Project Proposal

Oliver Engel
Tralton Bellings
Joanna Lam

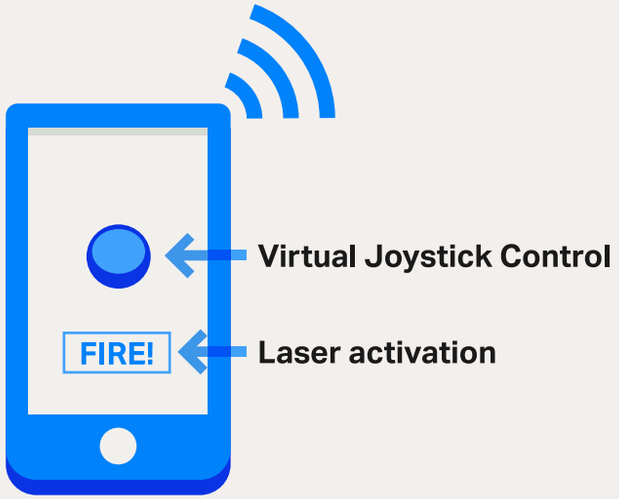
Our Proposal

Our game is a multiplayer miniaturized version of laser tag, but instead of controlling the lasers directly, players will control Bluetooth–enabled vehicles that have attached laser modules and photoresistor targets that determine when they have been shot.

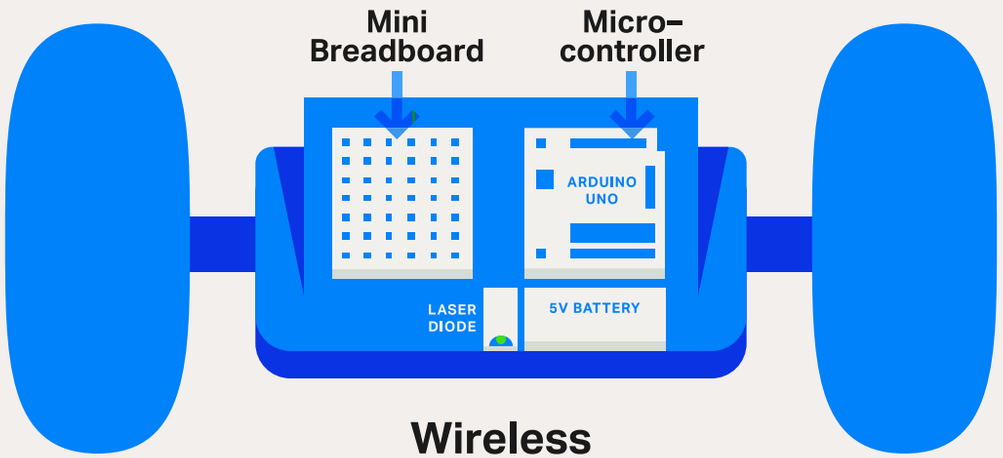
The vehicles will battle on a large mat that has paper craft obstacles and mirrors that can be used to strategize gameplay. Each game will be set on a timer, and the scores will be updated through a program on Processing.

Focus:

Modular, Free-Form Gameplay



Bluetooth Controller

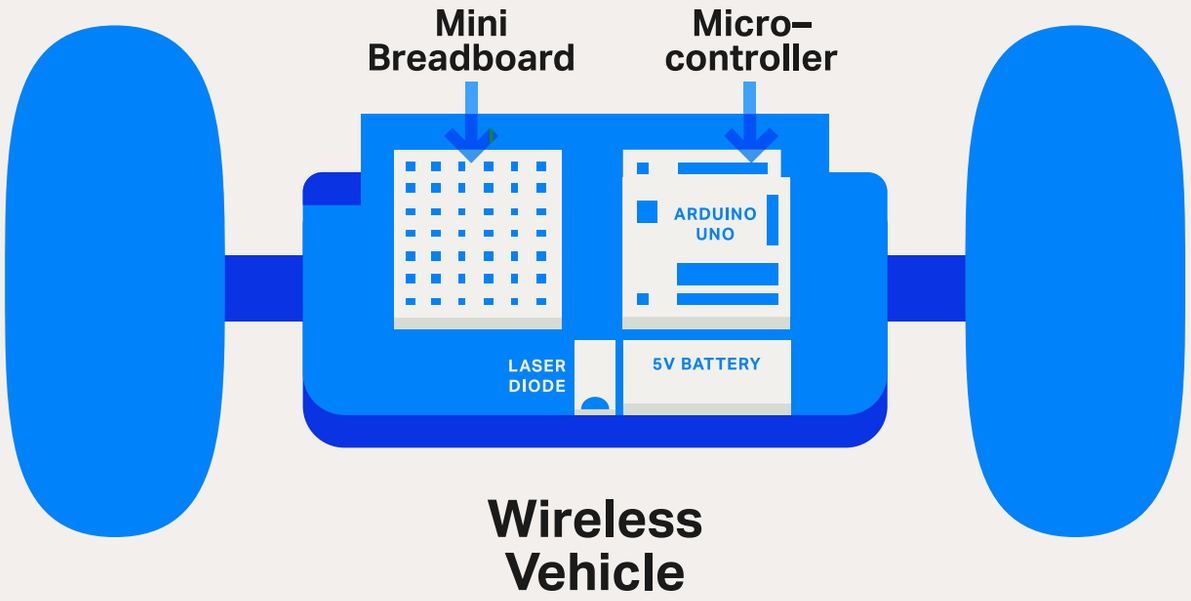


Wireless Vehicle

Score System & Game Timer

The controls will be forward, backward, steering left and right, and a trigger. The trigger will fire a laser module that is attached to the Arduino car. Each car will also feature a target containing a sensor to detect the laser shot by the opponent.

