Project’s Tasks Schedule

**Sprint 1: Project Setup and Hardware Assembly (Due by Sep 16)**

Task 1: Set up the development environment

* Description: Install python IDE and necessary libraries for development.
* Acceptance Criteria: python IDE is installed and ready to use.

Task 2: Define project requirements

* Description: List down the specific features and functions the fully autonomous security robot should have.
* Acceptance Criteria: A clear and prioritized list of project requirements.

Task 3: Assemble the robot hardware

* Description: Physically assemble the robot chassis, motors, wheels, sensors, and any additional hardware components.
* Acceptance Criteria: The robot's hardware is assembled and ready for programming.

Task 4: Design the user interface (UI) for the mobile app

* Description: Create wireframes and UI mockups for the mobile app.
* Acceptance Criteria: UI design for the mobile app is complete and approved.

**Sprint 2: Sensor Integration and Autonomous Navigation (Due by Sep 27)**

Task 5: Integrate sensors for autonomous navigation

* Description: Connect and calibrate sensors such as ultrasonic, IR, or LiDAR for obstacle detection and mapping.
* Acceptance Criteria: The robot can detect obstacles and navigate autonomously.

Task 6: Implement autonomous navigation algorithm

* Description: Develop code to control the robot's movements autonomously, avoiding obstacles and following predefined routes.
* Acceptance Criteria: The robot can navigate autonomously without human intervention.

Task 7: Implement mobile app communication with Raspberry pi

* Description: Develop code to establish communication between the mobile app and Raspberry pi using Wifi.
* Acceptance Criteria: The mobile app can send commands to the robot.

**Sprint 3: Security Monitoring Features (Due by Oct 11)**

Task 8: Integrate a camera module

* Description: Add a camera module to the robot for video capture.
* Acceptance Criteria: The robot can capture video footage.

Task 9: Implement live video streaming

* Description: Develop functionality in the mobile app to stream live video from the robot.
* Acceptance Criteria: The mobile app can display a live video feed from the robot.

**Sprint 4: Security Alert and Control Features (Due by Oct 25)**

Task 10: Implement security alert system

* Description: Develop code to trigger alerts (e.g., sound alarms, notifications) when the robot detects unusual activities.
* Acceptance Criteria: The robot can trigger alerts based on security monitoring data.

Task 11: Enhance autonomous control

* Description: Improve the autonomous capabilities of the robot for better security monitoring, including patrol routes and pattern recognition.
* Acceptance Criteria: The robot can autonomously monitor and respond to security threats.

**Sprint 5: Testing, Optimization, and Documentation (Due by Nov 1)**

Task 12: Test the entire system

* Description: Conduct comprehensive testing of the robot's hardware, software, and mobile app.
* Acceptance Criteria: All bugs and issues are identified and resolved.

Task 13: Optimize performance

* Description: Improve the efficiency and responsiveness of the autonomous robot and mobile app.
* Acceptance Criteria: The system is optimized for smooth operation.

Task 14: Create user documentation

* Description: Prepare user manuals and guides for operating the fully autonomous security monitoring robot and mobile app.
* Acceptance Criteria: User documentation is complete.

Task 15: Deploy the project

* Description: Prepare the robot and mobile app for deployment in the intended security monitoring environment.
* Acceptance Criteria: The fully autonomous security robot is ready for deployment.

Timeline Chart

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tasks | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 |
| Task 1  **Sep 16** |  |  |  |  |  |  |  |  |  |  |
| Task 2 |  |  |  |  |  |  |  |  |  |  |
| Task 3 |  |  |  |  |  |  |  |  |  |  |
| Task 4 |  |  |  |  |  |  |  |  |  |  |
| Task 5 |  | **Sep 27** |  |  |  |  |  |  |  |  |
| Task 6 |  |  |  |  |  |  |  |  |  |  |
| Task 7 |  |  |  |  |  |  |  |  |  |  |
| Task 8 |  |  |  |  | **Oct 11** |  |  |  |  |  |
| Task 9 |  |  |  |  |  |  |  |  |  |  |
| Task 10 |  |  |  |  |  |  | **Oct 25** |  |  |  |
| Task 11 |  |  |  |  |  |  |  |  |  |  |
| Task 12 |  |  |  |  |  |  |  |  | **Nov 1** |  |
| Task 13 |  |  |  |  |  |  |  |  |  |  |
| Task 14 |  |  |  |  |  |  |  |  |  |  |
| Task 15 |  |  |  |  |  |  |  |  |  |  |