IPRO 316: Developing a Robotics Initiative at IIT

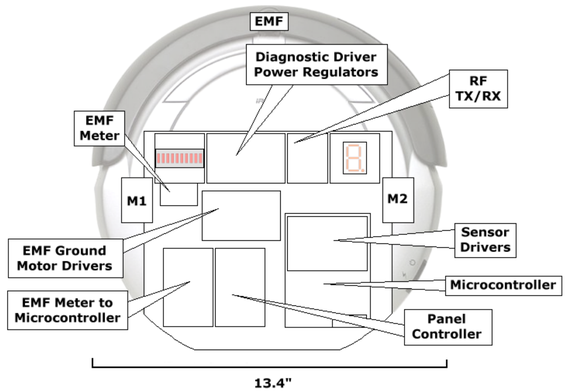
Project Timeline

- **9/6** — Group organizes.
- **9/27** — Most repairs complete.
- **10/26** — First microcontroller attempt.
- **11/15** — Second microcontroller attempt.
- **11/18** — All project details completed.

Division of Tasks

- Electrical- Saurabh Dass, Tyge Sopko, Ryan Wallenberg
- Mechanical- Eddie Schwalbach, Tyge Sopko
- Software- Jesse Collins, Saurabh Dass, Tyge Sopko, Eddie Yang
- Research- All Members

Physical Layout



E.R.M.bot Robotics Platform

EMF **R**oom **M**apping on a Roomba floor sweeping robot

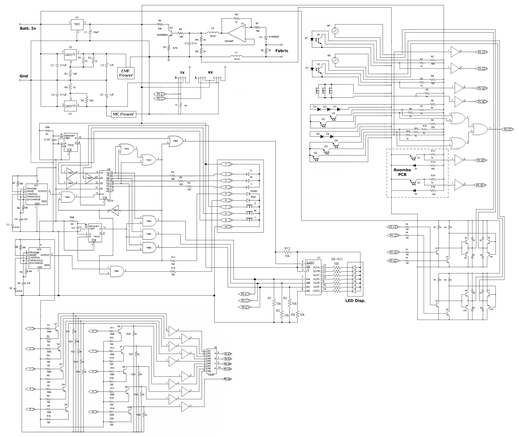
Goals

- To create a reusable platform to reinforce the robotics initiative at IIT
- Implementing electromagnetic field and room mapping capabilities on our platform

Obstacles

- Initial condition of robot was not satisfactory: extensive repairs were required
- Difficulties choosing microcontroller based on Pyro requirements

Electronic Schematic



Accomplishments

- A hardware platform was designed and constructed
- Foundation for a room mapping algorithm was created

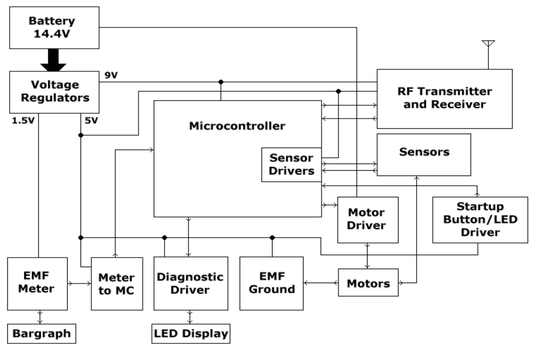
What's Next

- Refine software and construct more E.R.M.bots for swarms
- Improve motor shielding system

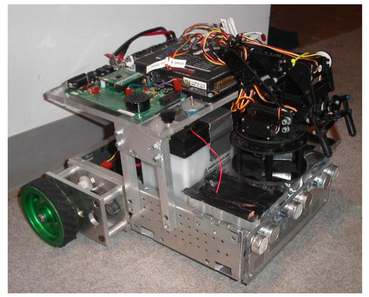
Why EMF?

- Inconclusive studies about the dangers of prolonged EMF exposure
- E.R.M.bot is a platform capable of mapping a room's EMF levels

Block Diagram



Peppy



Functions/Abilities

- Voice Recognition
- Mobility
- Grip
- Sonar

Goals

- Create Documentation
  - Make it easier for new members to learn about Peppy
- Replace non working parts
- Marketability
  - Make Peppy into a product that can be sold to a customer

Obstacles

- Battery did not hold charge
- Voice Extreme functionality of Peppy was shaky
- Lack of Documentation