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**SE\_Assignment-02**

**Software Requirements Specification (SRS) for Intelligent Surveillance System**

**1. Introduction**

**1.1 Purpose**

The purpose of this document is to specify the requirements for the Intelligent Surveillance System. The system will be used for tracking human movement, computing monthly attendance data, identifying unauthorized activity, and calculating semester-wise attendance for UG students in the department.

**1.2 Scope**

The scope of this project includes the development of software for tracking human movement, computing monthly attendance data, identifying unauthorized activity, and calculating semester-wise attendance for UG students in the department.

**1.3 Definitions, Acronyms, and Abbreviations**

Not applicable

**1.4 References**

Not applicable

**2. General Description**

**2.1 Product Overview**

The Intelligent Surveillance System is a software solution for tracking human movement, computing monthly attendance data, identifying unauthorized activity, and calculating semester-wise attendance for UG students in the department. The system will use video cameras and other sensors to track human movement and detect unauthorized activity.

**2.2 Product Functions**

The main functions of the Intelligent Surveillance System are:

Tracking human movement in the department

Tracking arrival and departure time of research scholars and PG students

Computing monthly attendance data of research scholars and PG students

Identifying unauthorized movement, unauthorized entry, fire break out, or damaging of property within the department

Real-time automated attendance recording and semester-wise attendance calculation for UG students in classrooms

**3. Specific Requirements**

**3.1 External Interface Requirements**

The system will interface with video cameras and other sensors to track human movement and detect unauthorized activity.

**3.2 Functional Requirements:**

**Use Case 1:** Intelligent Surveillance System

**Primary Actor:** User

**Pre Condition:** Internet connection and camera setup available.

**Main Scenario:**

1. User launches the Intelligent Surveillance System application.
2. System asks the user to log in using their credentials.
3. User provides the correct login information.
4. System displays the main screen, showing live video feed from the connected cameras.
5. User has the ability to view the live video feed from multiple cameras simultaneously.
6. System provides the option to enable motion detection and set sensitivity levels.
7. User can configure the system to send alerts via email or SMS upon detection of motion.
8. System provides the option to store recorded footage in the cloud or on a local device.
9. User can view, search, and download recorded footage as needed.
10. System provides the option to set up access schedules, limiting access to the system during designated hours.

**Alternate Scenario:**

(a). Camera failure

(a) 1. System displays an error message indicating that the camera is not functioning properly.

(a) 2. User can troubleshoot or replace the camera as needed.

**Use Case 2:** User Management

**Primary Actor:** Admin

**Pre Condition:** User account already created.

**Main Scenario:**

1. Admin logs into the Intelligent Surveillance System.
2. System displays the user management screen.
3. Admin can add new user accounts by specifying username, password, and level of access (admin or user).
4. Admin can edit existing user accounts, including changing passwords and modifying access levels.
5. Admin can delete user accounts as needed.
6. System logs all user management actions, including additions, edits, and deletions.

**Alternate Scenario:**

(a). Invalid username or password

(a) 1. System displays an error message indicating that the login information is incorrect.

(a) 2. User is prompted to try again.

**Use Case 3:** Footage Search and Retrieval

**Primary Actor:** User

**Pre Condition:** Recorded footage stored in the system.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the footage search and retrieval screen.
3. User can search for recorded footage by date, time, camera location, or keywords.
4. System displays a list of relevant recorded footage.
5. User can preview the recorded footage and select the desired footage for download.
6. System downloads the selected footage and provides the option to save it to a local device or cloud storage.

**Alternate Scenario:**

(a). No footage found

(a) 1. System displays a message indicating that no footage matching the search criteria was found.

(a) 2. User can modify the search criteria and try again.

**Use Case 4:** Motion Detection Alerts

**Primary Actor:** User

**Pre Condition**: Motion detection enabled.

**Main Scenario:**

1. System detects motion in the camera feed.
2. System sends an alert to the user, either via email or SMS, depending on the user's configuration.
3. Alert includes the time and location of the motion detection.
4. User can log into the Intelligent Surveillance System to view the live video feed and determine the cause of the motion.

**Alternate Scenario:**

(a). False positive motion detection

(a) 1. User can log into the Intelligent Surveillance System and determine that the motion was a false positive.

(a) 2. User can adjust the motion detection sensitivity settings to reduce the likelihood of false positive detections in the future.

**Use Case 5:** Access Scheduling

**Primary Actor:** Admin

**Pre Condition:** User account already created.

**Main Scenario:**

1. Admin logs into the Intelligent Surveillance System.
2. System displays the access scheduling screen.
3. Admin can specify access schedules for each user, limiting access to the system during designated hours.
4. System enforces the access schedules, only allowing users to log in during their designated hours.
5. Admin can edit or remove access schedules as needed.

**Alternate Scenario:**

(a). User attempts to log in outside of their designated hours

(a) 1. System displays an error message indicating that access is not allowed at this time.

(a) 2. User is unable to log in until their designated hours.

**Use Case 6:** Video Export

**Primary Actor:** User

**Pre Condition:** Recorded footage stored in the system.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the footage search and retrieval screen.
3. User selects the desired footage for export.
4. System exports the selected footage to a specified file format, such as MP4 or AVI.
5. User can save the exported file to a local device or cloud storage.

**Alternate Scenario:**

(a). Export failure

(a) 1. System displays an error message indicating that the export failed.

(a) 2. User can try the export again or select a different file format to try the export.

**Use Case 7:** Real-Time Monitoring

**Primary Actor:** User

**Pre Condition:** Live video feed available from cameras.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the live video feed from all cameras.
3. User can monitor the video feed in real-time and can pan, tilt, and zoom the cameras as needed.
4. User can also switch between camera feeds as desired.

