Inter-Vehicle Relative Localization

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Motivation and Background

- Relative location information is important in VANETs.
  - Autonomous vehicles
  - Location related security
  - Driving coordination
  - Driving assistance

Motivation and Background

- State-of-the-art
  - Global Positioning System (GPS)
    - Unacceptable error for mentioned applications
  - Infrared ranging system
    - High accuracy
    - Special hardware requirements

Motivation and Background

- State-of-the-art
  - Google self-driving car
    - At least 5 years to be put onto the market.
    - Especially designed for aged people.
  - Inter-vehicle communication module
    - Almost every automobile manufacturers are integrating inter-vehicle communication modules into products.
    - Cisco has developed advanced modules.
    - Mercedes-Benz start to cooperate with Huawei on communication modules.

Our solution

- Multi-antenna or virtual antenna tech
- Possible challenges
  - High speed. Real-time measurement.
  - Small AoA measurement error may cause large relative positioning error.