GROUP 7 -- Project 3

John Zumwalt
Ramakrishna Pantangi
Robert Moe
Vitaliy Marin
Intro

- Hardware
- Software
Hardware

- Motors and gearing
  - 4-wheel-drive
  - Two motors
Hardware cont.

- Sensors
  - CMU-cam
  - Shaft encoders
Hardware cont.

- The Claw-Grabber
Software

- Simple Finite State Machine
  - Easy to add modules
- Modules
  - Path Planner
  - Path Executor
  - Find Block
  - Has Block
Software Cont.

- World Model
  - Array of coordinates
    - Block
    - Goal
    - Robot
  - Robot coordinates updated as it moves through the world.
  - Used to find closest goal and plan a path.
Software Cont.

- Path Planning.
  - Find the shortest goal (Block / Goal)
  - Move plus/minus x positions to line up with goal on the same plane.
  - Move plus/minus y positions to goal.
  - Allowed for just 1 90 degree turn
    - Minimized turning error.
Software Cont.

Plan Executor.

- Array of commands
  - Straight, Turn Right, Turn Left, Stop, End
- Combines many straight commands into 1 command for specified distance.
- Robot evaluates position and re-plans if not to destination.
Software Conclusion.

- Software was a success when it came to the world model / path planning / execution.
- Shortfall was the accuracy of the turns and correcting for turning error. Needed more resolution for shaft encoders (currently had 10 ticks per inch).