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

- 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 a certain duration of time (10 seconds in our case), the app switches to P2P mode, and vehicles can be seen real-time and location can be shared.
- Incident Reporting within a certain radius.

**Figure 1:** V2V/V2I

**Figure 2:** Technologies Used

**Figure 3:** Application Screenshots

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