ANALISIS PERILAKU PENGEMUDI BERDASARKAN DATA CAN BUS TERHADAP KONSUMSI BAHAN BAKAR BERBASIS ALGORITMA KLASIFIKASI

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ABSTRAK

Perkembangan teknologi akuisisi data kendaraan seperti CAN Bus semakin penting untuk menganalisis perilaku pengemudi dan efisiensi konsumsi bahan bakar, terutama pada armada taksi seperti Bluebird yang menghadapi biaya operasional tinggi. Penelitian ini menggunakan data CAN Bus dari kendaraan Toyota Hiace pada rute Jakarta–Bandung, diambil dengan perangkat FMC130 dan LVCAN200 dari Teltonika, dianalisis dengan algoritma klasifikasi (Random Forest, Decision Tree, Naïve Bayes, SVM, dan KNN) melalui Python di Google Colab, dan divisualisasikan dalam bentuk grafik serta tabel. Hasilnya menunjukkan bahwa perilaku pengemudi agresif menyebabkan konsumsi bahan bakar 17.2% lebih banyak daripada pengemudi konservatif. Random Forest dan Decision Tree mencapai akurasi tertinggi sebesar 98%, diikuti oleh KNN dengan akurasi 96%, serta SVM dengan akurasi 80%. Sementara itu, Naïve Bayes menunjukkan performa terendah dengan akurasi 76%. Model ini memberikan wawasan berharga bagi perusahaan taksi untuk mengoptimalkan perilaku pengemudi dan mengurangi biaya bahan bakar.

Kata kunci: Perilaku Pengemudi, CAN Bus, Konsumsi bahan bakar, Klasifikasi, *Machine Learning.*

DRIVER BEHAVIOR ANALYSIS BASED ON CAN BUS DATA FOR FUEL CONSUMPTION USING CLASSIFICATION ALGORITHMS

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ABSTRACT

The development of vehicle data acquisition technologies such as the CAN Bus has become increasingly important for analyzing driver behavior and fuel efficiency, especially for taxi fleets like Bluebird that face high operational costs. This study utilizes CAN Bus data from a Toyota Hiace operating on the Jakarta–Bandung route, collected using Teltonika's FMC130 and LVCAN200 devices. The data were analyzed using classification algorithms (Random Forest, Decision Tree, Naïve Bayes, SVM, and KNN) in Python via Google Colab and visualized through graphs and tables. The results show that aggressive driving behavior leads to 17.2% higher fuel consumption compared to conservative driving. Random Forest and Decision Tree achieved the highest accuracy of 98%, followed by KNN with 96%, and SVM with 80%. Meanwhile, Naïve Bayes demonstrated the lowest performance, with accuracy 76%. This model provides valuable insights for taxi companies to optimize driver behavior and reduce fuel costs.

***Keywords**: Driver behavior, CAN Bus, Fuel Consumption, Classification, Machine Learning*