

Cellular-based Vehicle to Pedestrian (V2P) Communication for Road Safety in Autonomous Cars

Mobile Systems Programming

Mehrdad Bagheri
mehrdad.bagheri@aalto.fi

Realizing V2P for Road Safety in Autonomous Cars

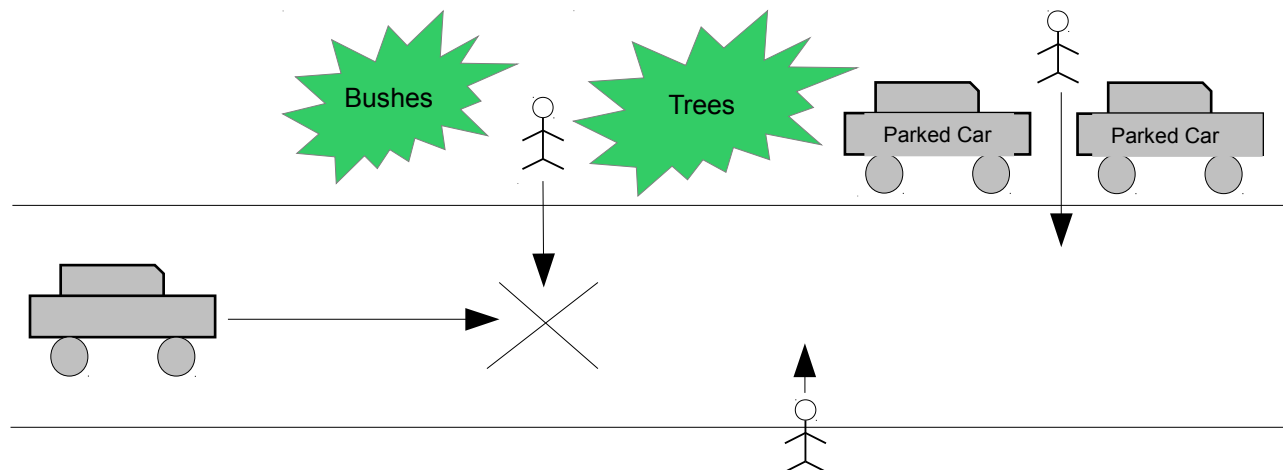
Future: Semi-autonomous Cars, Fully Autonomous Cars (Self-driving)

Pedestrian detection and V2P communication (refer to accident stats)

Crucial requirement for future autonomous cars

Also for Advanced Driver Assistance Systems

Different scenarios in road safety, collision warning and collision avoidance



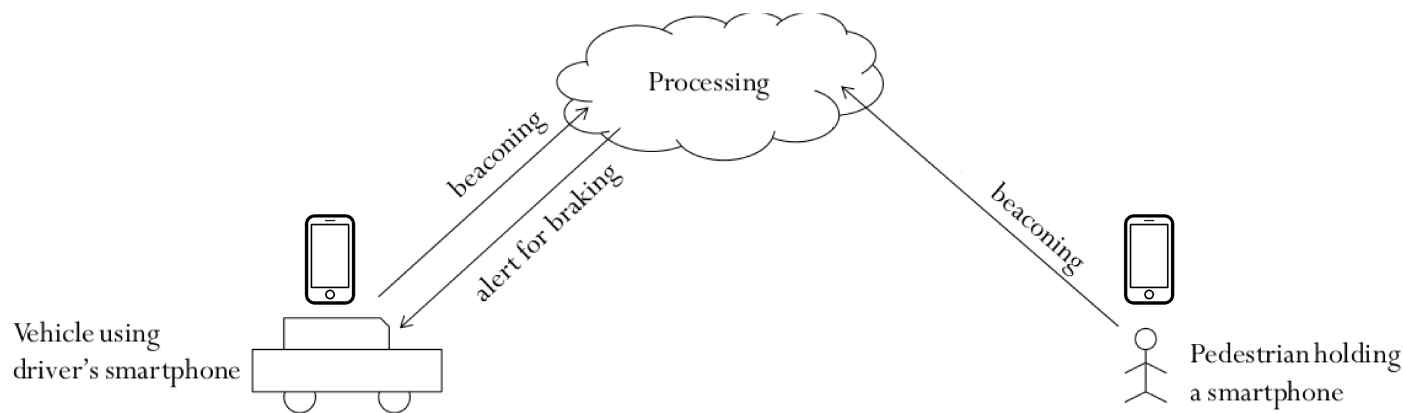
Cellular-based Road-safety in Autonomous Cars & Mobile Cloud Computing

Establish V2P communication, by means of smartphones, over cellular network.

