Nazmus Shakib Sayom

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Summary

Ph.D. student in Computer Science at the University of Utah. Researching cyber-physical systems security, currently focused on surrogate-based falsification for autonomous systems and safety policy verification for multi-robot systems.

Education

Ph.D., Computer Science Aug 2024 - Present
University of Utah Research Area: Cyber-Physical Systems Security

B.Sc., Computer Science & Engineering 2017 - 2020
American International University-Bangladesh Summa Cum Laude, CGPA: 3.96

Research Experience

Graduate Research Assistant Aug 2024 - Present
University of Utah, Salt Lake City, USA

- Property-guided falsification for CPS control stacks: build property-scoped reductions of control logic and physical dynamics to accelerate violation discovery; validate counterexamples on full systems (e.g., PX4, ArduPilot).
- Safety policy verification in multi-robot systems with multiple stakeholders: formalize policies, model role/permission constraints, analyze conflicts, and assess runtime monitoring.

Industry Experience

Linux Developer Jan 2023 - Jul 2024
meldCX, Dhaka, Bangladesh

- Developed application-specific embedded Linux distributions for ARM SoCs/SoMs.
- Implemented OS-agnostic, network-accessible abstractions for device drivers to improve performance and maintainability.

Senior Software Engineer Apr 2021 - Dec 2021
HelloTask Platform Ltd., Dhaka, Bangladesh

- Led design and development of a jobs platform for blue-collar workers.
- Built an IVR broadcasting and input-collection system for users without internet access.

Embedded Systems Engineer Jun 2020 - Mar 2021
HelloTask Platform Ltd., Dhaka, Bangladesh

- Prototyped a self-checkout store network to improve customer experience and security.
- Built a centralized out-of-home advertising delivery platform using IoT and computer vision analytics.

Lecturer (ETE/ICE) Jan 2022 - Dec 2022
Daffodil International University, Dhaka, Bangladesh

- Taught Operating Systems, Embedded Systems, and Computer Fundamentals.
- Co-authored two conference papers in deep learning; secured funding for low-cost educational technology research.

Selected Projects

Disaster Victim Tracking - Multi-layer communications (ESP32, LoRaWAN, BLE, GSM) for resilient search-and-rescue.
Voice Remote (AOSP TV) - Arduino + nRF24 with IBM Watson STT.
Depen - Raspberry Pi Zero OCR-centric tangible interface.
TALK-E - Long-range digital walkie-talkie on nRF24L01+.
Dancing Bees - Python/OpenCV visualization of honey-bee trajectories.

Technical Skills

Languages: C/C++, Python, JavaScript/TypeScript, Bash
Frameworks: Yocto, Node.js, NestJS, FastAPI, PyTorch, TensorFlow
Tools: Git, CMake, Docker, OpenCV, SQL, MongoDB, InfluxDB
Protocols: UART, I2C, SPI, LoRaWAN, BLE, REST, MQTT, WebSocket, GraphQL
Hardware: Raspberry Pi (3/4/CM4), ESP32, STM32, Toradex Verdin i.MX8M Mini, Firefly Core-3566JD4, Arduino

Honors & Awards

Summa Cum Laude (AIUB); Dean's List (Spring and Fall 2019); Champion, App Development, AIUB CS Fest 2017.