

Analisis Perbandingan Metode Kompresi Video AV1 dan VVC dan Filtering Bilateral, Histogram Equalization, dan Laplacian pada Object Detection Lalu Lintas = Comparative Analysis of AV1 and VVC Video Compression Methods and Bilateral, Histogram Equalization, and Laplacian Filtering for Traffic Object Detection

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Abstrak

Skripsi ini mengkaji perbandingan antara dua metode kompresi video terkini, AV1 dan Versatile Video Coding (VVC), serta pengaruh tiga jenis filter - Bilateral, Histogram Equalization, dan Laplacian - dalam konteks deteksi jumlah kendaraan pada video lalu lintas. Tujuan utama adalah untuk menentukan metode kompresi mana dan dengan penggunaan filter atau tidak yang paling efektif dalam meningkatkan akurasi dan efisiensi deteksi objek. Penelitian ini menggunakan video lalu lintas jalanan, yang dikompresi menggunakan metode AV1 dan VVC, dan kemudian diterapkan filter sebagai modul preprocessing. Parameter yang diukur meliputi waktu encoding, peak signal-to-noise ratio (SNR), bit rate, Bjontegaard Metric dan Rata-rata Confidence score dalam deteksi objek. Hasil penelitian ini diharapkan memberikan wawasan baru tentang pengaruh metode kompresi video dan teknik filtering terhadap kinerja aplikasi deteksi objek dalam video lalu lintas, serta memberikan rekomendasi untuk aplikasi serupa di masa depan.

.....This thesis examines the comparison between two recent video compression methods, AV1 and Versatile Video Coding (VVC), and the impact of three types of filters - Bilateral, Histogram Equalization, and Laplacian - in the context of vehicle count detection in traffic videos. The primary objective is to determine which is the most effective compression method and whether to use of filters or not in improving the accuracy and efficiency of object detection. This study uses traffic road videos, which are compressed using the AV1 and VVC methods, and then filters are applied as preprocessing modules. The measured parameters include Encoding Time, peak signal-to-noise ratio (SNR), bit rate, Bjontegaard Metric, and Average Confidence score in object detection. The results of this study are expected to provide new insights into the impact of video compression methods and filtering techniques on the performance of object detection applications in traffic videos, as well as to provide recommendations for similar applications in the future.