Rover One

System Specification

Version 0.1

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# Version history

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| --- | --- | --- |
| Revision | Date | Description |
| 0.1 | 6/7/2020 | Created initial document |
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Table 0.1 Version History

# Overview

* Software Desktop Application
  + Responsible for Telemetry and Control interface of Rover
  + Control Interface
    - Arrow keys specifying direction
    - Throttle bar controllable by control/alt keys
    - Menu accessible by escape key
      * Dump rover trace to logfile
      * Dump telemetry to logfile
      * Console debug
      * Exit
  + Presents Telemetry from Rover
    - Speed
    - Power Output
    - Battery Level
    - Throttle
    - Heading/Navigation
* Processing Unit
  + Xilinx Arty-7 35T FPGA Development Board
    - Soft-core Microprocessor
    - Interface to Wi-Fi Tx/Rx
    - Interface to Power Controller
    - Interface to Motor Drivers (I2C?)
    - Interface to IMU
  + IMU
  + Wi-Fi Tx/Rx
* Powertrain Unit
  + Battery
  + Motor(s)
  + Motor Drivers
* Mechanical Design
  + Fuck if I know, let’s find out

# Software application

The Software Application will initially target desktop platforms. Initial prototyping can be done in a command-line interface. The App is responsible for all user interaction with the Rover including telemetry presentation and navigation control. A mockup of eventual desktop App UI is shown in Figure 1.

F R P

Navigation Statistics

Powertrain Statistics

Imagery Placeholder

Figure 1. Desktop App User Interface

The App should be able to control the Rover in real-time, providing telemetry while initiating control. As a result, it is ideal to be a multithreaded application

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