

# Hazard Analysis

## Mechatronics Engineering

Team #1, Back End Developers

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Table 1: Revision History

<b>Date</b>	<b>Developer(s)</b>	<b>Change</b>
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
...	...	...

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[You are free to modify this template. —SS]

## 1 Introduction

[You can include your definition of what a hazard is here. —SS]

## 2 Scope and Purpose of Hazard Analysis

## 3 System Boundaries and Components

## 4 Critical Assumptions

[These assumptions that are made about the software or system. You should minimize the number of assumptions that remove potential hazards. For instance, you could assume a part will never fail, but it is generally better to include this potential failure mode. —SS]

- No wires will come loose during use.
- Batteries are plugged in correctly (the positive and negative ends are aligned as intended).
- All data are stored in the correct memory location.
- All subsystems work as intended.
- All off-the-shelf components work as intended.



## 5 Failure Mode and Effect Analysis

Design Component	Failure Modes	Causes of Failure	Effects of Failure	Detection	Recommended Action
Data Storage	Data stored at wrong memory location	<ul style="list-style-type: none"> <li>• Incorrect software commands</li> <li>• Memory space doesn't exist (invalid memory selected)</li> <li>• Insufficient memory space</li> <li>• Physical damage to hardware memory chip</li> </ul>	Lost and unsaved data	Set up error handler to check if each data point is successfully stored at the correct memory location each time	Replace faulty hardware or set up correct memory path
Data Storage	Data Stored with incorrect type	<ul style="list-style-type: none"> <li>• Wrong data type used for storing data</li> </ul>	Analysis program can't interpret data	Failed data analysis	Convert data to correct type
Device manager	Unable to establish connection	<ul style="list-style-type: none"> <li>• Loose wires</li> <li>• Incorrect communication protocol</li> <li>• Incorrect parameters for serial packets (size, format, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Data can't be transferred between hardware and software</li> <li>• Lost data</li> </ul>	<ul style="list-style-type: none"> <li>• Check list of connected devices on device manager</li> <li>• Visual inspection of wiring and circuitry</li> <li>• Attach an error detection LED</li> </ul>	<ul style="list-style-type: none"> <li>• Make sure all necessary connections are made</li> <li>• Reboot device</li> <li>• Restart host software</li> </ul>

## 6 Safety and Security Requirements

- All users are required to complete test prompt
  - All data to be backed up each time the device connects to host software
  - Only admin users will have access to device manager
- [Newly discovered requirements. These should also be added to the SRS. (A rationale design process how and why to fake it.) —SS]

## 7 Roadmap

[Which safety requirements will be implemented as part of the capstone timeline? Which requirements will be implemented in the future? —SS]