

# CS 362 - HoverCrafts

## The Team:

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## Original Prompt

The original idea was about a quadcopter design. After finding other team members, and re-evaluating safety and presentation issues, the project morphed into hovercrafts.

The basic ideas will still be present, such as controlling a micro-computer from another micro-computer and controlling electric engines. The biggest difference is that instead of having flying vehicles, the resulting project will have vehicles that glide along the ground.

Each hovercraft will have two engines, one to inflate the skirt and another to provide thrust. A servo will control rudders attached to the engine to provide directional movement. Additionally, the hovercrafts will have an IR blaster and receiver to simulated battles with each other as well has a WiFi or Bluetooth module connecting to the hovercraft's controllers. LEDs and a buzzer on the hovercraft will indicate the status of the hovercraft.

The controllers will use a series of inputs (analog sticks, buttons, etc.) to control the speed and direction of the hovercraft as well as the IR blaster. LCDs and LEDs may also be used to indicate the status of the connected hovercraft.

## Required Items

For each hovercraft.

- 1 Arduino
- 2 engine controllers. [Example ESC](#)
- [1 external battery to power the engines](#)
- 2 electric RC airplane OR ducted fan engines.
- Foam Board and Balsa for the deck.
- Durable airtight material for skirt.
- 1 servo mechanically connected to 2 rudders.
- Module for wireless communication (bluetooth or wifi)
- Infrared input/output for simulated battles with another hovercraft.

- Various LEDs for navigational lights or destruction simulation
- Buzzer to accompany LEDs

For each controller

- 1 Arduino
- 1 variable input for throttle
- 1 variable input for yaw control
- Module for wireless communication (bluetooth or wifi)
- 16\*2 lcd screen.

## External Resources

- Hovercraft Design
  - <http://www.instructables.com/id/Hovercraft-with-Arduino-design/>
    - Features usage of Wii Remote for a controller
  - <http://www.instructables.com/id/Build-your-own-hovercraft/>

## Schedule

TODO

- Hovercraft design, build, and programming
- Controller design, build, and programming
- at least 2 weeks of testing
- Constant documentation

Important Dates - Dates from Lec02 and Lec12

- 10/16 - 2 page report due
- 11/10 - 4 page report due
  - Describe progress, challenges, revisions, schematics, etc.
- 12/1 - project video due - Project should be done before then
- 12/8 - 10-15 page report and project checkout

Proposed Schedule

- Oct. 16 - Oct 27 (2 weeks) - Hovercraft and Controller design
  - Can be brought down to 1 week?
- Oct. 23 - Nov. 17 (3 weeks) - Hovercraft build and programming, Controller build and programming.
- Nov. 20 - Dec. 7 (3 weeks) - Testing
  - Video can be made during this time
- **Note:** Be sure to document every step of the project for the reports