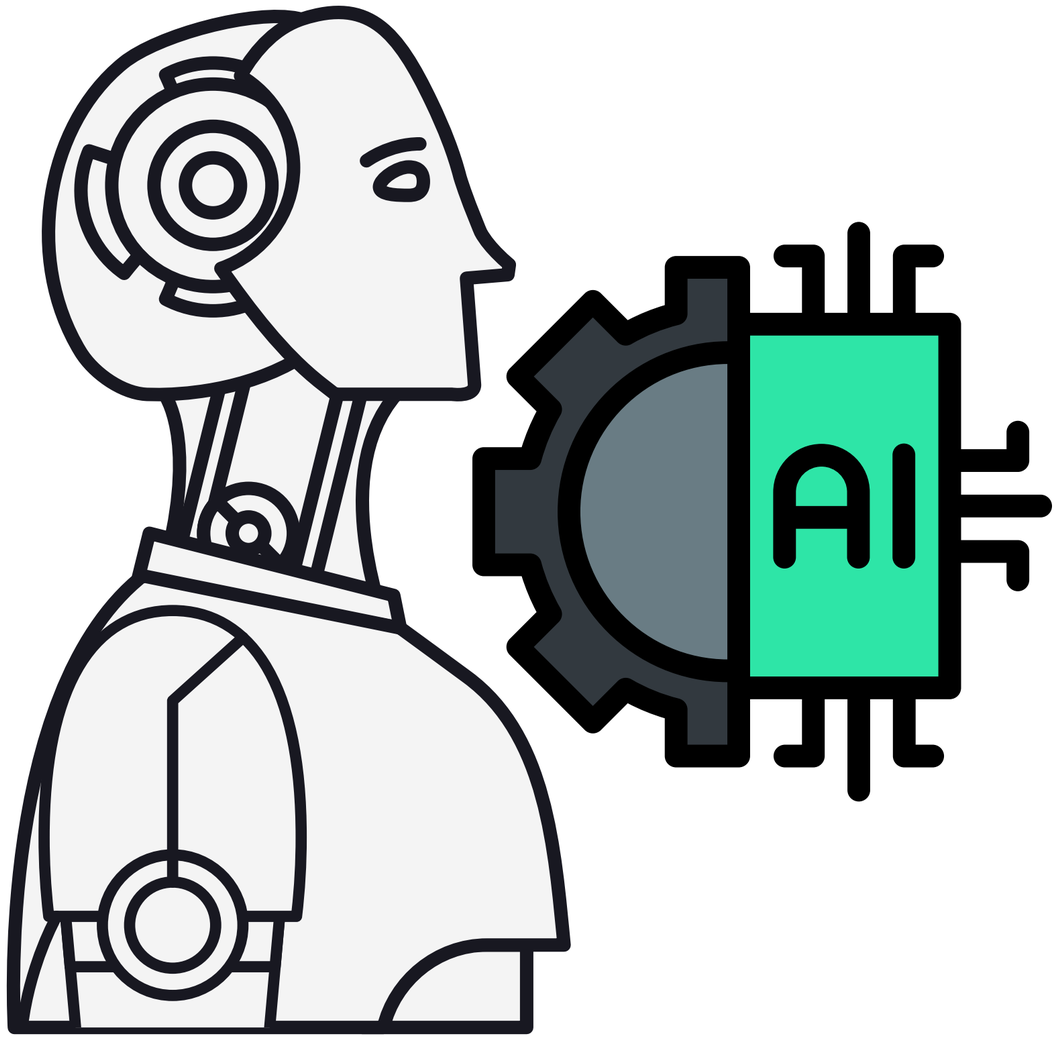

ARTIFICIAL INTELLIGENCE

SMART TRAFFIC

Group 5
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PROBLEM STATEMENT

Delayed accident reporting

Existing systems lead to delayed reporting of accidents, hindering prompt emergency responses and bystander interventions.

Parking inefficiencies

Drivers face challenges in locating available parking spots efficiently, leading to congestion and frustration.

Confusing toll payments

Various payment methods at toll booths in Malaysia result in confusion, long queues, and potential issues for drivers during peak hours.

Compromised road safety and driver inconvenience

Lack of signage, delayed accident reporting, and parking issues impact road safety for drivers.

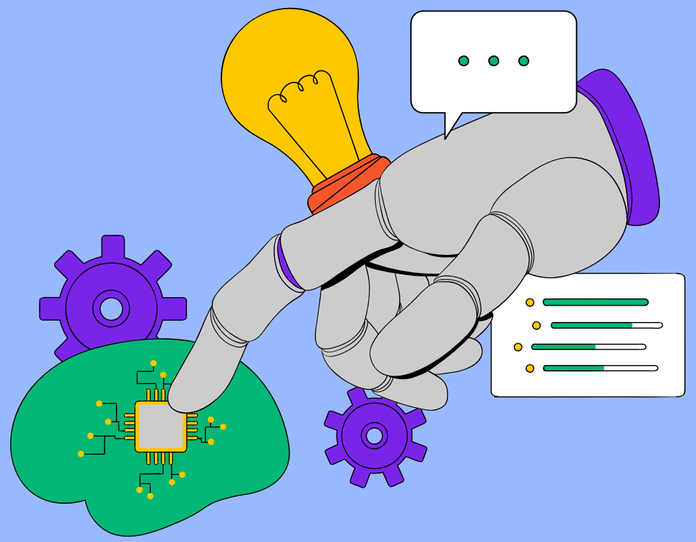
EMPHASIZE PHASE

- Identify driver needs for immediate assistance and real-time accident information.
- Understand perspectives of drivers and the Ministry of Transport.
- Crucial insights from this phase shape SmartTraffic's features.