Integrate it with other detection methods (e.g. vision based, radar based).

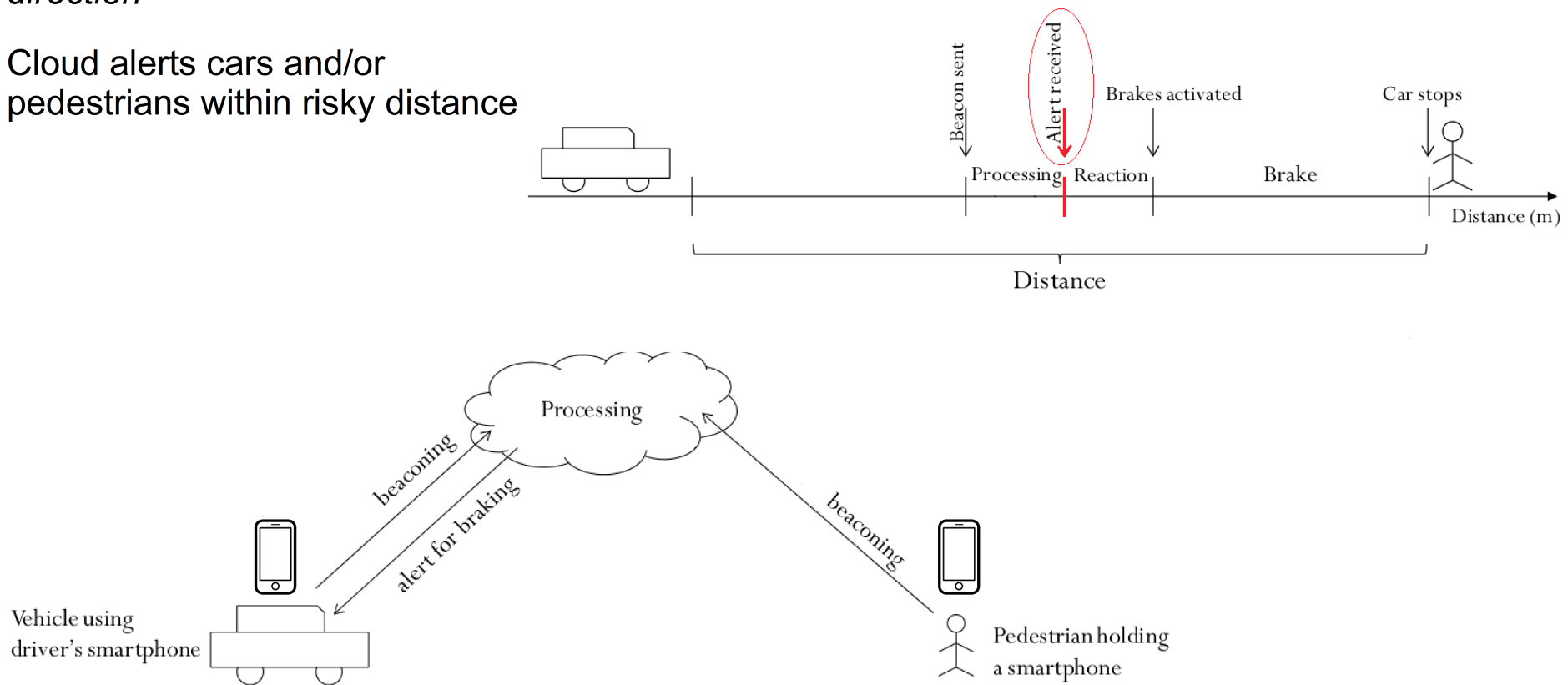
Motivation:

- No need for new infrastructure
- Availability: for both vehicles (drivers) and pedestrians
- DSRC methods: still expensive, not deployed, not supported on phones
- Radar methods: dependent on line-of-sight



Prototype

- Web-based client on smartphones
- Network nodes beacon periodically
Reporting their *location*, *speed* and *direction*
- Cloud alerts cars and/or pedestrians within risky distance



Project Goal: New Prototype Port to Mobile Edge Computing with RACS Platform

- Port the system to RACS MEC platform
- Get coordinates from base station (in addition to smartphone GPS)
- Develop Android App for client side (pedestrians, drivers)
- Proper user Interface (considering criticality of scenarios)

Thank you!
Any questions?