

# 1 Overview

Any complex electronic system will almost always require a control unit to operate it. This can take many forms, from off-the-shelf solutions to bespoke circuits. There are two aspects of control that must be designed for; the user interface to control the skateboard, battery management, and motor/drive train control.

## 2 User Interface

### 2.1 Overview

- Need a way to control the motion of the board
- Need to relay information back to the rider in a non distracting way
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### 2.2 Throttle Control

The user needs to be able to control the speed of the board intuitively and quickly, to ensure safe riding. There are already pre-existing electric skateboards that use a wireless controller with a roller as a throttle control. This allows for both accelerating, breaking, and reverse, with step wise control for fine adjustment. This only takes effect when a secondary button is held, acting as a dead-mans-switch.

### 2.3 Battery Meter

The user needs to be able to understand what the remaining range of the board is, so that they will not undertake a journey where they will run out of charge mid-journey.

## 3 Battery Management

### 3.1 Overview

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- sdfdsdfsdf

### 3.2 Charging

Lithium Polymer batteries have a very high energy density, which although desirable, leads to a range of safety concerns, firstly how to charge them without causing a fire.

### **3.3 Discharging**

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## **4 Motor Control**

### **4.1 Overview**

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### **4.2 Motor control**

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### **4.3 Feedback**

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