

Enhancing Last-Mile Delivery Planning: Understanding Drivers' Preferences with Machine Learning

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In last-mile delivery logistics, drivers often choose routes based on personal preferences, favouring familiar roads over the shortest distance. This study proposes an innovative approach to learning drivers' routing preferences by integrating Adaptive Large Neighbourhood Search (ALNS) with a sampling technique and a Machine Learning (ML)-based optimization technique. While ALNS aids in finding the optimal solutions, the sampling and ML-powered optimization adapt and learn from historical data to align with the preferences of drivers and route planners. This process not only humanizes the delivery process but also infuses it with intelligent, data-driven decision-making. The study, validated with real-world data, showcases that this approach yields superior solutions, reflecting the preferences of drivers and planners more accurately. The findings represent a significant step forward in machine learning-powered last-mile delivery planning.