DEFINE PHASE

- Uncover user expectations for immediate assistance, automatic toll payment, and easy parking solutions.
- Insights into drivers' concerns guide the integration of specific features.
- SmartTraffic aligns with user expectations for a user-friendly and efficient transportation solution.

GOAL OF AI SOLUTION



1. Immediate Accident Detection and Reporting
2. Accident Location Signaling
3. Streamlined Parking Process
4. Automated Toll Payment
5. Vehicle Status Analysis and Reporting

KNOWLEDGE REPRESENTATION

Accident Detection

Rule: IF impact_detector = true AND object_sensor = true, THEN accident_status = true

Accident Location Reporting

Rule: IF GPS_Access = true AND accident_status = true, THEN accident_notification = true

Parking Slot Detection

Rule: IF parking_slot_detector = true AND parking_available_status = true, THEN parking_display = true

Parking Fee Calculation

Rule 1: IF car_sensor = true AND proximity_sensor = true, THEN parking_available_status = false, duration_counter = true

Rule 2: IF car_sensor = false AND proximity_sensor = false, THEN parking_available_status = true, account_charge = true

Toll Fee Detection

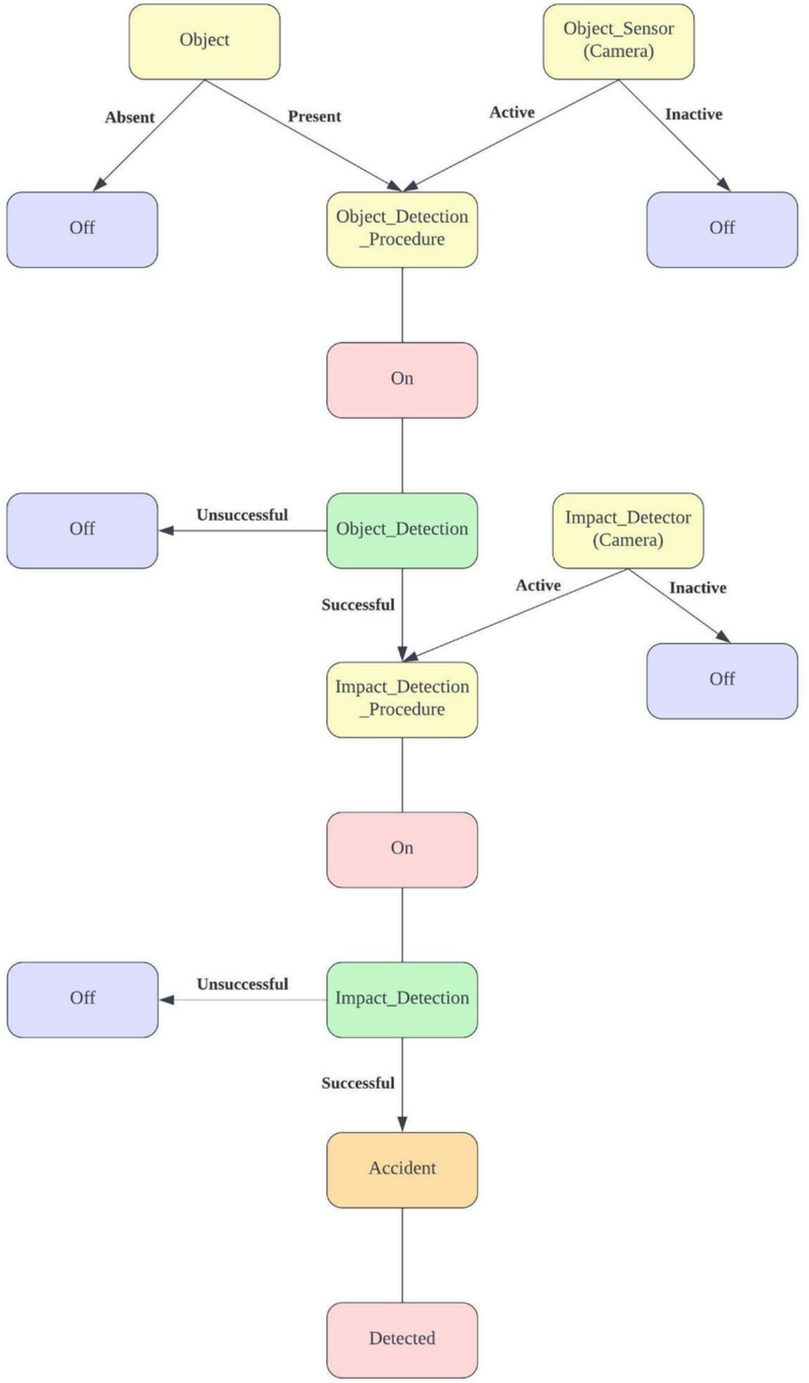
Rule: IF vehicle_detector = true AND toll_pass = true, THEN account_charge = true

