

Analyzing the Impact of Bitrate Reduction on Neural Networks Inference Accuracy

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In this work, we investigate the influence of video bitrate on the inference accuracy of YOLO models for human detection from unmanned aerial vehicles (UAVs). The study targets detection across both infrared (IR) and visible light spectrums, evaluating the model's robustness under varying compression levels. We explore bitrates ranging from 1 to 20 Mbps to assess the trade-off between compression and detection performance. Additionally, we compare two encoding strategies: a single merged stream combining IR and visible data versus two separate streams for each spectrum. Experimental results demonstrate how bitrate selection and stream configuration impact detection accuracy, providing insights for optimizing multi-spectral UAV-based human detection systems under bandwidth-constrained conditions.

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