

ABSTRACT

ENHANCING MULTI-ORIENTATION FACE DETECTION USING RECEPTIVE FIELD BLOCK MODULES IN THE RETINAFACE ARCHITECTURE

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In this research, a RetinaFace-based face detection model is proposed, integrating the Receptive Field Block (RFB) module into the Feature Pyramid Network (FPN) layers to improve the detection of multi-orientation features. The proposed model employs a MobileNetV2 backbone for computational efficiency. To assess the effectiveness of these modifications, its performance was compared against a baseline model based on the RetinaFace architecture with a MobileNetV2 backbone. Evaluations were conducted on WIDER FACE, AFLW2000 (at varied resolutions), and HPID (across diverse poses and resolutions). The results show that the RFB-enhanced model outperforms this specific baseline model (RetinaFace with MobileNetV2 backbone), demonstrating improvements in detection recall and overall performance, especially under challenging conditions such as low image resolution and extreme head poses where the baseline model's effectiveness diminishes. This work contributes to the development of face detection systems better able to accurately identify faces across a wider range of scales and orientations.

Keywords : face detection, multi-orientation, multi-scale, deep learning, retinaface, receptive field block, mobilenetv2.