



GPS Racing Lap Timer

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OVERVIEW

The motivation for this project is that there isn't a simple cost effective GPS racing lap timer that meets the needs of racers currently available. The GPS lap timer will be simple and easy to use without requiring external software to use it providing the rider with feedback during races.

The system we are creating uses a GPS module to lock onto the racer's position. Once locked on, only one button needs to be pressed to select the finish line to start recording and seeing lap times. This allows racers to worry less about setting up the device before a race and to focus on other aspects of the race.

Track time can be extremely expensive and without gathering lap time data, it is nearly impossible to tell if racers performance has improved at all. Our simple lap time solution will prevent track testing time from being wasted by an improperly set up device.

COMPONENTS

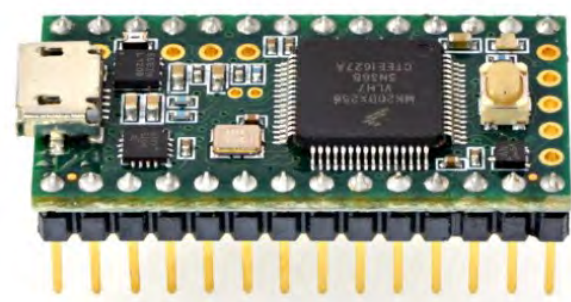


Figure 1

Arduino Teensy 3.2



Figure 2

Adafruit GPS Module



Figure 3

SD7565 LCD Screen



Figure 4

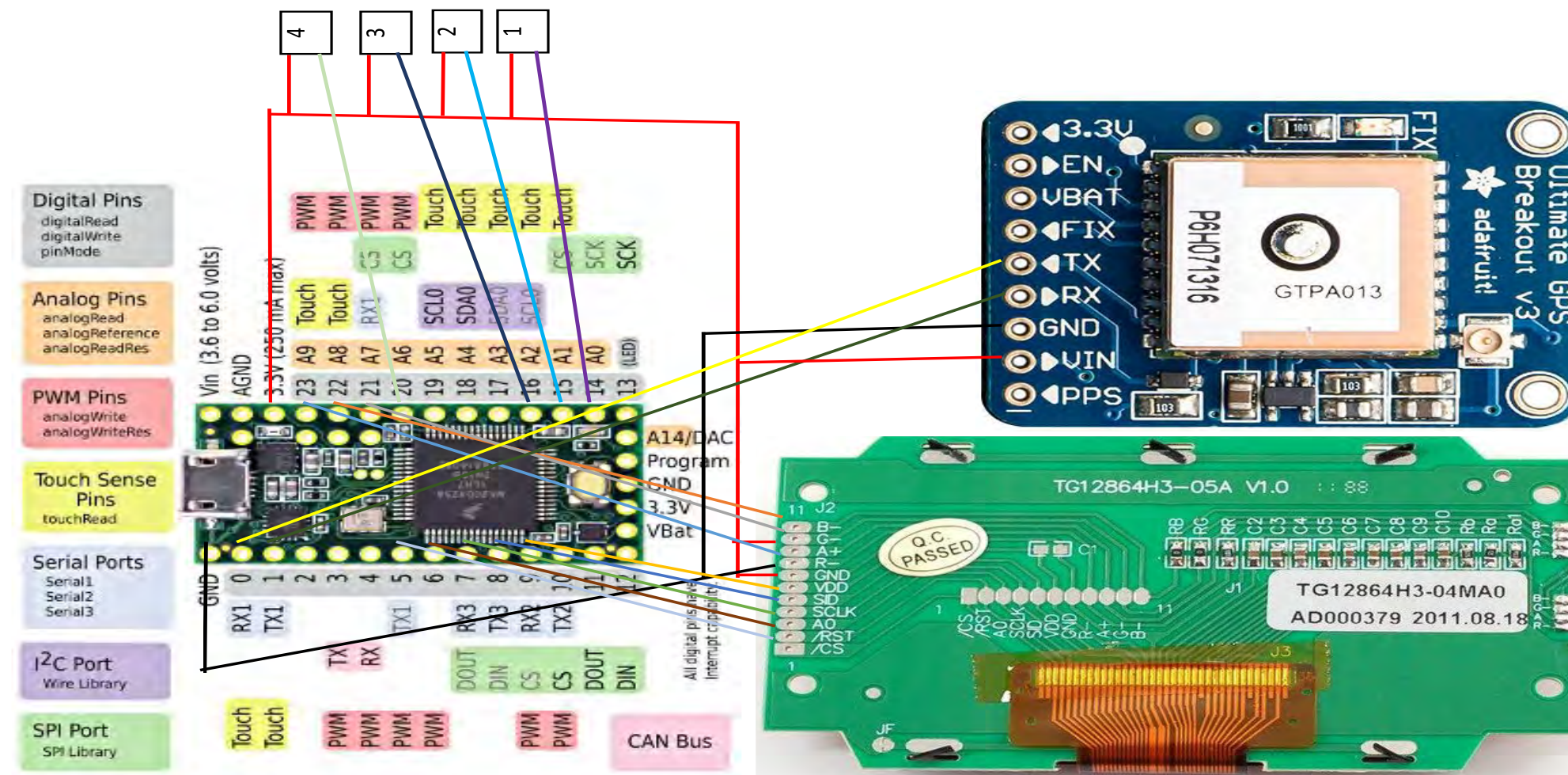
4 Push Buttons



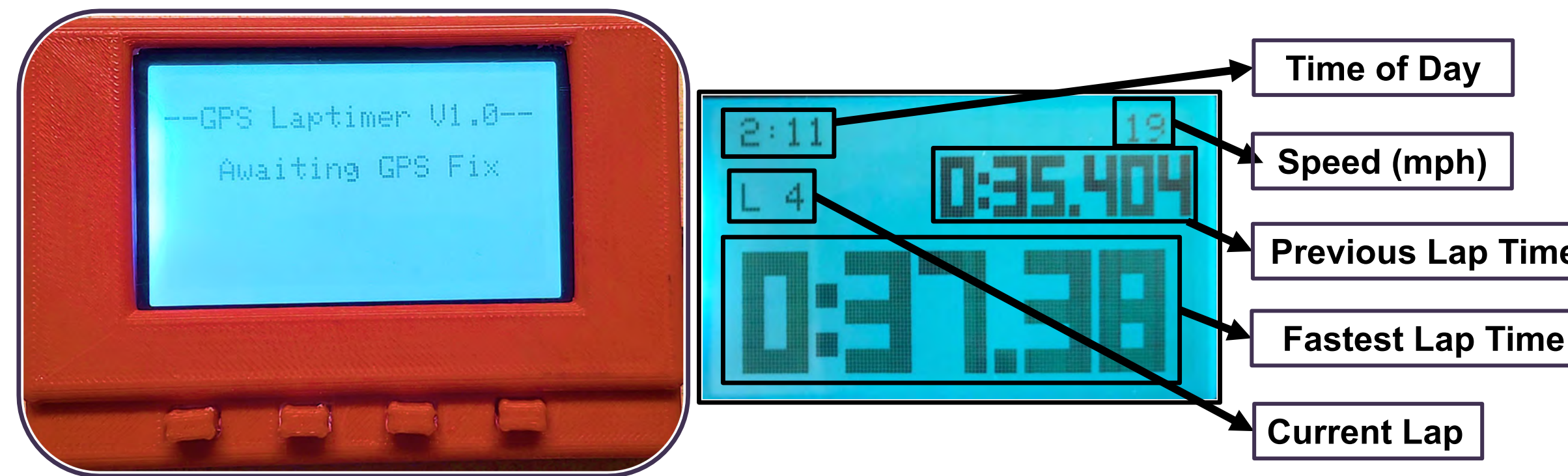
Figure 5

5V External Power Bank

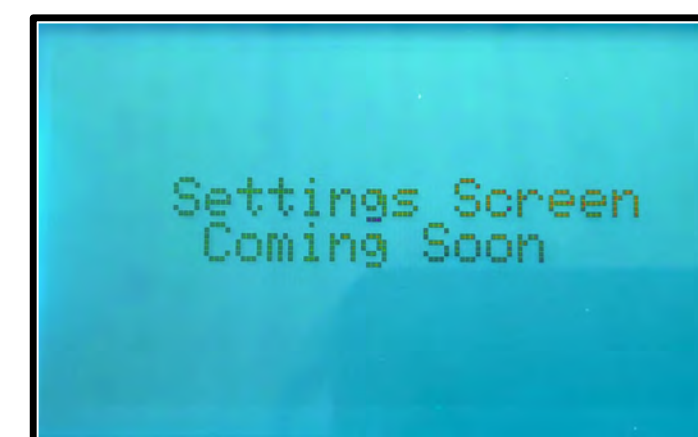
SYSTEM DESIGN



FINAL PRODUCT



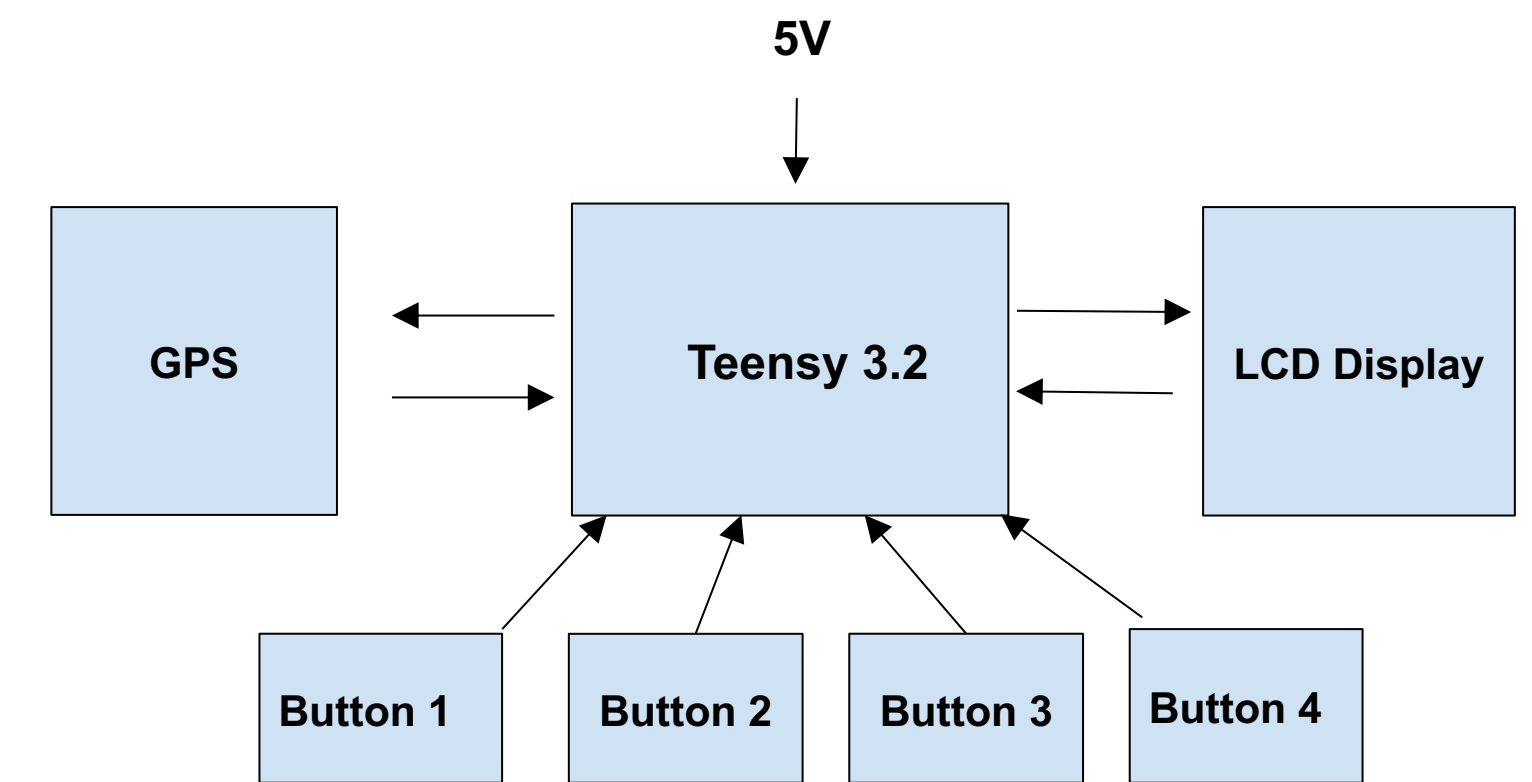
Menu Options



FUTURE IMPROVEMENTS

- Additional menu options
- Application to save certain tracks as well as previous track data recorded
- Attach an Antenna and Receiver to receive messages and updates from crew members and teammates in real time

BLOCK DIAGRAM



The GPS module will input the coordinates and speed of the rider to the Arduino Teensy 3.2 Microcontroller. The data will then be displayed to the LCD screen in a easy to understand format to the racer. A 5V external power bank powers the microcontroller which powers the GPS module and LCD Displays.

The four push switch buttons will allow the racer to select a finish and navigate the menu to view the top 5 lap times and speeds. The current lap and speed as well as the fastest lap time will be displayed to the racer in real time.

ACKNOWLEDGEMENTS

We would like to thank The Undergraduate Research Center for funding our project as well as our Junior Design professor Dr. Puteri Megat Hamari.

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CONTACT INFORMATION

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