

ABSTRACT

CAR PRICE CLASSIFICATION USING MULTIMODAL APPROACH

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Car price is an important factor in attracting potential buyers, and determining the right price remains a challenge in data science. Car price prediction can be approached through regression or classification, where machine learning models are often applied to unimodal tabular data containing vehicle specifications. In this study, a multimodal approach is implemented by combining tabular data and car images to improve price classification accuracy. The research findings show that in unimodal models utilizing the tabular modality, Random Forest and XGBoost achieved the best performance with 96% accuracy, outperforming logistic regression, which only reached 86%. Meanwhile, in unimodal models using the image modality, the fine-tuned EfficientNetB7 model attained the highest accuracy of 88%, surpassing other pretrained models. By integrating both modalities using the late fusion approach, the deep learning-based meta-classifier achieved the highest accuracy of 98% on the test data. These results demonstrate that the multimodal approach significantly enhances car price classification performance compared to unimodal models.

Keyword: car price classification, multimodal model, Random Forest, EfficientNetB7, late fusion