Bandung Traffic Density Classification Using EfficientNet Transfer Learning

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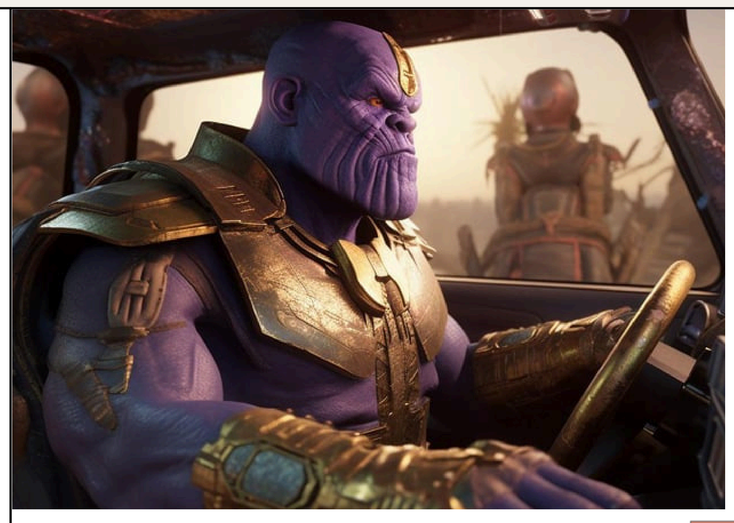
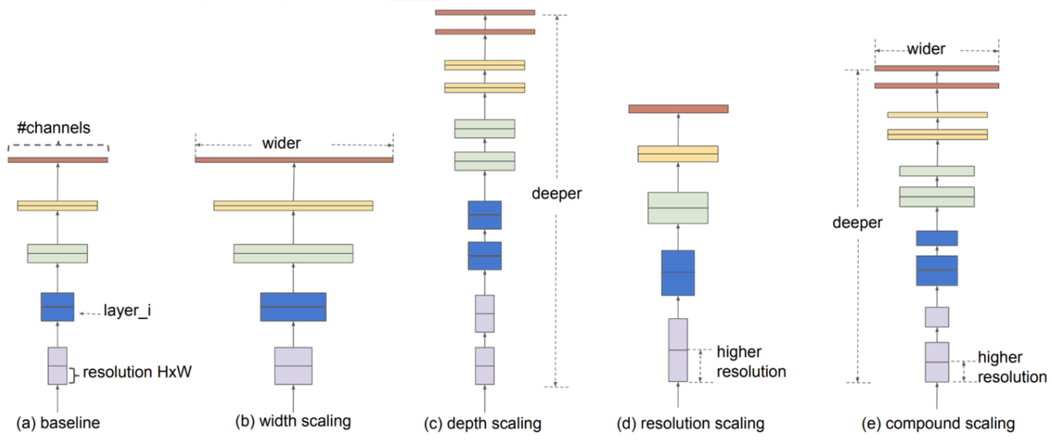
Introduction

Traffic congestion occurs when vehicle numbers exceed road capacity. Machine learning, specifically EfficientNet (a CNN model), can classify traffic density to help manage this issue. Traffic images from Bandung City's CCTV website are used for this classification.



METHODOLOGY

EfficientNet is a CNN architecture that enhances performance by systematically scaling depth, width, and resolution. Combining elements of MobileNet and ResNet, it efficiently understands high-quality images using compound scaling to address model inefficiencies.



EFFICIENTNET ARCHITECTURE

OBJECTIVE

Using EfficientNet to classify traffic density. Implementing the EfficientNet model for monitoring vehicle density at intersections in Bandung City.

RESULTS

72% ACCURACY

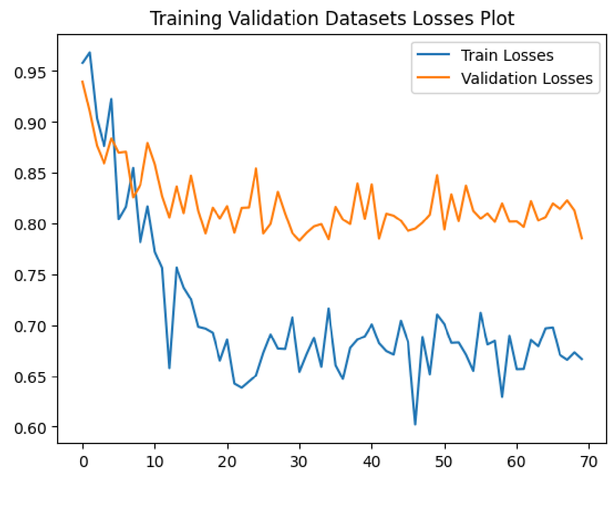
63% VALIDATION

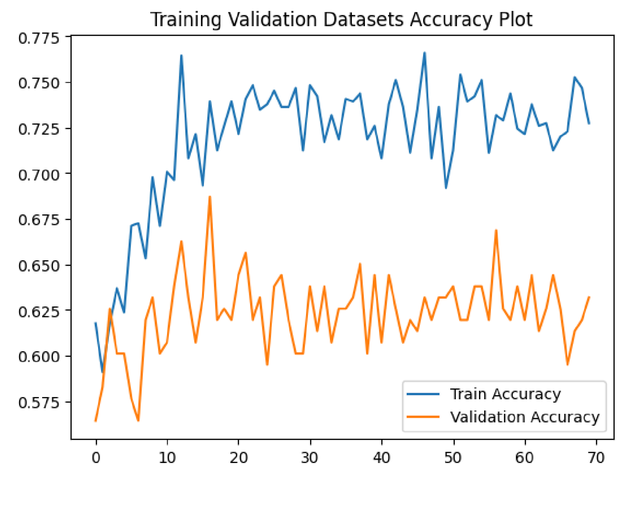
CONCLUSION

The current model's performance is not yet optimal and shows several areas that need improvement. Additional research and refinement are necessary to enhance its accuracy and reliability.

Discussion

In the similar project that implementing EfficientNet for transfer learning to classify traffic density in singapore traffic dataset is resulting in more than 93% F-1 Score. By implementing EfficientNet on non-benchmark dataset collected from CCTV Pelindung Bandung is resulting in 72% accuracy by 70 epochs, but when validating the accuracy is decreasing to 63%.





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