Car Status Checking

Rule: IF PlatNo_Detector = true AND Roadtax_Validity = false, THEN JPJ_Report = true

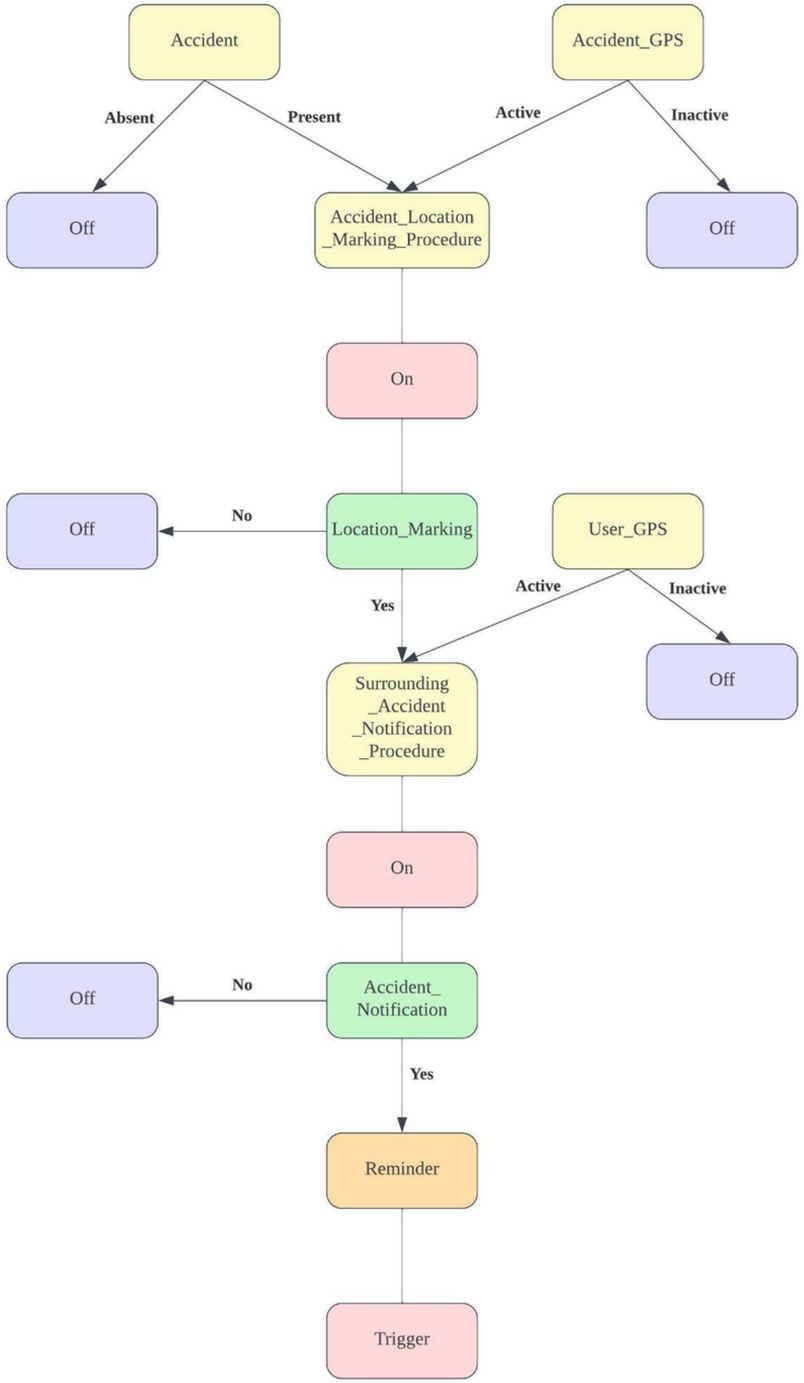
Accident Detection

Goal: Implement an AI system that promptly detects and identifies vehicle accidents using impact detectors and object sensors, enabling quick response and intervention from emergency services.



