

"Search for autonomous vehicle location and change traffic lights, call an ambulance when a patient emergency occurs" GIST holds 'Hybrid V2X Demo Day' to demonstrate the development of a connected car platform

- Public demonstration of Hybrid-V2X project results supported by KRW 2.22 billion for approximately 5 years as part of the 'AI-centered industrial convergence complex development project research and development project' 'Hybrid V2X Demo Day' held annually from 2020
- Autonomous vehicle location identification and traffic light change according to surrounding traffic conditions... When a patient emergency occurs, video is recorded and transmitted to the cloud to identify the emergency situation and call an ambulance through V2X communication
- Future mobility capabilities expected to be strengthened through the development of accident prevention technology that responds to external environments such as bad weather



▲ The research team of GIST (host organization) and participating organizations (Kookmin University, Etiforce Inc., and Tenergysoft Inc.) is taking a commemorative photo after completing a public demonstration of autonomous vehicle positioning and automatic traffic light changing.

The Gwangju Institute of Science and Technology (GIST, President Kichul Lim) announced on the 30th that the AI Graduate School (Dean Professor JongWon Kim) held a 'Hybrid V2X* Demo Day' event to demonstrate a prototype of the connected car* platform development research for autonomous vehicles.

* connected car: A car that is connected to the internet and can share its internet connection with other devices both outside and inside the car. Connected cars have special technologies that provide additional benefits, such as automatic collision notification, speeding, and safety alert notifications, in addition to internet and V2X connectivity.

* Hybrid V2X (Vehicle to Everything communication): A technology that allows vehicles to communicate with other vehicles, infrastructure, pedestrians, and networks, and is considered a core technology for autonomous vehicles and next-generation intelligent transportation systems. The method of simultaneously supporting DSRC (WAVE) and C-V2X (Celular V2X) as V2X communication standards is collectively referred to as Hybrid-V2X.

As part of the 'AI-centered Industrial Convergence Complex Research and Development Project' (Ministry of Science and ICT; IT Industry Promotion Agency), the research team (host: GIST) of the relevant R&D project*, which will receive a total of KRW 2.22 billion over approximately 5 years (May 1, 2020 to December 31, 2024), is conducting R&D on ▲ Hybrid-V2X communication platform ▲ High-precision positioning technology ▲ Distributed XAI-DCU prototype and ▲ Driving simulator

hardware-in-the-loop (HILS) linkage technology, and the developed technology is disclosed every year through the 'Hybrid V2X Demo Day' event.

* project name: 'Development of V2X-based connected platform technology capable of responding to external environments such as bad weather', Project manager: Professor JongWon Kim, Implementing organization: Host (GIST), Participating (Kookmin University, Etiforce Co., Ltd., Tenergysoft Co., Ltd.)

The research team will disclose element technologies related to the connected car platform from the first year to the third year (2020-2022), and in the fourth year (2023), publicly demonstrated '4D radar-based vehicle positioning demo linked to Hybrid V2X communication' and 'Demo of low-latency service verification environment construction through Hybrid V2X Car Edge cloud using SiLS (Software-in-the-loop) method.'

This year, when the final results were revealed, the GIST AI Graduate School (Professor JongWon Kim's research team) and Tenergysoft (CEO Chun-seok Jeon) ▲ SiLS (Software-in-the-loop) method Hybrid-V2X Car-Edge cloud-based service verification environment construction, and Etiforce (CEO Ho-jun Kim) and Kookmin University (Professor Gu-min Jeong's research team) ▲ Hybrid-V2X communication-based vehicle positioning integrated demonstration were conducted.

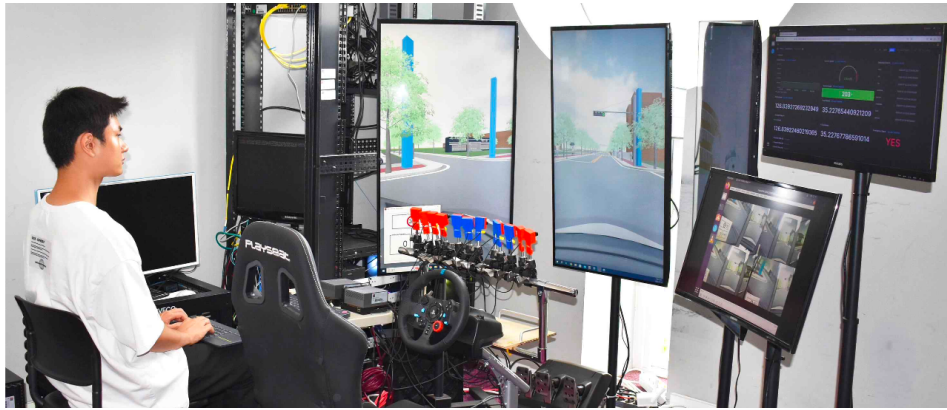
Etiforce Inc. and the research team at Kookmin University demonstrated a series of processes including using autonomous vehicles and mobile V2X smartpoles* on the road outside the GIST AI Graduate School building to accurately determine the location of autonomous vehicles, changing traffic lights from red to blue in real time depending on surrounding traffic conditions, and transmitting the collected vehicle location information and the status of the V2X communication module in real time to the V2X Car Edge cloud in the AI Graduate School building to store the data.

* Smart Pole: This is a smart infrastructure that connects citizens and the city. It is an urban infrastructure that supports citizens to lead a safer and more comfortable life by combining various types of urban infrastructure (signal poles, streetlight poles, CCTV poles, security poles) with various smart city ICT technologies such as public Wi-Fi, IoT, intelligent CCTV, electric charging, and autonomous driving.



▲ The research team of Kookmin University and Etiforce Inc. is publicly demonstrating vehicle location determination and automatic change of traffic lights (from red to blue) using autonomous vehicles and mobile V2X communication poles.

In addition, it also revealed how to integrate and manage collected data in real time by transmitting data observed through V2X communication with autonomous vehicles on the road outside the building in real time to the V2X Car Edge cloud along with real-time observation data in virtual space.



▲ The GIST and Tenergysoft research team are conducting a public demonstration of emergency patient transport using a hybrid V2X Car Edge cloud and driving simulator, as well as an open demonstration of integrated control of the demonstration data and autonomous vehicle positioning demonstration data.

Professor JongWon Kim said, "During the demonstration of the R&D results, rain accompanied by strong winds actually fell, but the research team verified that the prepared scenario worked without any problems. In the future, we expect to strengthen the capabilities of future mobility that increases traffic efficiency while reducing traffic safety risks through the development technology of a hybrid-V2X-based connected car platform that responds to bad weather, and we plan to continue industry-academia collaboration for the spread of R&D technology."