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A Deep Learning-Based Pedestrian Trajectory Prediction Algorithm

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Abstract : With the rise of the Internet of Things era, intelligent products are gradually integrating into people's lives. Pedestrian trajectory prediction has become a key issue, which is crucial for the motion path planning of intelligent agents such as autonomous vehicles, robots, and drones. In the current technological context, deep learning technology is becoming increasingly sophisticated and gradually replacing traditional models. The pedestrian trajectory prediction algorithm combining neural networks and attention mechanisms has significantly improved prediction accuracy. Based on in-depth research on deep learning and pedestrian trajectory prediction algorithms, this article focuses on physical environment modeling and learning of historical trajectory time dependence. At the same time, social interaction between pedestrians and scene interaction between pedestrians and the environment were handled. An improved pedestrian trajectory prediction algorithm is proposed by analyzing the existing model architecture. With the help of these improvements, acceptable predicted trajectories were successfully obtained. Experiments on public datasets have demonstrated the algorithm's effectiveness and achieved acceptable results.

Keywords : deep learning, graph convolutional network, attention mechanism, LSTM
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