Reading notes

AUTOCAST aims to minimize data shared over wireless channels so as to overcome network bottlenecks due to the limitations by the technologies used i.e LTE-direct, DSRC/802.11p, WiFi-direct. The expected data rate to be transmitted using LiDAR is about 2.2Gbps for Velodyne LIDAR.

AVR enables communication of raw sensor reading by implementing a software prototype that can be inputs to driving assistance or autonomous driving systems.

Thamani et al developed a cluster-based highway communication model where the clustering technique is based on vehicle density, position and speed. This is different with my proposed approach where the cluster head switching method is implemented based on a consensus approach instead.

To verify some of the algorithms proposed for verification in inter-vehicular networking and communication, Wang et al recommend and list a couple simulators that can be used to support experimental work. Wang also outline the following steps necessary for autonomous vehicles to participate in a clustering process:

1. Neighborhood discovery
2. Cluster head selection
3. Affiliation
4. Announcement
5. Maintenance

Chen et al prosed a system whose experimental results show that augmented data could improve perception accuracy in addition to demonstrating feasibility for a vehicular network technologies.

Legacy distributed systems

Paxos library exists for consensus implementation by the cluster head to allow members to join the cluster. <https://pypi.org/project/paxos/>.

Emnah Daknou fast clustering algorithm approach is what seems to be close to observe the behavior of the mobility model and network for the intersection scenario.

Clustering algorithms are most often used in vehicular ad-hoc networks to minimize the latencies and bandwidth challenges experienced when sharing data in highly mobile environment. [ref papers].

Cluster head selection as shown (Results) takes longer when done each time. To reduce the overhead time the state is also replicated and encrypted and saved as a log file to all other nodes memory’s. Python Paxos library is used to achieve consensus during the discovery stage by reading first the me.

Typically, clustering algorithms will involve the following phases as Wang et al describe.