

ABSTRACT

DESIGN OF A CONGESTION AND TRAVEL TIME PREDICTION SYSTEM TO IIB DARMAJAYA USING THE LSTM ALGORITHM BASED ON REAL-TIME TRAFFIC DATA

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Traffic congestion presents a persistent challenge in Bandar Lampung, especially on routes to IIB Darmajaya, which often experience heavy traffic during peak hours. The unpredictability of real-time traffic conditions complicates accurate travel time estimation for commuters, highlighting the need for an intelligent system that can dynamically predict congestion levels and travel durations. This research developed a travel time prediction system for routes to Darmajaya Campus using the Long Short-Term Memory (LSTM) algorithm, trained on real-time traffic data sourced from OpenRouteService (ORS). The dataset comprised distance, estimated travel duration, congestion intensity, and historically recorded travel times. Data preprocessing, normalization, and sequence generation were conducted prior to LSTM model training. The resulting system was implemented as a web-based application, enabling users to input their starting location and receive predicted travel times alongside current congestion levels. Results indicated that applying the LSTM model to real-time traffic data produced accurate travel time predictions and supported users in more efficient trip planning.

Keywords: Congestion Prediction, Travel Time, Real-Time Traffic, LSTM, Machine Learning, OpenRouteService