Accident Notification

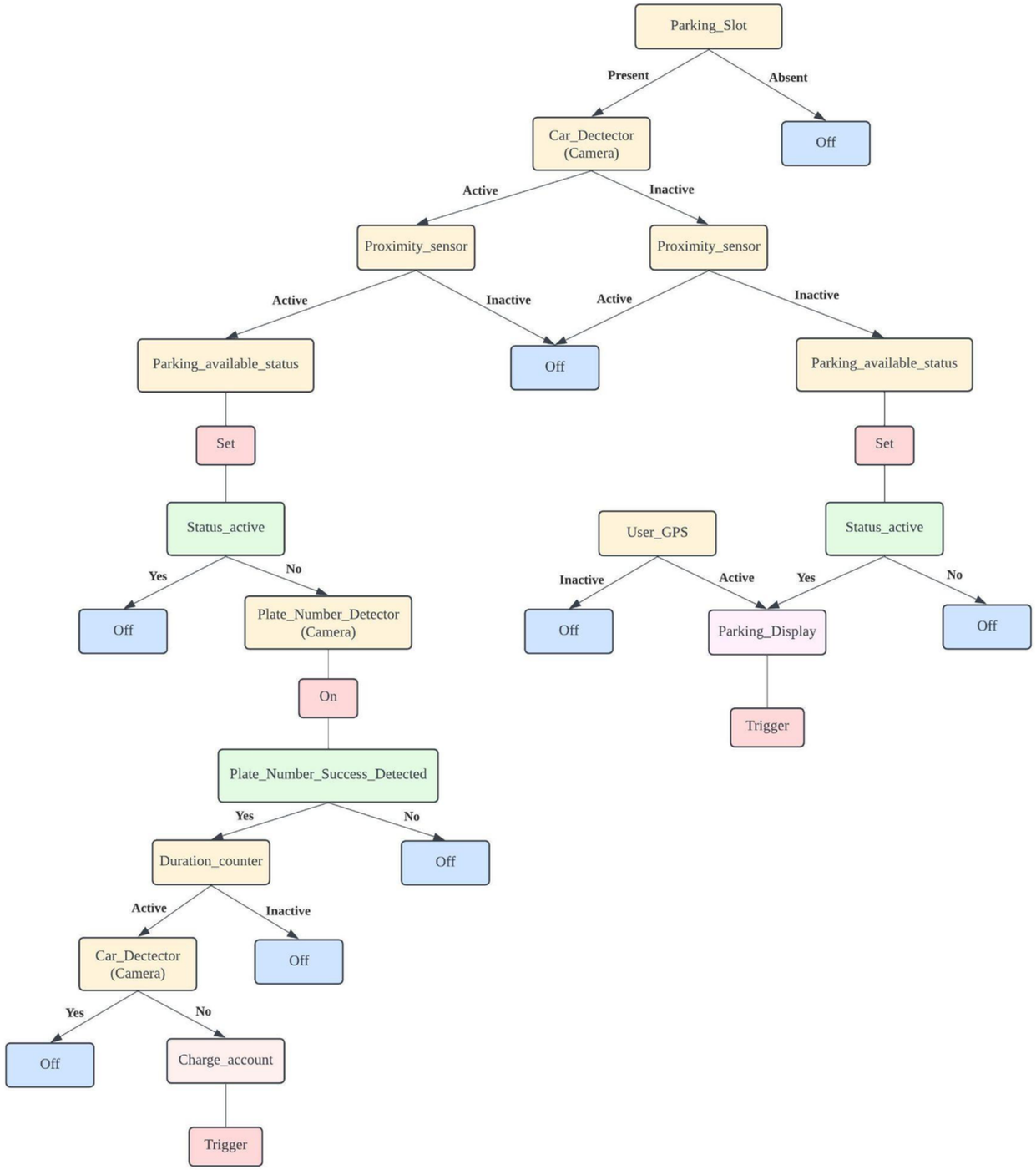
Goal: Create an AI system that promptly and automatically notify relevant users about the occurrence of a detected accident based on their current location



Parking Slot Detection and Parking Fee Calculation

Goal: Create an AI system that detects and displays available parking slots, aiding drivers in efficiently locating parking spaces.

