

Development Scenario: Third Eye Automotive Surveillance

Day 1: Automotive Security Introduction and Environment Setup, Camera Integration and Motion Detection

Task 1: Learn about automotive security systems, focusing on camera-based surveillance for moving and parked vehicles.

Task 2: Set up an Android development environment and create a project that includes permissions for camera access and background processing.

Task 3: Integrate the camera API to capture live video feeds and still images from within an Android application.

Task 4: Implement basic motion detection algorithms that trigger photo capture when movement is detected around the vehicle.

Day 2: Vibration Detection and Event-Driven Capture

Task 1: Develop a system to detect vibrations using the vehicle's built-in sensors or external hardware connected to an Android device.

Task 2: Set up an event-driven mechanism that initiates the camera to take photos every 2 seconds when vibrations are detected while parked.

Task 3: Process and compress images captured by the camera to reduce storage space without compromising quality.

Task 4: Efficiently store the captured images and videos locally with a timestamp and geo-tagging information.

Day 3: Power Management and Background Services

Task 1: Design a power management system that minimizes battery usage when the vehicle is parked.

Task 2: Implement a background service that runs the surveillance system only when the vehicle is locked and the engine is off.

Day 4: Data Transmission and User Interface

Task 1: Create a method for transmitting alerts and images to the vehicle owner's smartphone or designated device.

Task 2: Develop a user interface for the owner to interact with the Third Eye system, including viewing the captured media and receiving alerts.

Day 5: Testing, Security, and Compliance

Task 1: Perform rigorous testing in various scenarios, including different lighting and weather conditions, to ensure the system's reliability.

Task 2: Ensure that all data capture and transmission are secure and comply with privacy laws and automotive regulations.

Submission Guidelines:

1. Ensure that each answer is clear, concise, and reflects an understanding of the core concepts.
2. Diagrams can be hand-drawn and scanned or created using any digital drawing tool.
3. Provide references for any external sources used.

Submit your work in a single PDF document by end of Module.

4. You must submit your code on GitLab by the end of next day.