

Robot Hardware

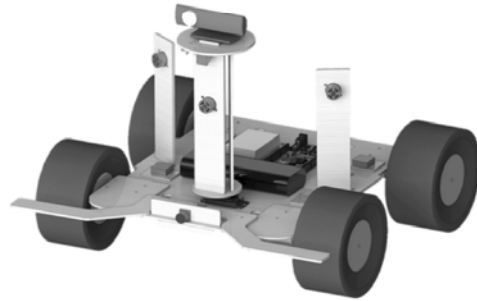
ANDY GRAY

Objectives

- Process for determining hardware requirements
- General hardware breakdown of a robot
- Electrical hardware
- Mechanical hardware
- Where to find products

Traditional IMDL Robot

1. Obstacle avoidance
2. Mission
3. Special Sensor

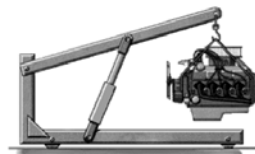


ROBOT HARDWARE: ANDY GRAY

3

Brainstorming a robot

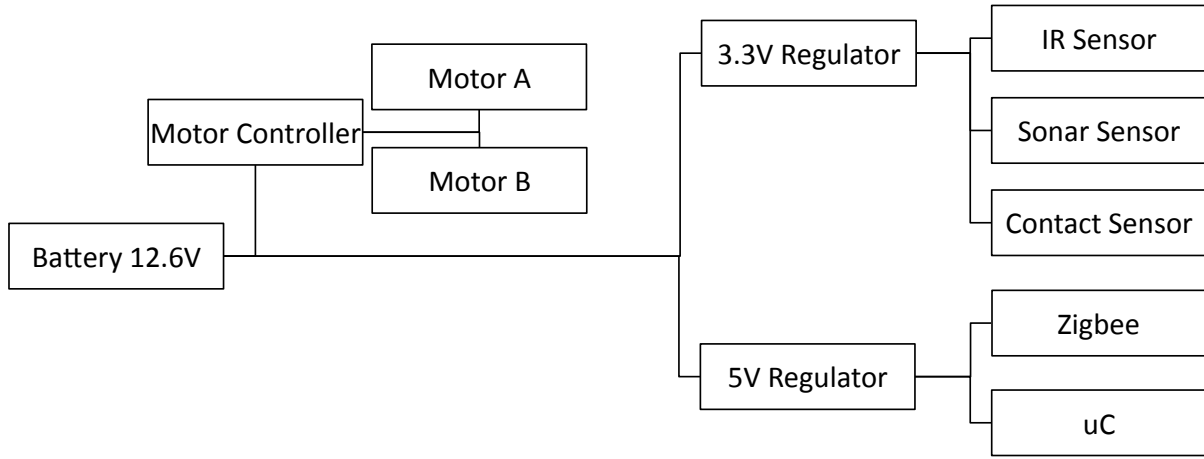
1. Determine the robot's mission
2. Research previous solutions
3. Design/Simulate/Model solutions
4. Research hardware
5. Identify hardware requirements



