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Neural Architecture Search Based Deepfake Detection Model using YOLO

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Abstract: *Deepfakes are intentionally created to disseminate false information or serve malicious purposes. Detecting deepfakes has become increasingly difficult due to the advancing technology involved in their creation. This paper introduces a deep learning model based on Neural Architecture Search (NAS) that incorporates the You Only Look Once (YOLO) model for image segmentation and employs data augmentation to enhance the diversity of the dataset. The goal is to improve deepfake detection accuracy compared to current models. The study utilized the CelebDF v2 dataset, which includes 590 genuine videos and 5,639 deepfake videos. From this dataset, 100 deepfake and 100 real videos were chosen, and frames were extracted. After augmentation, the resulting dataset comprised 2,000 real and 2,000 deepfake images. The proposed model attained a testing accuracy of 99.04% and performed exceptionally well across other evaluation metrics such as F1 score, precision, and recall.*

Keywords: NAS, YOLO, GAN, augmentation