Demand Forecasting in Transportation: A Graph Attention Networks for Predicting Bus Ridership

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***Abstract*—Demand prediction in transportation systems plays a critical role in optimizing resources and improving service efficiency. This study explores demand prediction for Ulaanbaatar's public transportation network using Graph Attention Networks (GATs), Convolutional Neural Networks (CNNs), and Generative Adversarial Networks (GANs). GATs effectively capture spatial relationships, achieving the best performance while GANs struggle with stability and convergence issues. The findings emphasize the potential of using graph-based methods that incorporate key stations in the analysis of public transportation networks for predicting transit demand.**

***Keyword*—Generative Adversarial Networks, Convolutional neural networks, Intelligent transportation systems, Deep learning**

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