Alternate Scenario:

(a). Camera failure

(a) 1. System displays an error message indicating that the camera is not responding.

(a) 2. User can switch to a different camera feed or report the issue to the administrator.

**Use Case 8:** User Management

**Primary Actor:** Admin

**Pre Condition:** System running and accessible.

**Main Scenario:**

1. Admin logs into the Intelligent Surveillance System.
2. System displays the user management screen.
3. Admin can create new user accounts, edit existing user accounts, and delete user accounts.
4. Admin can assign different levels of access and privileges to each user account.
5. System enforces the assigned access levels and privileges for each user account.

**Alternate Scenario:**

(a). User tries to access a restricted area

(a) 1. System displays an error message indicating that the user does not have sufficient privileges to access the area.

(a) 2. User is unable to access the restricted area.

**Use Case 9:** Reporting

**Primary Actor:** User

**Pre Condition:** Data stored in the system.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the reporting screen.
3. User can generate reports based on different parameters, such as motion detection events, user activity, camera usage, etc.
4. Reports can be generated in different formats, such as PDF, CSV, or Excel.
5. User can save the generated reports to a local device or cloud storage.

**Alternate Scenario:**

(a). Report generation failure

(a) 1. System displays an error message indicating that the report generation failed.

(a) 2. User can try the report generation again with different parameters or format.

**Use Case 10:** Alarm Management

**Primary Actor:** User

**Pre Condition:** Alarm system configured and active.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the alarm management screen.
3. User can configure the alarm system to trigger an alarm in case of specific events, such as motion detection, camera tampering, or network failure.
4. User can set different alarm triggers for different cameras and can choose the type of alarm to trigger, such as an audible alarm, email notification, or SMS alert.
5. System triggers the alarm as configured by the user when a specified event occurs.

**Alternate Scenario:**

(a). Alarm trigger failure

(a) 1. System displays an error message indicating that the alarm trigger failed.

(a) 2. User can try to reconfigure the alarm system or report the issue to the administrator.

**Use Case 11:** System Maintenance

**Primary Actor**: Admin

**Pre Condition:** System running and accessible.

**Main Scenario:**

1. Admin logs into the Intelligent Surveillance System.
2. System displays the maintenance screen.
3. Admin can perform system maintenance tasks, such as software updates, database backups, and system reboots.
4. Admin can also check the system logs for any issues or errors.
5. System performs the maintenance tasks as requested by the admin and logs the actions taken.

**Alternate Scenario:**

(a). Maintenance failure

(a) 1. System displays an error message indicating that the maintenance task failed.

(a) 2. Admin can try the maintenance task again or report the issue to technical support.

**Use Case 12:** Camera Management

**Primary Actor:** User

**Pre Condition:** Cameras connected and accessible.

**Main Scenario:**

1. User logs into the Intelligent Surveillance System.
2. System displays the camera management screen.
3. User can add new cameras, edit existing cameras, and delete cameras from the system.
4. User can configure camera settings, such as image resolution, frame rate, and compression.
5. System displays live video feeds from the cameras and allows the user to control the cameras, such as pan, tilt, and zoom.

**Alternate Scenario:**

(a). Camera connectivity failure

(a) 1. System displays an error message indicating that the camera is not accessible.

(a) 2. User can check the camera connectivity and try to reconnect the camera.

**Use Case 13:** Data Storage

**Primary Actor:** Admin

**Pre Condition**: System running and accessible.

**Main Scenario:**

1. Admin logs into the Intelligent Surveillance System.
2. System displays the data storage screen.
3. Admin can configure the data storage settings, such as the location of data storage, the amount of data to store, and the retention period.
4. System automatically stores the data generated by the cameras and the system.
5. System can also automatically backup the data to a remote location for disaster recovery.

**Alternate Scenario:**

(a). Data storage failure

(a) 1. System displays an error message indicating that the data storage failed.

(a) 2. Admin can try to reconfigure the data storage settings or report the issue to technical support.

**4. Other Requirements**

**4.1 Performance Requirements**

The system must have a response time of less than 1 second for tracking human movement and detecting unauthorized activity.

**4.2 Design Constraints**

Not applicable

**4.3 User Documentation**

The system will include user documentation to help users understand how to use the software.

Note: The SRS document should be reviewed and approved by relevant stakeholders before proceeding with the development of the system.

**5. Maintenance**

**5.1 Maintenance Procedures**

Procedures for maintenance and updating of the Intelligent Surveillance System will be documented and made available to the system administrator.

**5.2 Software Maintenance**

The software will be maintained to ensure its continued functionality and to fix any bugs or issues that may arise.

**6. Configuration Management**

**6.1 Configuration Management Plan**

A configuration management plan will be established to ensure that the Intelligent Surveillance System is properly managed and controlled throughout its lifecycle.

**6.2 Configuration Identification**

The system components and related documentation will be identified and marked with unique identifiers to facilitate configuration management.

**6.3 Configuration Control**

Changes to the Intelligent Surveillance System will be controlled through a change management process to ensure that they are properly evaluated and implemented.

**7. Quality Assurance**

**7.1 Quality Assurance Plan**

A quality assurance plan will be established to ensure that the Intelligent Surveillance System meets the required standards and specifications.

**7.2 Verification and Validation**

Verification and validation activities will be conducted to ensure that the Intelligent Surveillance System meets the specified requirements and functions as intended.

**Acceptance Criteria**

The Intelligent Surveillance System will be accepted by the department only if it meets the specified requirements and passes the verification and validation activities.

**Conclusion**

This Software Requirements Specification provides a detailed description of the requirements for the Intelligent Surveillance System. It will serve as a basis for the development of the software and will be used for validation of the final system.