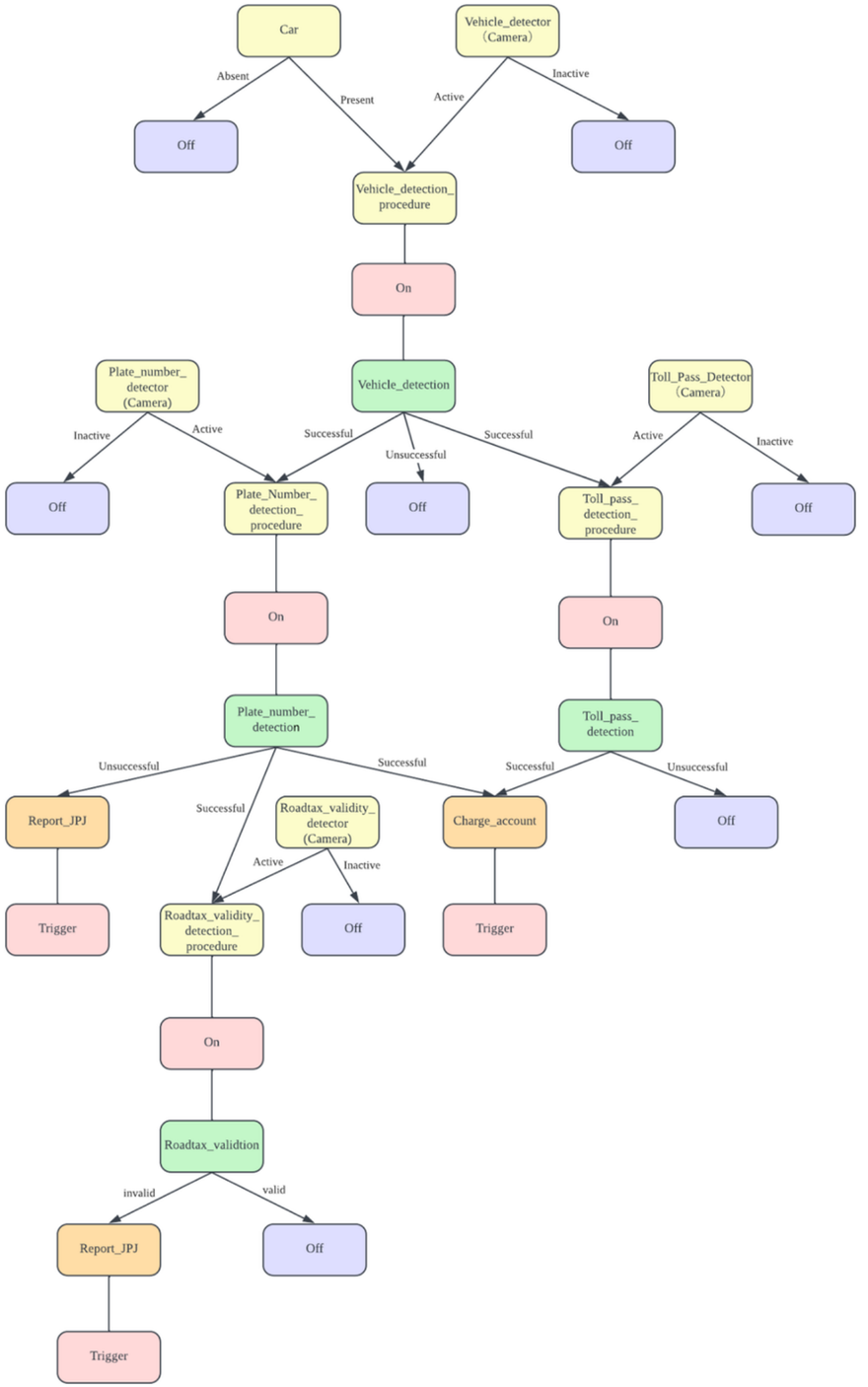
Goal: Implement an AI solution to automate parking fee calculation by utilizing car sensors and proximity sensors, enhancing the user experience and streamlining the parking process.



Toll Fee Detection and Car Status Checking

Goal: Develop an AI system to detect vehicles passing through toll gates with valid toll passes, automating the toll fee deduction process from user accounts.

Goal: Implement an AI solution that checks and analyzes vehicle statuses, such as road tax validity, and automatically reports any discrepancies to the relevant authorities, ensuring compliance with regulations.



DEFINE PEAS MODEL

Performance measure

Safety, Accuracy, Precision, Response Time, Reliability, Effectiveness

Environment

Vehicles, Pedestrians, Obstacles, Drivers, Roads, Road signs, Parking lot, Buildings

