SIP-adus Workshop 2022

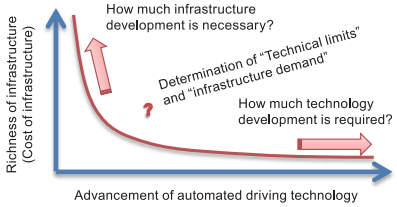
Research on recognition technologies necessary for automated driving (levels 3 and 4)

AD-URBAN

Objective

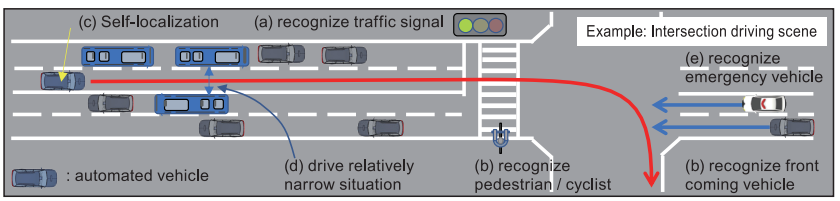
FOT project of Automated Driving system under Real city environment based on Academic Researcher' s Neutral knowledge

- Level 4-equivalent autonomous driving in urban areas
  - It is necessary to have advanced perception and decision-making systems run by onboard AI, as well as infrastructure such as road facilities and communication facilities to support it
- State-of-the-art autonomous vehicle technology
  - Competition area in the industry
  - Knowledge of academia is essential
- Determination of technical and infrastructure demand



Project Summary

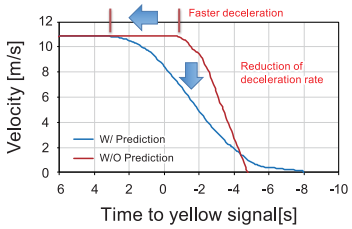
Determine installation and maintenance demand for infrastructure-supported sensors during automated driving through real vehicle experiments and utilization of realistic simulator



- Development of traffic light recognition
  - ➢ The recognition rate of 99% was achieved.

    Scenes where recognition is difficult were confirmed in public road driving tests
    - ◆ Occlusion, Night, Sunshine, Background assimilation

- Evaluating the effectiveness of V2I/N2N
  - ➢ Reduction of deceleration in the dilemma zone using remaining signal time.



- Verification of simulators and scenarios in cooperation with SAKURA/DIVP
  - ➢ Recreating scenes that make recognition difficult using DIVP simulator.

    Traffic light recognition in rainy conditions
    - ◆ Real-world environment
      No effect due to rainfall of a few mm/h under the experimental condition
    - ◆ Simulation environment
      Confirmation of poor recognition due to raindrops

Example of simulation image in rainy condition

- Demonstration experiment at Tokyo waterfront area and Kanazawa-city

  Public road testing at Tokyo waterfront
  - ◆ Number of driving days: 182 days
  - ◆ Total mileage of autonomous driving: 3,212.8km
    (As of the record from FY2019 to 2021)

Public road demonstration at Tokyo waterfront area

金沢大学 中部大学 名城大学