Abrar Rahman Protyasha

Contact Information

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Education

University of Rochester — Rochester, NY
B.S., Electrical and Computer Engineering — **Aug 2017 – May 2021**

- GPA: 3.80 out of 4.00; Research and Innovation Grant (RIG) recipient.

Relevant Coursework, Projects

Coursework:

Autonomous mobile robots	Digital image processing	Embedded systems
Signals/systems analysis	Integrated circuit design	Machine learning

Lab experience:

- Development of embedded systems and digital data acquisition systems on MIPS32 M4K core microcontrollers. Explored interrupts, timers, ADCs, DACs, various sensors/actuators, and communication protocols (UART, SPI, I2C).
- Analog circuit design, simulation (HSpice) and extensive testing/analysis using lab test equipment - oscilloscopes, digital multimeters, function generators.
- Numerical analysis and modeling of stochastic systems, and extensive data visualization using MATLAB and scientific computation libraries in Python (Numpy, Scipy, Matplotlib).

Notable projects:

- Autonomous mobile robot software architecture: Developed ROS packages for simulation, perception, occupancy grid mapping, path planning, localization, path following controls, and an OpenGL GUI to explore a partially known world using a TurtleBot2.
  Keywords: ROS, C++14, CMake, SLAM, Sampling-based motion planning, Pure pursuit.
- Remotely operated vehicle: Designed a wirelessly controlled vehicle with an on-board Raspberry Pi and PIC32 MCU, driving two DC gear-motors through a dual motor driver carrier using a PID controller.
  Keywords: Embedded Linux, SPI communication, Feedback control, Mechanical assembly.

Professional Experience

Silicon Labs — Nashua, NH
Applications Engineering Intern — **May 2020 – Aug 2020**

Product validation, solutions bring-up, design collateral generation for IEEE 1588 timing modules.

- Developed a 1 PPS/ToD stream alignment tool on an ARM Cortex-M4 based EFM32 MCU.
- Established procedure to demonstrate PTP synchronization of IEEE 1588 modules using the W32Time networking module in MS Windows. Reduced demo bring-up cost by $\gg 100\%$.
- Traced IEEE 1588 modules' electrical/performance specifications to underlying components to conform with internal documentation standards.

Wireless Communication and Networking Group (WCNG) — Rochester, NY
Xerox Engineering Research Fellow — **May 2019 – May 2020**

Researched on mobile ad-hoc network creation and management.

- Developed channel selection, IPV6 support, and improved debugging infrastructure in a wireless network emulating testbed used to evaluate mobile ad-hoc network protocols.
- Automated network data acquisition using Python test scripts and socket programs in C.
- Compiled use-case data, generated weekly reports, and led weekly lab meetings on this project.

University of Rochester — Rochester, NY
Lead Teaching Assistant — **Aug 2018 – May 2020**

Lead TA for ECE114 (Intro to C/C++ programming). Responsibilities included creating assignments, delivering lecture sessions, and establishing general course direction with Prof. Stephen Kastner.

Technical Skills

Languages: C++, Python, C, MATLAB, Bash, LaTeX, HSpice, HTML/CSS.
Technologies: UNIX, ROS, CMake, Git, NumPy, SciPy.
Hardware skills: Proficient with lab test equipment, Electronics prototyping, Soldering