

## Mapping Facial Emotions through Deep Neural Networks

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**Abstract :** Facial Expression Recognition (FER) has experienced significant advancements recently, driven by breakthroughs in machine learning, image processing, and cognitive sciences. This study aims to enhance the precision and effectiveness of FER by delving into the intricacies of facial movement features within static images. Our innovative approach utilizes patch-based Gabor features to automatically capture these nuances, providing a comprehensive understanding of static and dynamic characteristics crucial for robust FER. Notably, our results showcase exceptional performance, with VGG16 achieving an outstanding accuracy of 99.28% in the Emotion Detection Dataset. These findings validate the efficacy of our proposed methodology and emphasize the potential of integrating dynamic facial movement features for superior emotion recognition.

**Keywords :** facial emotion recognition, deep learning, MobileNetV2, VGG16, Xception, efficientNet, ResNet50, accuracy, precision, recall, F1-Score, multimodal integration, transfer learning

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