Enabling Congestion Assistance with Over-the-Horizon Awareness

The problem: Traffic Congestion
- Pollution
- Noise
- Safety
- Waste of time
- Large carbon footprint
- Log on political agenda
- Saturation
- Slow roads
- Traffic jams
- Increasing efficiency by cooperation between vehicles
- More fluent behaviour of vehicles
- Less fuel burning
- Closer following
- Advanced by upgrading
- Cooperation Assistance systems

The solution: Vehicle-to-Vehicle Communications
- Efficiently disseminate traffic flow information
- Disable computerised traffic lights
- Provide contact with other vehicles
- Minimise sensitivity to vehicles in traffic

Fleeting in a Vehicular Adhoc Network
Objective: Efficient on-demand vehicle-to-vehicle communications
Directional Skilled & Persistent Fleets
- Pass on messages to upstream vehicles
- Propose directional changes: pick up way to information
- Individual vehicles can propose new information

Proposed improvements: middleware
- Gossip folder learns knowledge to prevent collisions with one agent
- Propose information in delay with same
- Delay (eg, 200m for 1km)
- Low motion (delay)
- Low number of collisions

Results
- Fast dissemination of traffic flow
- Speed 3.5 sec as real vehicle
- Up to several tens of kilometers
- Road, city, and accuracy
- Even with 500 vehicles per second
- Fleeting depends on generation of vehicles, they function both on normal and enriched

Future Work
- Improved network
- Multi-fleet scenarios
- Licencing codes
- Location anonymity
Civil Engineering

Traffic flow
Driver behaviour
Infrastructure
etc.

Computer Science

Wireless Comm.
Guidance / control
Computation
etc.

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On the poster:

Method to provide over-the-horizon view to vehicles (∼10km):
- The TrafficFilter

Propose flooding strategy (multi-hop V2V):
- microSlotted 1-persistence flooding

Research viability (simulation):
- 10km in 80ms
- scales well