

Table 1: Revision History

| Date | Developer(s) | Change |
|-------------|---------------------|------------------------|
| Date1 | Name(s) | Description of changes |
| Date2 | Name(s) | Description of changes |
| ... | ... | ... |

Hazard Analysis Mechtronics Enigeering

Team 32, Wingman, SmartVault
Edward He
Erping Zhang
Guangwei Tang
Peng Cui
Peihua Jin

Contents

| | | |
|----------|---|----------|
| 1 | Introduction | 4 |
| 2 | Component Overview | 4 |
| 2.1 | Movement of Camera | 4 |
| 2.2 | Human Body Detection | 4 |
| 2.3 | User Interface | 4 |
| 2.4 | Database | 4 |
| 2.5 | Objection Detection | 4 |
| 3 | Safety Considerations and Connection with Requirements | 4 |
| 3.1 | Movement of Camera | 4 |
| 3.2 | Human Body Detection | 4 |
| 3.2.1 | Human Body not Detected | 4 |
| 3.2.2 | Wrong Human Body Detected | 4 |
| 3.2.3 | Body Movement not Detected | 4 |
| 3.2.4 | Wrong Body Movement Detected | 5 |
| 3.3 | User Interface | 5 |
| 3.4 | Database | 5 |
| 3.5 | Object Detection | 5 |
| 4 | FMEA Worksheet | 5 |

1 Introduction

2 Component Overview

The project can be divided into five different main components. Those components are listed in the paragraphs below.

2.1 Movement of Camera

2.2 Human Body Detection

A good detection method should be used so that the human body can be detected by the program in the images provided by the camera. The movement of the human body should also need to be detected to help the camera to judge its angular position.

2.3 User Interface

2.4 Database

2.5 Objection Detection

3 Safety Considerations and Connection with Requirements

3.1 Movement of Camera

3.2 Human Body Detection

3.2.1 Human Body not Detected

When a human presents in the room and the images have been shown in the computer, the program fail to detect the human body in the screen.

Related Requirements: IPR1

3.2.2 Wrong Human Body Detected

When the software component of the oobject detects a human body shown in the camera, the body shown on the screen is not actually a body of a person.

Related Requirements: IPR1

3.2.3 Body Movement not Detected

When people moves in the room and thhe images has been sent to the computer, the program cannot detect the movement of the body.

Related Requirements: IPR4

| Table 1: The FMEA Table | | | |
|-------------------------|------------------------------|---|---|
| Components | Failures | Cause of Failure | Recommendations |
| Movement of Camera | N | N | N |
| Human Body Detection | Human Body not Detected | a. Detection method failure b. Wrong posture of human | a. Restart the program b. request for help |
| | Wrong Human Body Detected | a. Detection method failure | a. Restart the program b. Request for help |
| | Body Movement not Detected | a. Detection method failure b. Human body moves too fast | a. Restart the program b. Request for help |
| | Wrong Body Movement Detected | a. Detection method failure | a. Restart the program b. Request for help |
| User Interface | N | N | N |
| Database | N | N | N |
| Object Detection | N | N | N |

3.2.4 Wrong Body Movement Detected

When the program detects the movements of human body, only part of movement or wrong movement is identified by the program.

Related Requirements: IPR4

3.3 User Interface

3.4 Database

3.5 Object Detection

4 FMEA Worksheet