

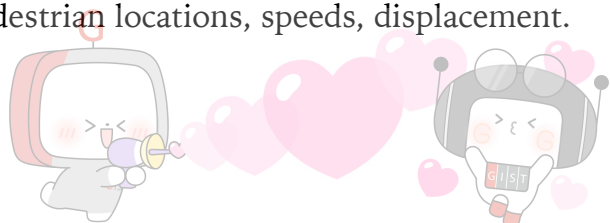
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Professor Hae-Gon Jeon's team develops a pedestrian path prediction system using artificial intelligence

- Figuring out pedestrian paths is one of the essential elements in autonomous driving and service robotics technology. To this end, research on estimating pedestrian walkable routes and final arrival locations using observed video images has recently been in the spotlight in the AI field of the computer vision and machine learning.
- Professor Hae-Gon Jeon at the AI Graduate School at GIST (Gwangju Science and Technology, President Kiseon Kim), and Bae In-hwan, a master's program student in the School of Electrical Engineering and Computer Science, developed an accurate pedestrian path prediction algorithm using artificial intelligence.
 - This research result is expected to be applied to the field of autonomous-driving avoidance technology and service robotics, where pedestrian movement is important.
- Existing methodologies model pedestrian-to-pedestrian locations via a deep learning network with a constant structure, while this work proposes a novel form of deep-learning structure that can use graph convolutional networks to model various information such as pedestrian locations, speeds, displacement.



- Graph Convolutional Networks (GCNs) are deep-learning networks that are able to learn graph-shaped data represented by the relationship between objects and their objects. Social interaction was expressed by shaping all pedestrians in the scene as spatio-temporal graphs, and efficiency and accuracy were enhanced by introducing a method to create graph sets by releasing strong bonds between pedestrian vertices.
 - Furthermore, unlike traditional prediction models, we present a new methodology that prevents overshooting through vectors that compensate for cumulative errors and allows the path to be recovered in the original destination direction. The proposed method enables complex and diverse forms of path prediction, such as collective joining, collective movement, and rapid rotation of pedestrians that are not solved by existing methodologies. Furthermore, the proposed model's light capacity networks have also been recognized for their superiority in terms of practicality.
- Professor Hae-Gon Jeon said, "This study has academic significance in that it simulated the pedestrian movements from various perspectives through graph-based network structure models. It is expected that the fast inference speed unique to deep learning-based methodology and the strong performance of the proposed algorithm will speed up the practical use of technology in pedestrian path prediction."
 - The study, led by Professor Hae-Gon Jeon of the AT Graduate School and Bae In-hwan (the lead author) of the School of Electrical Engineering and Computer Science, was presented on February 5, 2021, at the AAAI Conference on Artificial Intelligence and will be included in the 2021 Proceedings of the AAAI Conference on Artificial Intelligence.
 - Meanwhile, the AAAI marks its 35th anniversary this year as the world's premier academic event hosted by the World AI Association. It is a place where international scholars and top authorities from various fields gather in one place every year to share the latest AI technologies and research trends such as machine learning and deep learning.

