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Professor Yong Gu Lee's joint research team develops deep learning for autonomous vehicles

- GIST (President Seung Hyeon Moon) and POSTECH (President Do-yeon Kim) will start deep learning research for autonomous vehicles, which is attracting attention as a future strategic business.
- Over the next four years, GIST Professor Yong Gu Lee of the School of Mechanical Engineering and POSTECH Professor Dae-jin Kim will lead a joint research team to develop open data sets and cognitive processing technologies for autonomous driving research.
- According to data from IHS (UK market research agency), the worldwide annual sales of fully autonomous vehicles are expected to reach 2.18 million units in 2035 from 230,000 units in 2025.
- Open data set and cognitive processing technology can detect objects, determine distances, and recognize behavior in images. In order to do this, special large-scale data such as police officers and security personnel who play an important role on the road are needed. By using such data, cognitive processing for autonomous vehicles on roads with many variables can be accomplished through deep learning.

- For example ▲ Recognizing the signal of police officers and security personnel ordering deceleration or detours ▲ Slowing down by recognizing unexpected situations or sudden accidents when a pedestrian suddenly rushes out ▲ Vehicle will be able to carry out autonomous driving by itself even in complicated situations by recognizing the traffic signals or safety crew at construction sites.

- The research teams will divide the role of each laboratory according to their expertise in this project.

- GIST Professor Yong Gu Lee's research team will focus on on atypical dynamic data sets involving human movements, and POSTECH Professor Dae-jin Kim plans to focus on developing technologies based on deep learning.

- The research team will construct more than 310,000 video and image data sets of traffic signals, police, traffic safety personnel, and irregular dynamic data during the research period.

- It is expected that three effects of the research will result. ▲ On the technical side, it is possible to plan the behavior patterns of autonomous vehicles in special situations such as accident situations or traffic control situations by analyzing dynamic data as well as static data on roads. ▲ In terms of economic and industrial benefits, Korean companies can take the lead in the development of autonomous vehicles around the world by providing a large amount of unstructured data to domestic companies and research organizations. ▲ On the social side, based on the high-performance cognitive processing technology, the social awareness of autonomous vehicles can be improved, contributing to the influx and training of personnel in the field, and open autonomous driving data sets are available to support the development of various educational and industrial bodies and infrastructure.

- GIST Professor Yong Gu Lee's said, "Recently, Uber felt the need to develop artificial intelligence capable of making flexible choices in

special circumstances because of a tragic accidents causing the death of pedestrians. If this research succeeds, Korea is expected to play a leading role in the future development of autonomous vehicles in the future."

