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Informal Proposal

In short, the project consists of having two autonomous robots. Robot A will mimic a daily automotive that would drive around until it 'breaks down.' Once it breaks down, Robot A would send a signal to Robot B signaling its need of towing service. When Robot B receives such signal, he would then proceed to Robot's A location for assistance. Upon arrival, Robot B would tow Robot A to a specified destination.

Below is a list of possible sensors and sensors types that would help the robot accomplish phase I goals: obstacle avoidance and robot motion. Also listed, are the future hardware that would be used to accomplish phase II of the project.

Sensors

- Camera:
  - Raspberry Pi Camera
  - PS3 Eye Camera
  - Logitech HD Webcam
- Proximity sensor
  - IR Sensor
  - CDS- Light Intensity

Actuators

- Two motors
  - DC Brushed with encoder
  - DC Brushless with encoder
- Dual motor controllers compatible with motors
- A caster

Behaviors in detail

- Robot A (Broken-down robot)
  - Able to move and avoid obstacles through an environment
  - Able to send a signal to Robot B (Towing robot) when it needs towing
  - Future: Able to receive a signal from Robot B when it arrives to towing dock
  - Future: Able to follow a path given by the god-camera

- Robot B (Towing robot)
    - Able to identify the position or receive the pixel location from the god-camera of Robot A
    - Able to move and avoid obstacle through an environment
    - Able to 'tow', attached to Robot A in order to tow to desired location
    - Future: Able to find the best path/ route to reach Robot A based on object recognition from the god-camera

Things to explore:

- Communication between devices: Robot A to Robot B, Robot B to god-camera
- Body material
- Body design

Timeline

The timeline is divided into two phases: phase I deals mainly with obstacle avoidance, motor actuation, and initial software, whereas phase II deals with visual recognition and final project features.

Projects	**Comments**	**January**	**February**	**March**	**April**
IMDL Robot					
Hardware Research Phase I	Sensors: Visual, Tactile, Movement,	11th -25th			
Budget Analysis	Estimate Cost of Final Robots	22th			
Buy Equipment Phase I	Equipment for Phase I	22th			
Software Implementation Phase I	Obstacle Avoidance, Motor Actuation	25th -	8th		
Hardware Research Phase II	Sensors: Special Sensor, Visual, Networking		1st-8th		
Buy Equipment Phase II	Final Purchase		8th		
Hardware Implementation Phase I	Obstacle Avoidance, Motor Actuation, Body		1st -15th		
Testing I	Obstacle, Motors' Performance		15th-22nd		
Software Implementation Phase II	Visual Recognition, Communication, Path		29th-	14th	
Hardware Implementation Phase I	Effective Components Location			14th -21st	
Testing II	Location of Object, Possible Path Recognition			21st-	11th
Re-assess the course of the project.	Assessment, Objective Met				11th -25th