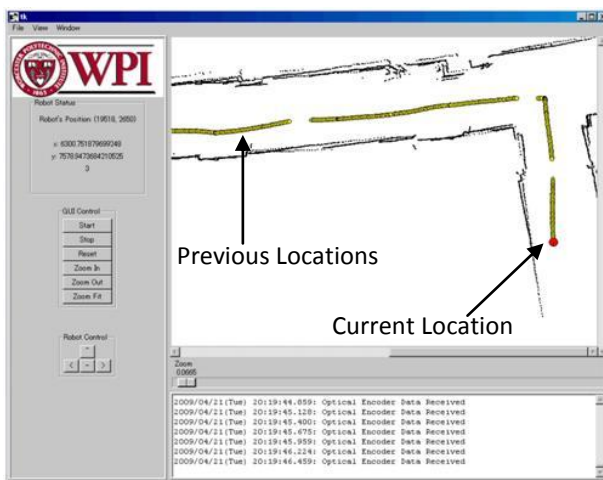


# Autonomous Mapping Robot

## 3<sup>rd</sup> Place Provost's MQP Competition

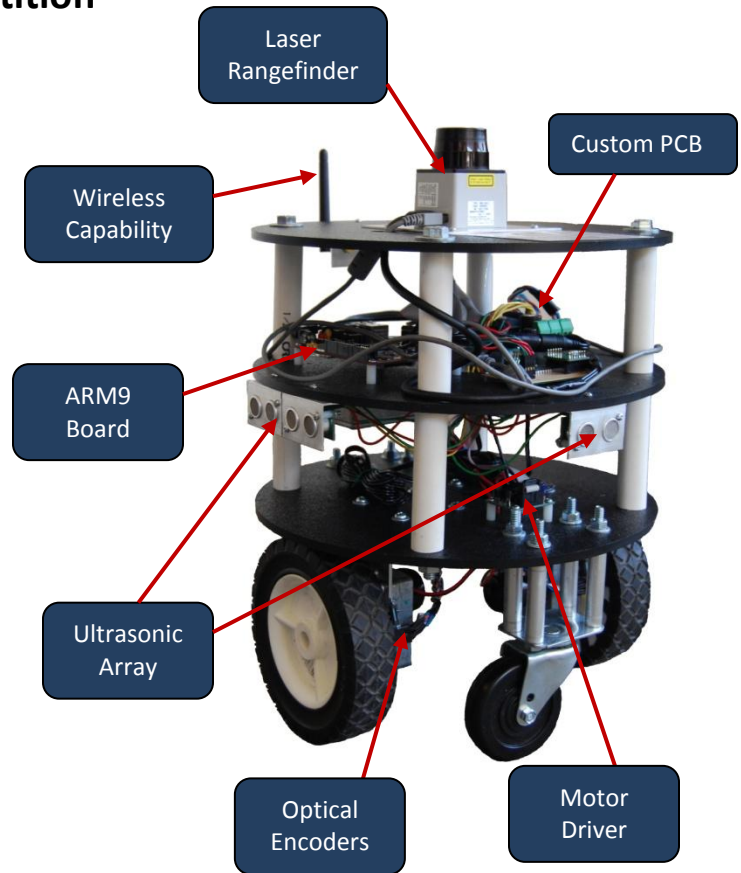
### The purpose of this Major Qualifying Project

was to design and build a prototype of an autonomous mapping robot capable of producing a floor plan of the interior of a building. In order to accomplish this, several technologies were combined including, a laser rangefinder for gathering mapping data, ultrasonic sensors for navigation and obstacle detection, optical encoders and an inertial sensor for location estimation, and wireless networking to send the mapping data to a remote host laptop.



Graphical User Interface Displays Example Map

well as to interface the many sensors with the processor. The hardware and software integration of these systems allowed for effective autonomous operation and accurate mapping with the robot.



All of these technologies together make up a small, self-contained autonomous robot controlled by an ARM9 processor running embedded Linux. A custom PCB was designed to house the power supply and wireless module as

### Project completed by:

- Jonathan Hayden (ECE)
- Hiroshi Mita (ECE)
- Jason Ogasian (ECE)

### Project advisors:

- R. James Duckworth (ECE)
- David Cyganski (ECE)

