Audience Interaction Questions and their Answers:

1. Algorithms-> Can they be quantized?

In the research paper they have tested with different algorithms such as naïve bayes theorem and so on but they proved J48 decision tree will have 99% accuracy to predict the traffic signal accurately for increasing green phase duration based on queue length and congestion of vehicles.

J48 decision tree simplified into rule-based decision tree. This makes the it lightweight and can run with low latency at edge. So instead of quantizing we use model simplification to make it practical for edge deployment.

1. How often are you calculating AGP?

AGAP is recalculated continuously in real time. Each cycle uses live dataset which has vehicle speed, queue length, acceleration from road side units and loop detectors.

1. Reliability → What if the cloud doesn’t work due to some reason?

Even if cloud fails the action module at the edge makes local decisions of green phase duration using recent sensor data.

Cloud is mainly used for long term analytics not for immediate control.

So traffic continues to flow safely without depending on the cloud.

1. How are you implementing this?

We are planning to do the simulation with iFogSim2 and SUMO simulators.

IOT devices such as sensors collect live traffic data. By training the models of YOLO and Q Learning for the congestion and queue length. By using this trained model virtual simulation will be done.

1. Physical IoT → Where & how are you testing your results?

In this project testing is done by simulation of IOT devices and traffic scenarios. Vehicle speed, queue length and congestion details are fed into edge/clous modules. In real time road side units, loop detectors and cameras would provide this data.

1. How are you physically implementing?

The implementation is virtual based simulation in this project. The simulation will be done using SUMO and iFogSim2 simulators which are virtual based. Only the data is collected physically by IOT devices.

1. What are the edge features performed by J48 Algorithm?

The edge features are lightweight execution tasks like:

Taking AGAP results from the cloud

Making real time decisions

Handling emergency overrides (ambulance priority)

The J48 provides the predicted decisions whether the vehicle pass during that phase or not while the edge executes it instantly.