

## **Theme: Machine Intelligence**

### **- Sub-Theme: Future Mobility Technology**

Among various areas of ‘Future Mobility Technology’, we focus on level 4 Autonomous Driving (AD). Level 4 AD requires little human interaction in the vehicle’s operation as the vehicle itself handles unexpected situations such as system failure.

In order to realize level 4 AD, it is essential to develop highly reliable perception algorithms that can accurately detect and recognize surrounding objects and drivable regions, based on various kinds of sensor data. Particularly, the algorithm should not only have high accuracy for favorable autonomous driving conditions, such as daytime on highways, but should also be robust enough to cater to varying illumination, weather, and traffic conditions. Furthermore, the vehicle should be able to localize and drive itself accurately in such situations.

In addition to perception, safe and reliable path planning and decision making are also required for realizing level 4 AD. These tasks are based on the previously acquired knowledge about the surrounding environment and traffic rules.

#### **- [L4 AD Perception - Vision]**

Camera-based vision only solution to perceive the 360-degree surrounding environment of the vehicle, including bird's-eye-view (BEV) detection, segmentation, extended object tracking, and object trajectory prediction in BEV.

#### **- [L4 AD Perception - LiDAR, Multimodal]**

A solution for learning and discerning the surrounding environment is collecting raw data from a comprehensive set of sensors including cameras and LiDARs.

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- [L4 AD Perception – Radar]  
Implementation of ML-Based Radar Perception Algorithm, which includes Super-Resolution Imaging, Advanced Classification, Multi-object Clustering, and Extended Object Tracking.
- [ L4 AD control, Path Planning, Decision Making]  
Development of risk/interaction(intention)-aware decision making and motion planning algorithm for autonomous driving
- ※ The topics are not limited to the above examples and may include ‘L4 HW/SW Architecture for AD’, ‘SOC & Computing, and EV Technology’, etc. The participants are encouraged to propose the original idea.
- ※ Funding: Up to USD 150,000 per year