After being shot, a signal will be sent to a third Bluetooth enabled Arduino that will keep score. To begin with, the first player to score five hits wins, but this may change as testing goes on. The win will be indicated by the scorekeeping Arduino, and it will also feature to reset the game.

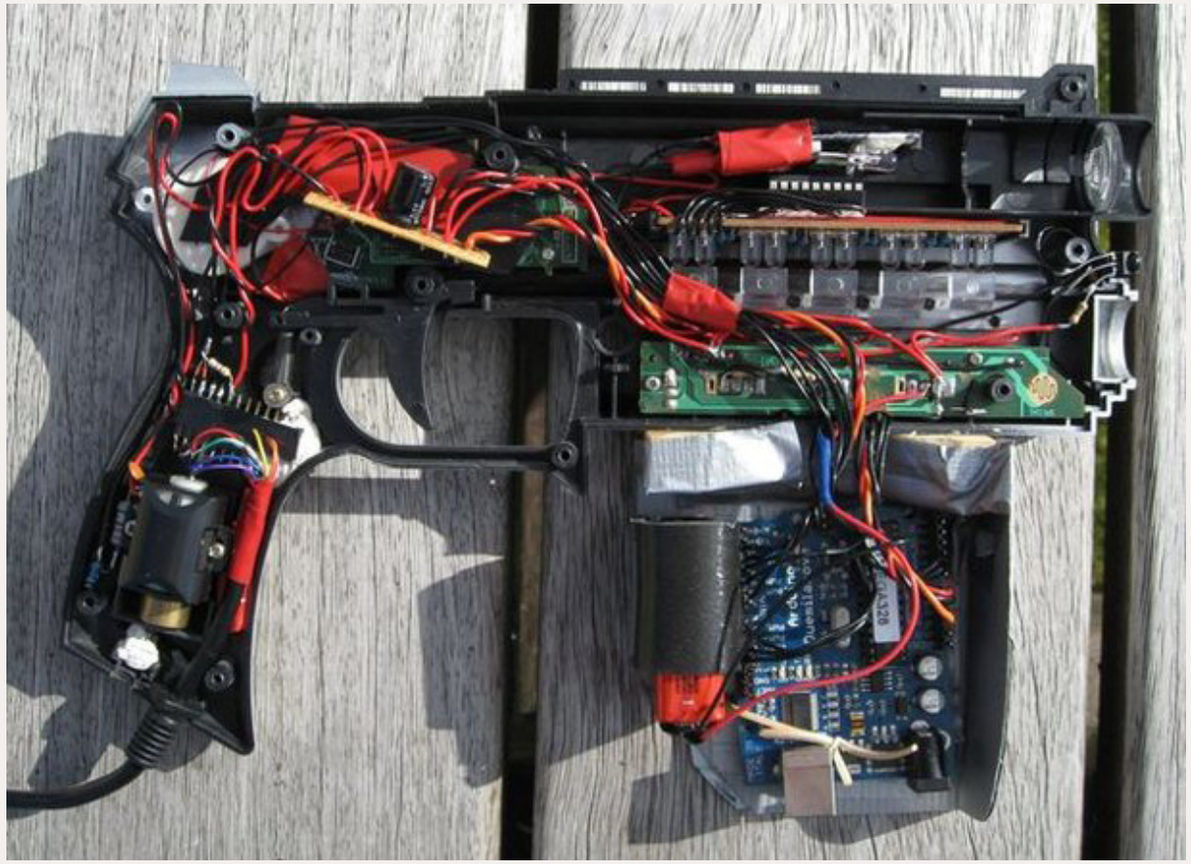


Wireless Vehicle

Research & Related Work

We researched how to wirelessly interface with an Arduino, and decided on using a Bluetooth module as our method of communication. We also researched materials needed to build a small moving robot, and found that a motor driver with two DC motors on each vehicle should accomplish the transportation aspect.

There are a few examples of Arduino–based projects that utilize wireless technology in conjunction with lasers, such as the following:



Arduino Laser Tag Gun

Two-wheel LEGO bot

Evaluation

Our toy will need to be interactive, challenging, and modular. There should be an aspect of competition with interactive response mechanisms that allow the players to become immersed in the game and receive sensory feedback based on the gameplay.

We can test this by allowing others to test out the game; the main concern is the ability of players to hit the photoresistor target on the other player. If it is too difficult, for example, we could increase the amount of photoresistor targets. Games should be fast–paced and exciting.

Timeline

- 11.14 Solidify concept & materials list
- 11.16 Order additional materials
- 11.18 Bluetooth controller testing
- 11.20 Assemble car (3D print)
- 11.28 Finish code, develop packaging
- 11.30 Final packaging & directions
- 12.1 Present in section, showcase prep
- 12.4 Finalize video & website
- 12.7 Exhibition