

Convolutional neural networks for robust and efficient Face recognition

'Department of Computer Science and Engineering, SRM University – AP, Andhra Pradesh, India'

Abstract: Facial recognition technology has received increased attention in recent years due to its widespread use in security, surveillance, and user authentication systems. This work presents a comprehensive analysis of deep learning mechanisms for face recognition. The system aims to achieve greater accuracy and robustness in human face recognition by using convolutional neural networks (CNNs) and some underlying architecture of Deep Learning. The project starts with dataset collection and preprocessing phase, where facial images are acquired, standardized for training and testing and then deep learning models are developed and trained with this dataset. We have used some optimal processing techniques like transformation, integration, and fully overlapping layers to remove discrimination features from the facial images. To further enhance the performance of the model we have also used some data enhancement techniques to increase data set variability and improve generalization. Transfer and optimization learning have been investigated as they were applied to previously trained models on large image datasets. In addition, the project explores real-world applications of face recognition, including face authentication, gender segmentation, age estimation, and emotion recognition, and demonstrates how deep learning sampling can work in face assessment or recognition tasks. The results of this work show that deep learning-based face recognition methods can achieve better performance

Keywords: Convolutional Neural Networks (CNNs), Transformation, Fully Overlapping layers