Abrar Rahman Protyasha

CONTACT
INFORMATION

Phone: ▮▮▮▮▮▮▮▮▮▮

Website: https://aprotyas.github.io

Email: aprotyas@u.rochester.edu

EDUCATION

University of Rochester   Rochester, NY

B.S., Electrical and Computer Engineering   **Aug 2017 – May 2021**

- GPA: 3.84 out of 4.00; Research and Innovation Grant (RIG) recipient.

University of Rochester   Rochester, NY

M.S., Electrical and Computer Engineering   **Aug 2021 – May 2022**

RELEVANT
COURSEWORK,
PROJECTS

Notable projects:

- **Central Pattern Generator (CPG) viewer**: Developed a Unix-specific simulation application in Qt5 ($>$ C++11) for the 3-D visualization of arbitrary robot model locomotion under configurable CPG parameter sets.
  Keywords: C++, Qt, Eigen, CMake, Simulation, Inverse Kinematics.

- **Autonomous mobile robot software architecture**: Developed ROS packages ($>$ C++11) 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: C++, ROS, CMake, SLAM, Sampling-based motion planning, Pure pursuit.

- **Remotely operated vehicle**: Designed and programmed (in C) 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.

- **Automated bacterial colony counter**: Robust Python3.x package utilizing image segmentation and morphological analysis techniques to identify bacterial colonies in petrifilm images.
  Keywords: Python3, NumPy, scikit-image, SciPy, Signal processing.

Coursework:

Autonomous mobile robots	Digital image processing	Embedded systems
Computer architecture	Stochastic processes	Integrated circuit design

ENGINEERING
EXPERIENCE

Robotics and Artificial Intelligence Laboratory - Univ. of Rochester   Rochester, NY

Undergraduate Research Assistant   **Aug 2020 – Present**

- Investigated probabilistic graphical models to infer distributions of parametrized controllers for underactuated robots.

- Developed a simulation infrastructure (GUI + rendering) in modern C++ using Qt5 for the 3D visualization of locomotion of arbitrary robot models.

Silicon Labs   Nashua, NH

Applications Engineering Intern   **May 2020 – Aug 2020**

- Product validation and design collateral generation for IEEE 1588 timing modules.

- Developed embedded software tools (in C) for internal lab testing on an ARM EFM32 MCU.

- Researched on PTP standards in several domains, presented findings to entire business unit.

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 socket programs in C and Bash scripts.

TECHNICAL
SKILLS

Languages: C++, MATLAB, Python, C, Java, Bash, Assembly.

Technologies: Git, CMake, Qt5, Jupyter, UNIX, ROS, NumPy.