Large Language Model and AI Agent System for Smart City: A Systematic Literature Review

Min-Yuh Day *
Graduate Institute of Information Management, National Taipei University, New Taipei City, Taiwan
myday@gm.ntpu.edu.tw

Hsin-Ting Lu
Graduate Institute of Information Management, National Taipei University, New Taipei City, Taiwan
hsintinglubob@gmail.com

Xu-You Lan
Graduate Institute of Information Management, National Taipei University, New Taipei City, Taiwan
xuyou0403@gmail.com

Bor-Jen Chen
Graduate Institute of Information Management, National Taipei University, New Taipei City, Taiwan
chenborjen@gmail.com

Abstract

As smart cities rapidly develop, large language model (LLM) agent systems are playing an increasingly vital role in enhancing citizens' quality of life, particularly in traffic management. This study aims to explore the core technological architecture and current developments of LLM agent systems in smart city transportation through a systematic literature review of studies published between 2022 and 2024 in the Web of Science database. The findings reveal key trends, challenges, and opportunities in the application of LLM-based AI agents, with major application areas including traffic data processing and prediction, autonomous driving technology, generative AI for transportation systems, and traffic management. The research contributions of this study include synthesizing current knowledge on LLM-based AI agents in smart city transportation, addressing gaps in existing literature, and providing practical recommendations for improving urban traffic management efficiency. The practitioner implications of this study include insights for optimizing traffic management, enhancing autonomous driving technologies, and improving urban mobility through the implementation of LLM-based AI agents in smart city initiatives.