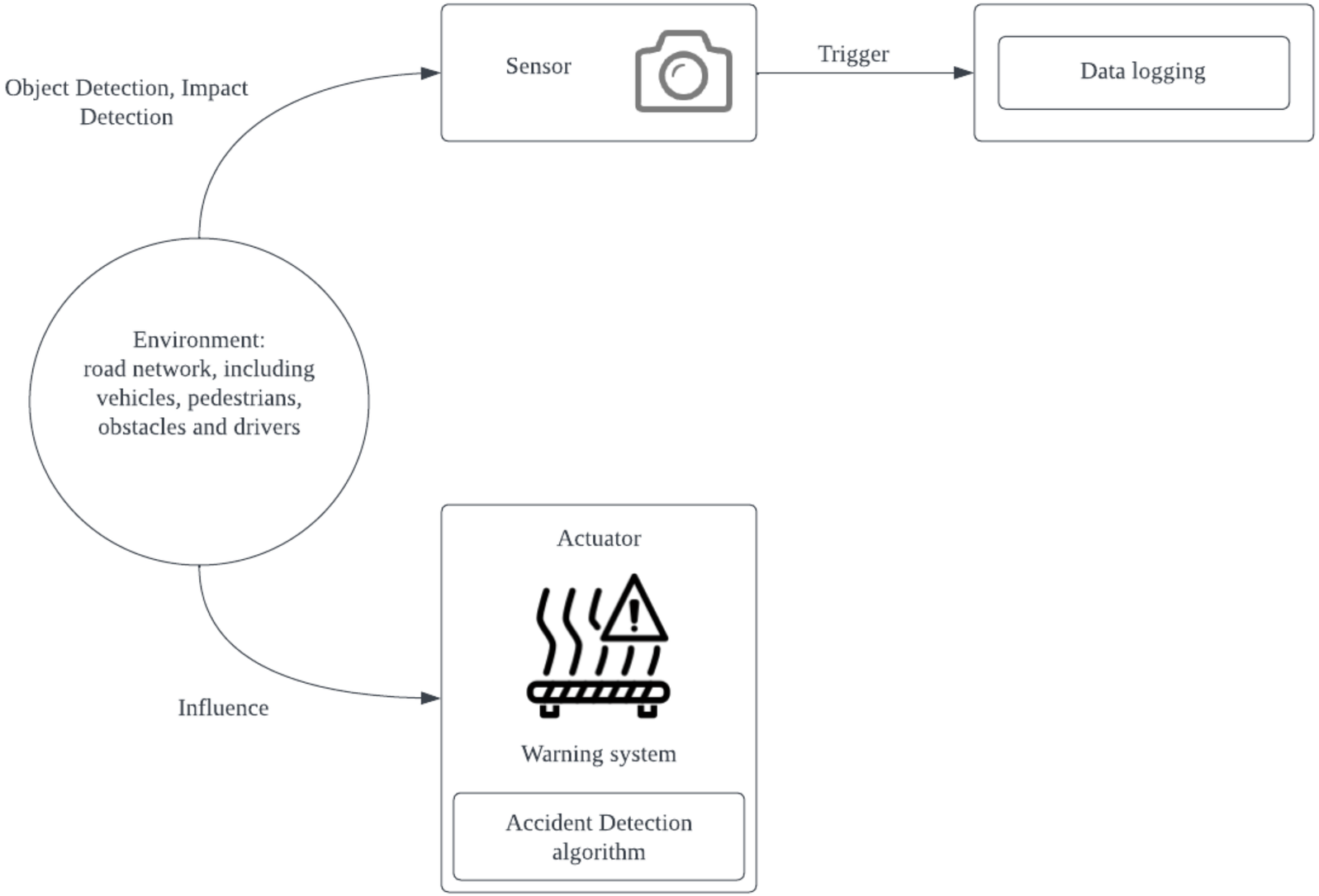
Actuators

Notification Systems, Automated Response Mechanisms, Smart Toll Booth

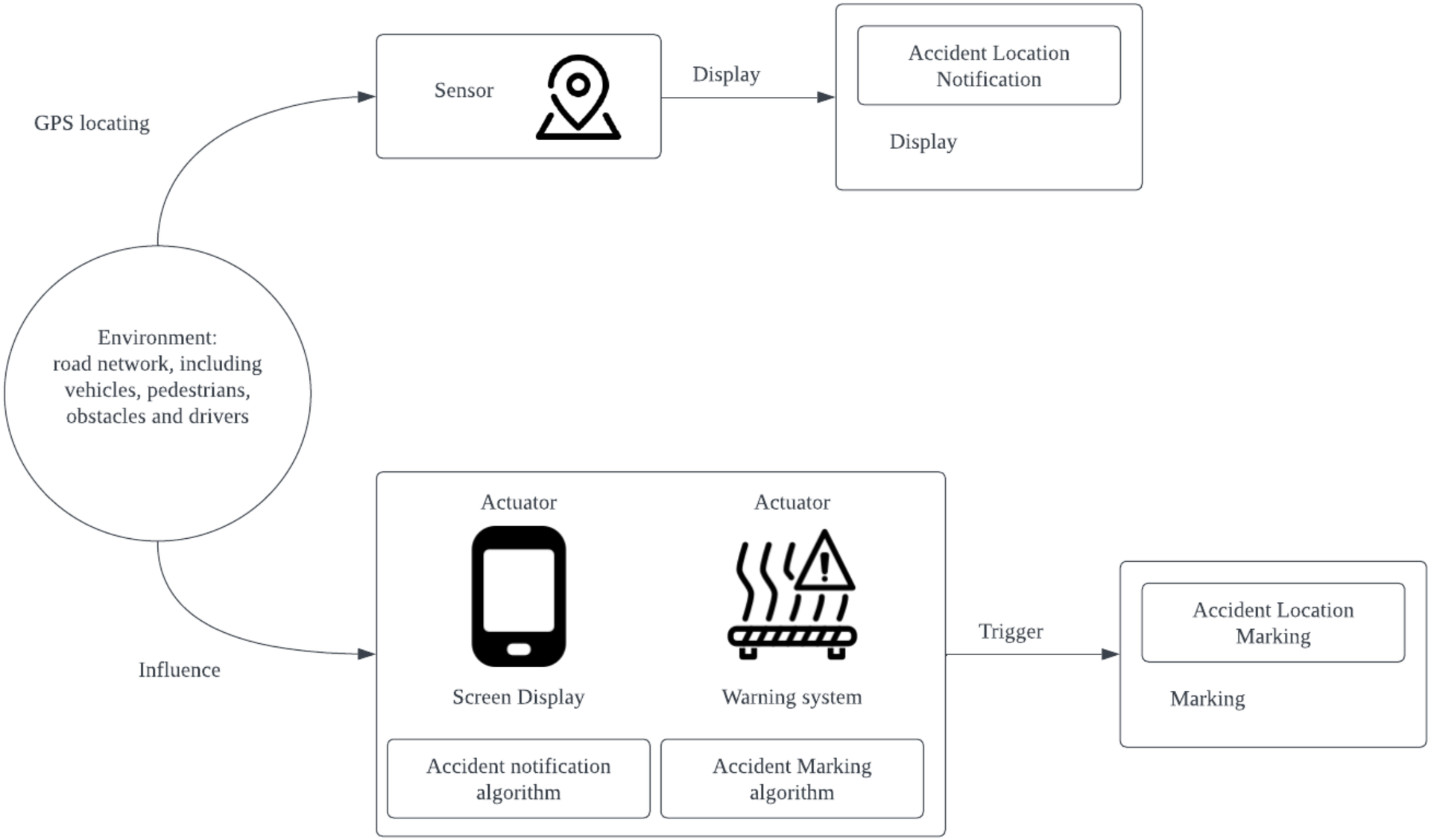
Sensors

Object sensor, Impact detector, GPS, Vehicle detector, Plate number detector, Toll pass detector, Road tax validity detector

