**Mobile App Use Case Document**

**1. Introduction**

This document outlines the use cases for the mobile app, which captures finger and hand movements using a rolling shutter camera and LED gloves. The app processes the input and provides real-time feedback for user interactions.

**2. System Components**

* **Rolling Shutter Camera**: Captures finger and hand movements.
* **LED Gloves**: Equipped with sensors that detect finger positions.
* **Mobile Application**: Collects data from the camera and gloves, processes it, and provides a user interface for tracking.

**3. Primary Use Cases**

**3.1 Setup Camera**

* **Actor**: User
* **Description**: The user sets up the rolling shutter camera for hand and finger movement tracking.
* **Steps**:
  1. Connect the camera to the mobile app.
  2. Calibrate the camera.
  3. Confirm successful setup.
* **Exceptions**:
  1. **Camera Hardware Error**: The camera has malfunctioned or is not working.
  2. **Camera Not Detected**: The camera is not recognized by the app.
  3. **Camera Not Compatible**: The camera is incompatible with the app.

**3.2 Setup Glove**

* **Actor**: User
* **Description**: The user configures the LED gloves, ensuring proper pairing with the mobile app.
* **Steps**:
  1. Connect the gloves to the mobile device via Bluetooth or wired connection.
  2. Ensure all glove sensors are functioning.
  3. Confirm proper connection through the app.
* **Exceptions**:
  1. **Glove Hardware Error**: The gloves have a hardware malfunction.
  2. **Glove Not Detected**: The gloves are not recognized by the app.
  3. **Glove Not Compatible**: The gloves are incompatible with the app.

**3.3 Start Tracking Fingers**

* **Actor**: User
* **Description**: The mobile app starts capturing finger movements using the camera and glove sensors.
* **Steps**:
  1. Begin tracking via the mobile app.
  2. Display finger movement data in real time.
* **Exceptions**:
  1. **Server Processing Error**: The server cannot process the input data.
  2. **No Internet Connection**: The app is unable to connect to the server.
  3. **Connection Interrupted**: Connection to the server is lost during the session.

**3.4 Stop Tracking Fingers**

* **Actor**: User
* **Description**: The user stops the app from tracking finger movements, ending the session.
* **Steps**:
  1. Press the stop button in the app.
  2. Save or discard the tracked data.
* **Exceptions**:
  1. **Server Processing Error**: The server cannot process the input data.
  2. **No Internet Connection**: The app is unable to connect to the server.
  3. **Connection Interrupted**: Connection to the server is lost during the session.

**4. Error Handling Use Cases**

**4.1 Server Exceptions**

* **Actor**: System
* **Description**: Handles server-side issues such as:
  + **Server Processing Error**: The server cannot process the request.
  + **No Internet Connection**: The app has no internet connectivity.
  + **Connection Interrupted**: The app's connection to the server was disrupted.

**4.2 Camera Exceptions**

* **Actor**: System
* **Description**: Handles camera-related issues such as:
  + **Camera Hardware Error**: Camera malfunctions during the session.
  + **Camera Not Detected**: The camera fails to connect.
  + **Camera Not Compatible**: The camera is incompatible with the app.

**4.3 Glove Exceptions**

* **Actor**: System
* **Description**: Handles glove-related issues such as:
  + **Glove Hardware Error**: The gloves malfunction during use.
  + **Glove Not Detected**: The system fails to recognize the gloves.
  + **Glove Not Compatible**: The gloves are incompatible with the mobile app.