

# Advanced Laser Tag

## Project

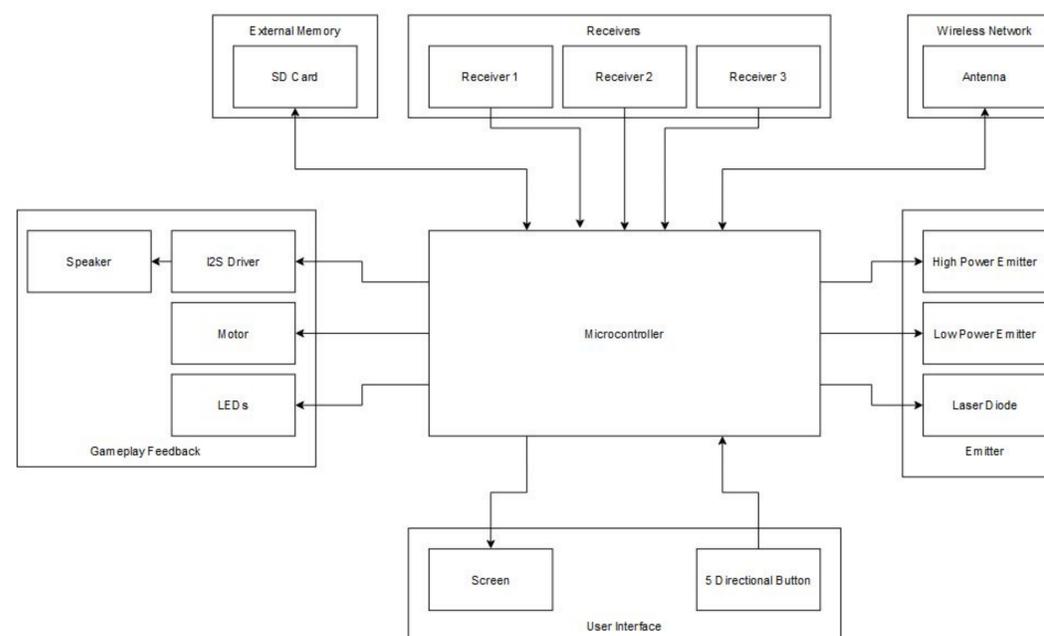
Laser tag is a fun group activity but is limited to arena gameplay with bulky equipment and limited rulesets

### Goals:

- Portable indoor and outdoor laser tag system
- Fully contained game control and score synchronization within the guns
- Range of at least 150 ft.



## System



## Methods

- Modular approach to hardware development for easy and reliable build
- Self-contained and rechargeable battery system provides hours of gameplay
- Data transmission through a high power infrared emitter with dynamic power adjustment suitable for indoor and outdoor play
- Determine direction of hit reception through multiple receivers (Left, Right, Front)
- LEDs and haptic feedback for player immersion
- Devices connect and synchronize through a wireless IEEE 802.11 network protocol to coordinate game configuration and gameplay status
- Software allows several types of game modes selected via screen and navigational button

## Conclusion

### Results:

- Maximum tested range of greater than 1300 ft. in ideal conditions
- Successful mesh network communicates data between devices
- Successful self-powered, portable, and rechargeable system

### Future Improvements:

- Better infrared beamforming
- Enhanced network adaptability for rapid topology adjustments
- Additional game mode implementations