ROBOT HARDWARE: ANDY GRAY

4

Breakdown of a Robot



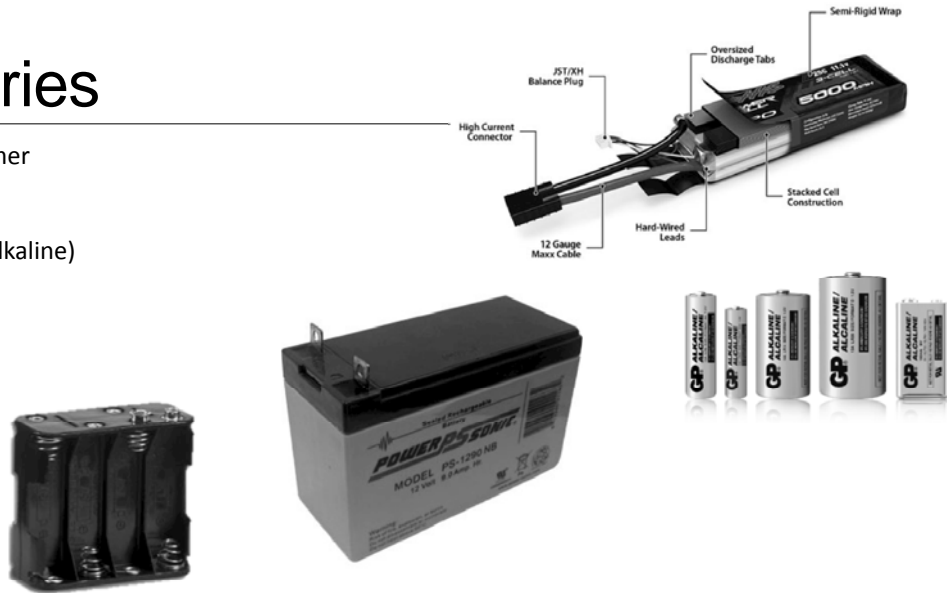
Motors/Servos

- Brushed
- Brushless/stepper motor
- Traditional servo
- Continuous turn servo



Batteries

- Lithium Polymer
- NiMH
- Disposable (alkaline)
- Lead Acid
- LiFePO4

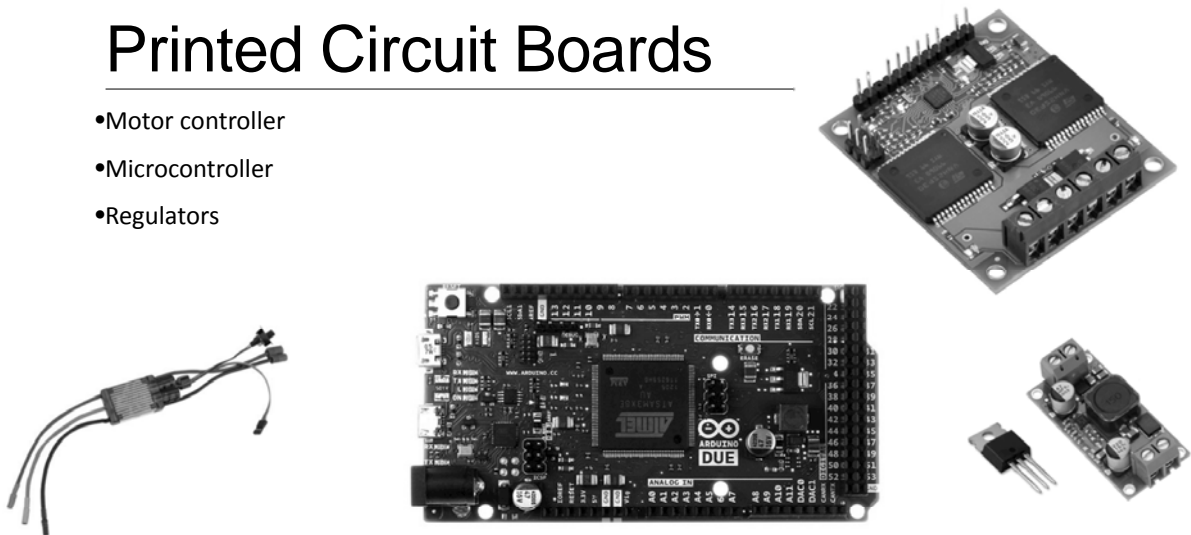


ROBOT HARDWARE: ANDY GRAY

7

Printed Circuit Boards

- Motor controller
- Microcontroller
- Regulators



ROBOT HARDWARE: ANDY GRAY

8

Sensors

- Range
- Temperature
- Humidity

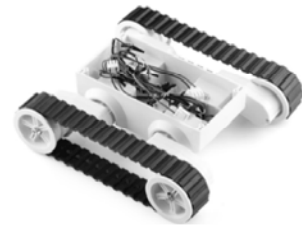
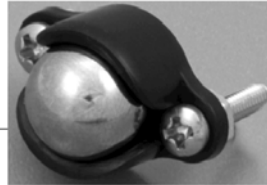


ROBOT HARDWARE: ANDY GRAY

9

Propulsion

- Wheels
- Treads
- Propellers
- Castors
- Legs



ROBOT HARDWARE: ANDY GRAY

10

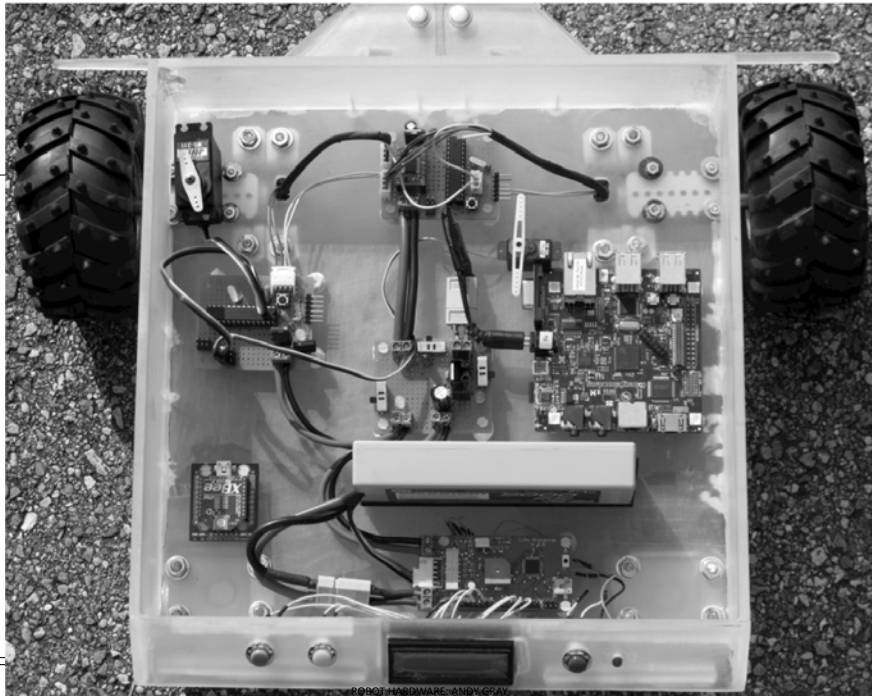
Misc Hardware

- Aircraft plywood
- Fasteners
- Hinges
- Wire
- Heat Shrink



ROBOT HARDWARE: ANDY GRAY

11



ROBOT HARDWARE: ANDY GRAY

12

Purchasing Products

- Locally

- Lowes/Home Depot
- Hobby Lobby
- HobbyTown USA



- Online

- Sparkfun <https://www.sparkfun.com/>
- Pololu <http://www.pololu.com/>
- Lynxmotion <http://www.lynxmotion.com/>
- McMaster <http://www.mcmaster.com/>
- Digikey <http://www.digikey.com/>
- HobbyKing <http://hobbyking.com/hobbyking/store/index.asp>
- Adafruit <https://www.adafruit.com/>
- AmeriDroid <http://ameridroid.com/>

Questions
