Research Report Template

Title: \*Distributed Clustering Protocol for Vehicular Networks

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Research Methodology (Template)

**Problem:**

**Background:**

1. Clustering protocols (algorithms)
2. Wireless Networks Channel Interference
3. Consensus Protocols

**Related Works:**

* Application:
  + Augmented Vehicle Reality (AVR)
  + VANETS (Vehicular Ad-hoc Networks)
  + Cooperative downloading

**Research question:**

* Problems and Challenges
* Idea Formulation (Clustering)
* Questions

**Software/Game Prototype Design:**

* Tools
  + Programming Language: Python
  + Operating System: Ubuntu
  + Hardware: GPU Machine + Raspberry Pi
  + Software: AutoDisCord, CARLA, NS-3
* Usage
* Components
  + Generator
  + Cooperative Perception Engine
  + \*Car Agents
  + Edge devices
  + Ground devices

**Interfacing CARLA with ns-3**:

* CARLA Modules
* NS-3 Modules

**Distributed Clustering Algorithm (Name TBD**):

* Algorithm design
* Algorithm analysis

**Consensus approach**

**Simulation setup**

In our experiment, we setup an arbitrary number of beacons on CARLA environment as cars on a highway. Interference is expected to occur due to objects around the car environment.

Our goal for the experiment is to ensure that packets sent from the highway car client application arrives to a server on another car on the same highway at predicted time T depending on application needs running at a given edge device.

**Data Analysis**

**Network Analysis**

**Prototype Evaluation**

* Packet-level
* Algorithm
* Design

**Discussion**

**Conclusion**