Surveillance Car

Team -4
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Motivation and Use case

Motivation :-

To use all the concepts learnt from the IoT course and decided to put them into use such as - MQTT, ESP8266 WiFi module, Blynk App, Sensors and Actuators, NodeMCU, Arduino, Timers.

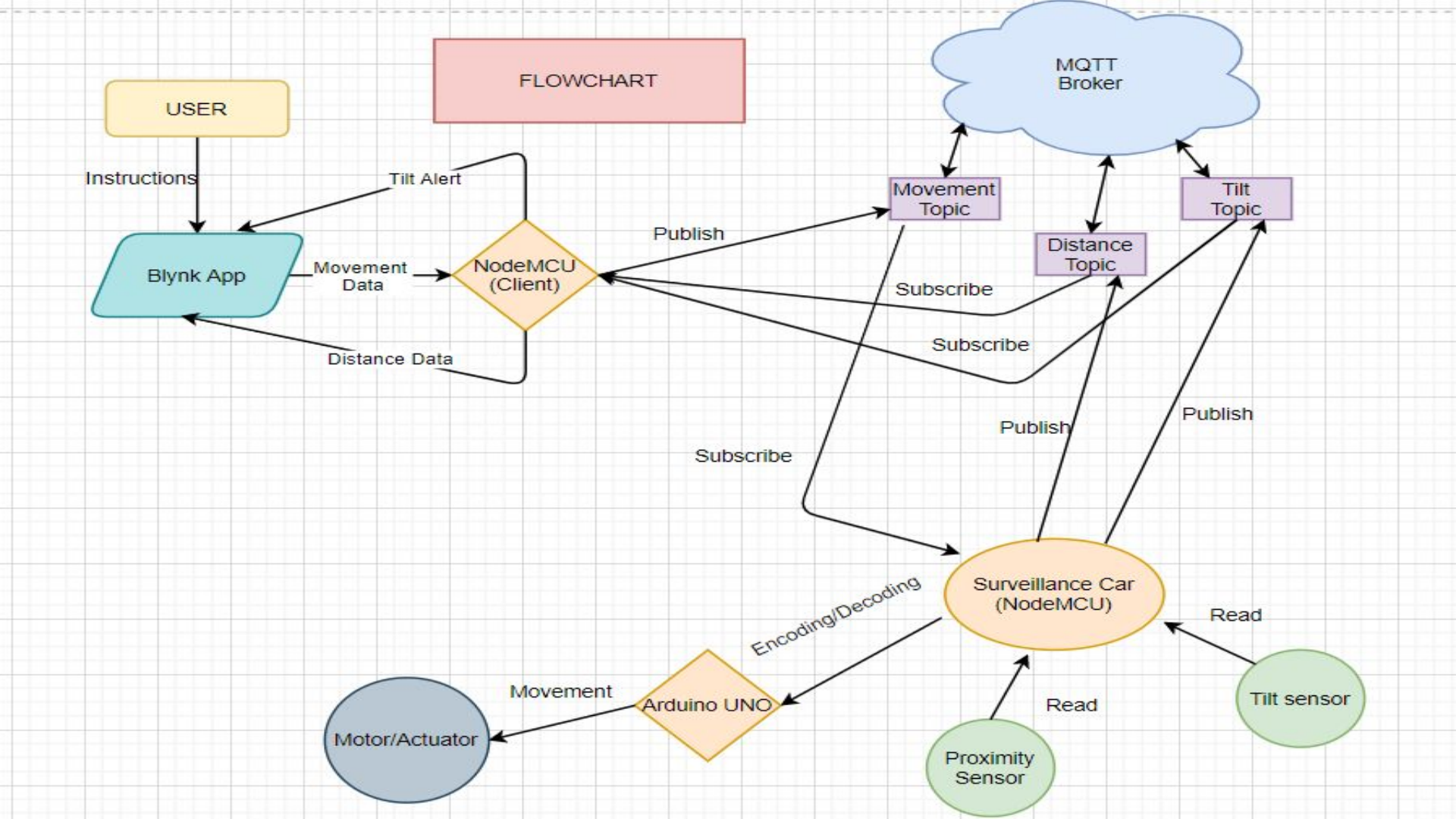
Use case :-

- Military and defence.

- Harsh terrain research without putting yourself in danger.

Features

- Remote controlled movement.
- Multiple Users
- Remote access of sensed data from the car.
- Alert popup when the car starts to flip.
- Distance from the nearest object to avoid crashing.


FLOWCHART
USER
Instructions
Tilt Alert
Blynk App
Movement Data
NodeMCU (Client)
Distance Data
Publish
Subscribe
Subscribe
MQTT Broker
Movement Topic
Distance Topic
Tilt Topic
Subscribe
Publish
Publish
Surveillance Car (NodeMCU)
Encoding/Decoding
Movement
Arduino UNO
Motor/Actuator
Read
Read
Tilt sensor
Proximity Sensor

Working

The working depends on the connection of NodeMCU and Arduino and the constant data flux between them. The protocol we decided to use for data sharing is MQTT.

Basically for control, We use a joystick in the Blynk app and send the x , y coordinates of the joystick to user NodeMCU and use these to determine the direction of movement requested.

We publish these directions to MQTT topic and the car reads these directions and controls the motors accordingly.

The sensor data is published to MQTT from the car every 5 sec and is read and displayed on the Blynk app on the user side.

Hardware

Components -

- **Micro-controllers**

NodeMCU, Arduino.

Actuators-

L298N Motor driver, Motors.

Sensors-

Tilt sensor, Ultrasound Proximity sensor.