# A Multimodal Communication Network for Autonomous Vehicle Control

**Objective**: Setup a multimodal communication network comprising WiFi and 5G backbone to facilitate real-time control of vehicles across the IISc and to further enable distributed intelligence by connecting mobile robotic nodes to a high efficiency compute over a low latency, high throughput communication network.

## Application Scenario 1

- Human Assisted Surveillance using Drones
  - Drone relays surveillance video to the Ground Control Station in real-time. The GCS on detection of an intruder relinquishes the control for manual maneuvering of the drone.
  - WiFi 802.11r enabled APs, our UGV and UAV, H.264 codec using ffmpeg for video streaming.

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## Application Scenario 2

- Remote Driving using Video Feed
  - Remote driving of a vehicle over a WiFi/cellular network using real-time video streaming to exercise quick emergency braking.
  - Network and codec delay optimization
  - Our experimentation on the physical WiFi testbed showed zero packet loss and no video lags during inter-AP handovers.

**UGV, Quadcopter with PX4 , Rpi3B+, camera & WiFi**

**Remote driver console**

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