Hazard Analysis
Software Engineering

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Table 1: Revision History

Date	Developer(s)	Change
Oct 17 2022	Jeremy	Added 2 FMEA table entries related to web application hazards
Oct 17 2022	Andrew	Added Camera FMEA table entry
Oct 17 2022	Jeremy	Added 2 more FMEA table entries related to web application
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
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2 Scope and Purpose of Hazard Analysis

3 System Boundaries and Components

4 Critical Assumptions

5 Failure Mode and Effect Analysis

Table 2: Failure Mode and Effect Analysis

Design Function	Failure Modes	Effects of Failure	Causes of Failure	Recommended Action	SR	Ref.
User authentication error	Invalid credentials	User cannot log in to system	User error or improperly saved data	Reset credentials and inform user	TODO	TODO
Database Access	Database is inaccessible	User cannot view progress or stored personal data	Database connection failure	Display static error page and await database backup/restoration	TODO	TODO
Working Application	Error state	User cannot view any pages, progress, and account	Major system failure due to bugs	Display static error page and await application restoration	TODO	TODO
Hand sign tracking	Hand sign motions are too fast/slow	System cannot accurately give user feedback and measure progress	Model and system efficiency	Interrupt the user and inform user to adjust hand sign motions accordingly	TODO	TODO
Camera	Visual feed is unable to be captured	User's sign cannot be perceived by the device and subsequently be processed	1. Poor Lighting Conditions	1. Instruct user to adjust their environment lighting or move to environment with sufficient lighting	HR1	H3-1
			2. User skin color is not within the bounds of the training set data used	2. Broaden training dataset to include more skin color types	DTR1	H3-2
	Physical defect that impairs operation		3. Cracked/Filthy camera lenses	3. Notify user that camera lenses appear to be inoperable	HR2	H4-1

6 Safety and Security Requirements

6.1 Hardware Requirements

6.2 Dataset Training Requirements

7 Roadmap