI persona robot platform with swappable downloadable personalities running fully offline on NVIDIA Jetson Orin Nano; STT→LLM→TTS pipeline (Whisper.cpp → llama.cpp/Gemma → Piper) achieving <500 ms round-trip latency on-device.
- Built a custom CUDA 13.2-compatible llama.cpp from source for JetPack 7.2 (resolved container incompatibility); integrated DistilBERT zero-shot NLI classifier for real-time query routing in a Python AI agent, replacing fragile regex-based routing.
- Launched full company infrastructure: domain (plasso.ai), Netlify investor landing page, USPTO Class 009 trademark filing, GitHub repos, and social channels; targeting US Semiquincentennial (July 4, 2026) with a Lincoln Edition persona as launch wedge.
- Designed 4-DOF upper-body companion robot architecture with Qdrant-backed RAG and an App-Store-style persona marketplace; offline STT/LLM/TTS stack runs without cloud dependency.

NEC Labs America Princeton, NJ
Research Intern — Embedded Systems & Localization *Jun 2019 – Apr 2021*

- Led firmware and algorithm development for NavigateIO, a zero-infrastructure 3D indoor tracking system for first responders, fusing UWB, IMU, LoRa, and Visual Odometry on ARM Cortex-M targets.
- Achieved sub-meter 3D localization accuracy in multi-story NLOS environments using COTS Qorvo DW1000 modules; drop-and-go anchor architecture enables deployment in under 60 seconds.
- Co-invented 4 granted US patents (12,335,899 · 12,207,226 · 11,595,934 · 11,388,564); contributed to securing $1M in seed capital.
- Built complete embedded IoT stack: hardware bring-up, sensor drivers (SPI/I2C/UART), real-time data pipelines, and fault-tolerant diagnostics for field deployments.

Stony Brook University — Wireless & Networks Lab Stony Brook, NY
Research Assistant (NSF-funded, 3 concurrent grants) *May 2014 – May 2019*

- **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 100 m FSO backhaul prototype with custom Tracking & Pointing mechanism; validated resilience against fog and vibration; formulated near-optimal transceiver placement algorithm for 3D

urban topologies (NYC, San Francisco); 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.

Philips Research North America Briarcliff, NY
Research Intern — IoT *Jun 2015 – Aug 2015*

- Implemented IoT mesh network protocols optimized for 4G backhaul connectivity in a healthcare device context.

Bangladesh University of Engineering and Technology Dhaka, Bangladesh
Lecturer, Computer Science *May 2009 – Jun 2013*

- Delivered courses on VLSI Design, AI, Theory of Computation, OS, Database Systems, and Microprocessor Design; served as CISCO CCNA 1–4 Trainer.
- Consulted for Central Bank of Bangladesh automation project and Bangladesh's first machine-readable passport system.

EDUCATION

Stony Brook University Stony Brook, NY
Ph.D., Computer Science *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 Stony Brook, NY
M.S., Computer Science — GPA 3.78/4.0 *Dec 2017*

Bangladesh University of Engineering and Technology Dhaka, Bangladesh
B.S., Computer Science — GPA 3.92/4.0 (Dean's List every semester) *Mar 2009*

US PATENTS (ALL FROM NAVIGATEIO FIRST-RESPONDER TRACKING SYSTEM)

- US 12,335,899: Simultaneous localization and synchronization across multiple antennas
- US 12,207,226: Device tracking with radio ranging and sensor functions
- US 11,595,934: Infrastructure-free tracking and response
- US 11,388,564: Infrastructure-free RF tracking in dynamic indoor environments

SELECTED PUBLICATIONS (190+ CITATIONS, H-INDEX 7 — GOOGLE SCHOLAR)

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.