VISIBLE: Application for Vehicle Visibility and Incident Reporting in Real-Time

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MOTIVATION
- Safety issues in transportation system are the major concerns.
- Foggy conditions, Ghat Sections and intersections are the major accident prone areas due to no clear visibility.
- Internet Connectivity is again a major concern in areas like Ghats.

OBJECTIVE
- To build a reliable platform that effectively utilizes mobile devices for grasping the traffic situation.
- To develop an android application to for V2V/V2I communication using P2P and Cloud Technology.
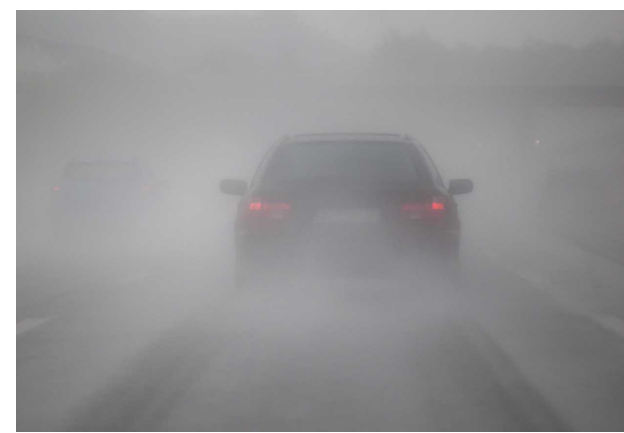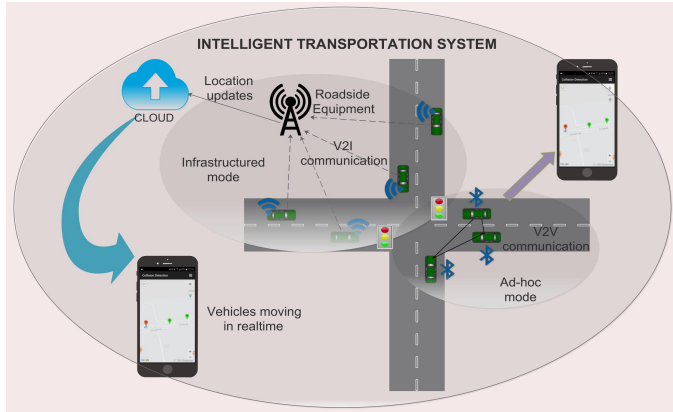
VISIBLE App

Figure 1: V2V/V2I

- Real-Time visibility of vehicles in the collision domain.
- Application has two modes. **Cloud Mode** and **P2P Mode**.
- Application automatically switches from Cloud mode to P2p mode when there is no internet.
- Whenever there is no internet for certain duration of time (10 seconds in our case), app switches to P2P mode and vehicles can be seen real-time and location can be shared.
- Incident Reporting within certain radius.

Figure 2: Technologies Used

Login Screen	Map Activity	Peer Discovery	Message Broadcast using P2P	Nevigation Drawer	Cloud Messaging
New users can register using Google or Email Sign-In methods	Green markers shows the real-time location of neighbouring vehicles	Activity to show connected peers and a button to display location on map	In case of no Internet, location is sent to peers and displayed on map	Nevigation drawer to switch among different activities of application	Share message within certain radius i.e Incident Reporting

Figure 3: Application Screenshots

Conclusion and Future Work

- We developed a smartphone based application that can make use of existing P2P and cloud technology to detect vehicles in the collision domain.
- Future work comprises of audible beeps/alerts if a vehicle comes into danger zone.
- Developing efficient RF (eg. Bluetooth) scanning methods for estimating traffic congestion and speed.
- Make use of technologies like Mobile Edge Computing (MEC) to reduce the cloud latency.