



College of Artificial Intelligence (El Alamein)

[EMOTION DETECTION]

Computer Vision (IN412): Final Project Proposal



Name:	Ahmed Salem	Ahmed Hesham	Eslam Arafa
RN:	20109956	20102971	20102059

1. Project Description:

The proposed project aims to develop an emotion detection system using computer vision and deep learning techniques. Emotion detection plays a vital role in various applications, such as human-computer interaction, affective computing, and social robotics. This project seeks to leverage advancements in computer vision and deep learning to accurately recognize and classify human emotions from facial expressions captured in images or videos

Problem Statement:

2. The ability to detect and understand human emotions from visual cues is crucial for various domains. However, accurately recognizing emotions from facial expressions is a challenging task due to factors like inter-personal variations, facial occlusions, and subtle emotional cues. This project aims to address these challenges by developing an efficient and reliable emotion detection system using computer vision and deep learning techniques.

3. Methodology:

Convolutional Neural Networks (CNNs): CNNs have proven to be highly effective in image classification tasks. We will explore and implement CNN-based architectures specifically designed for emotion recognition.

Transfer Learning: Leveraging pre-trained models, such as VGGNet, ResNet, or Inception, we will fine-tune them on emotion-specific datasets to improve performance and accelerate training.

Image Preprocessing: We will apply various preprocessing techniques, such as face detection, alignment, and normalization, to ensure consistent and accurate feature extraction.

Deep Learning Frameworks: Python-based deep learning frameworks like TensorFlow or PyTorch will be used for model development and training.

4. **Data:**

5. The project will utilize publicly available emotion recognition datasets, such as the Facial Expression Recognition Challenge (FERC) dataset, the Extended Cohn-Kanade (CK+) dataset, or the AffectNet dataset. These datasets contain labeled facial images with corresponding emotion labels. Preprocessing steps will involve face detection and alignment, followed by cropping and resizing the images for consistency.

6. **Evaluation Metrics:**

To measure the performance of our emotion detection model, we will employ commonly used evaluation metrics, including accuracy, precision, recall, F1-score, and confusion matrix analysis.

7. **Expected Results:**

By the end of the project, we expect to develop an emotion detection system that achieves high accuracy in recognizing and classifying emotions from facial expressions. We anticipate that our model will demonstrate improved performance compared to existing approaches.

8. **References:**

<https://medium.com/themlblog/how-to-do-facial-emotion-recognition-using-a-cnn-b7bbae79cd8f>

- <https://github.com/atulapra/Emotion-detection>

<https://www.youtube.com/watch?v=avv9GQ3b6Qg>