# Abrar Rahman Protyasha

CONTACT INFORMATION

Phone: ███████████
Email: aprotyas@u.rochester.edu

Website: https://aprotyas.github.io
Github: https://github.com/aprotyas

## EDUCATION

**University of Rochester** — Rochester, NY
*B.S., Electrical and Computer Engineering* — **Aug 2017 − May 2021**
- GPA: 3.86 out of 4.00; Honors: Highest distinction, Tau Beta Pi.

**University of Rochester** — Rochester, NY
*M.S., Electrical and Computer Engineering* — **Aug 2021 − May 2022**
- Concentration: Robotics, Signal Processing.

## ENGINEERING EXPERIENCE

**Open Robotics** — Mountain View, CA
*Software Engineering Intern* — **May 2021 − Present**
- Redesigned and integrated `rosdoc2` - a domain-agnostic tool for API document generation.
- Developed roadmap features for ROS 2's C++ client API and geometry libraries.
- Authored and contributed to various Secure Robotics Operating System (SROS2) tools and packages to address security concerns in the Robotics Middleware Framework (RMF).

**Robotics and Artificial Intelligence Laboratory - Univ. of Rochester** — Rochester, NY
*Undergraduate Research Assistant* — **Aug 2020 − May 2021**
- Investigated generalizable probabilistic models for motion adaptation of underactuated systems.
- Developed `cpg-viewer` - a Qt5 application (C++) 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**
- Developed IPV6 support and improved debugging support in a wireless network emulator.
- Automated network data acquisition using socket programs in C and Bash scripts.

## RELEVANT COURSEWORK, PROJECTS

*Notable projects:*
- `nodl_to_policy`: Tooling to generate a ROS 2 Access Control Policy from the Node Interface Definition (NoDL) of a ROS system, used in secure robotics applications - such as RoMi-H.
  *Technologies*: Python3, CLI entry points, XML, XSLT, Security.
- **Central Pattern Generator (CPG) viewer**: Cross-platform simulation application in Qt5 (> C++11) for the 3-D visualization of arbitrary robot model locomotion under configurable CPG parameter sets.
  *Technologies*: 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.
  *Technologies*: C++, ROS, CMake, SLAM, Sampling-based motion planning, Pure pursuit.
- **Automated bacterial colony counter**: Robust Python3.x package utilizing image segmentation and morphological analysis techniques to identify bacterial colonies in petrifilm images.
  *Technologies*: Python3, NumPy, scikit-image, SciPy, Signal processing.

## TECHNICAL SKILLS

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

*Tools/Technologies:* Linux, Git, CMake, Qt5, Testing frameworks (GoogleTest/pytest), CI tools (Travis CI, Github actions), Documentation (Doxygen, Sphinx).