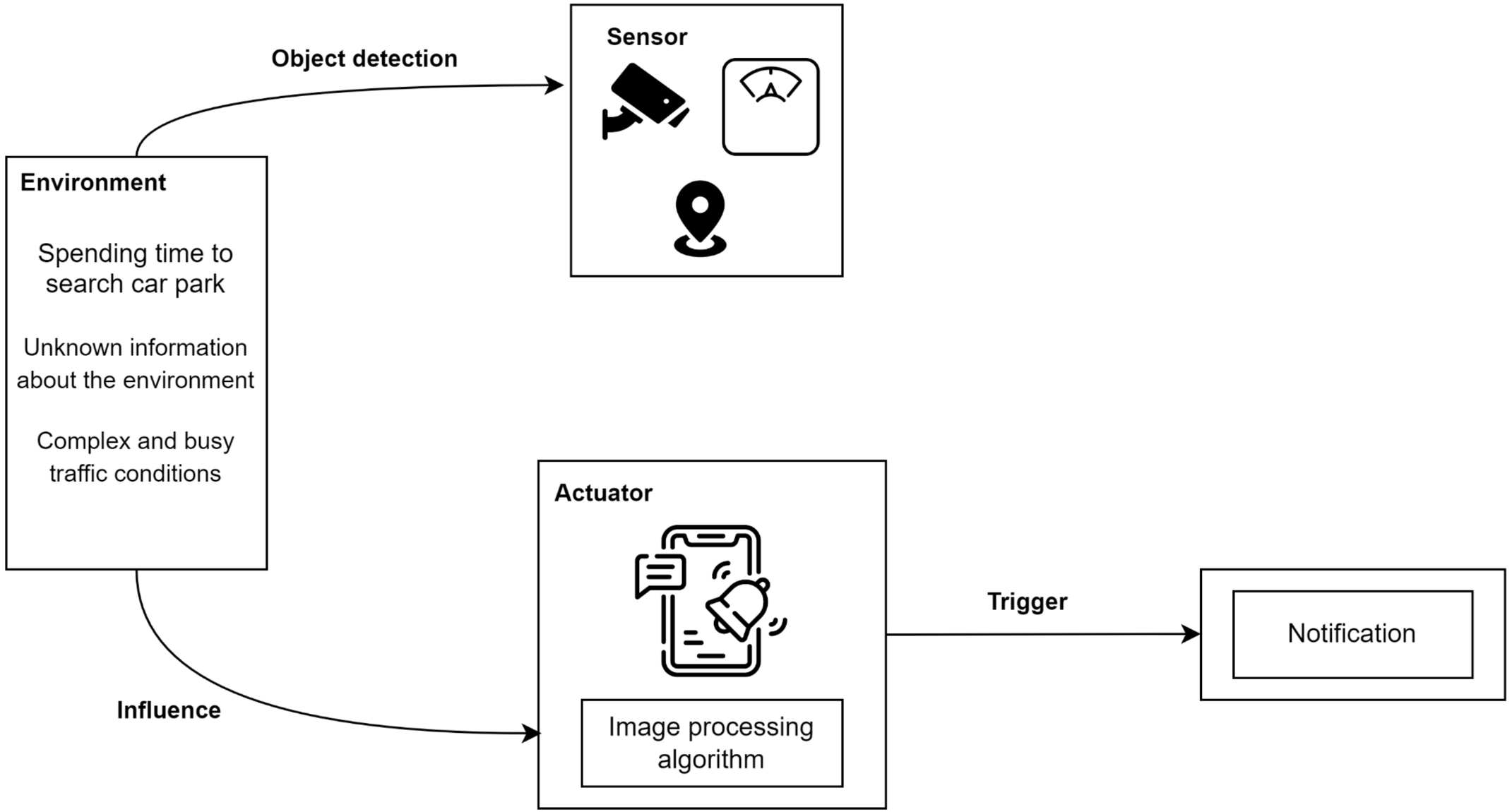
ACCIDENT DETECTION



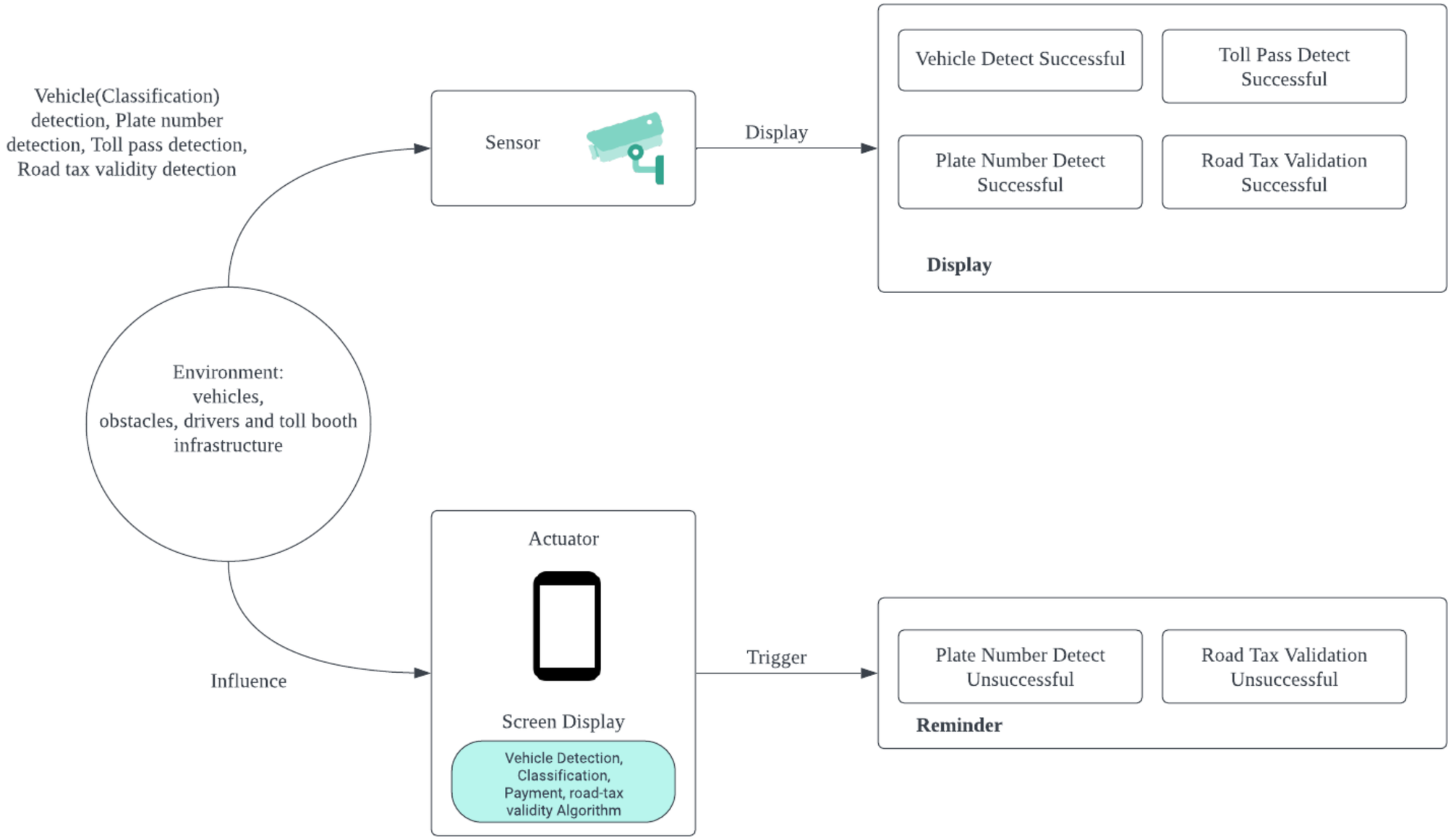
ACCIDENT NOTIFICATION



PARKING SYSTEM



TOLL SYSTEM


Vehicle(Classification) detection, Plate number detection, Toll pass detection, Road tax validity detection
Sensor
Display
Vehicle Detect Successful
Toll Pass Detect Successful
Plate Number Detect Successful
Road Tax Validation Successful
Display
Environment: vehicles, obstacles, drivers and toll booth infrastructure
Influence
Actuator
Screen Display
Vehicle Detection, Classification, Payment, road-tax validity Algorithm
Trigger
Plate Number Detect Unsuccessful
Road Tax Validation Unsuccessful
Reminder