Comparing Emotion Detection Algorithms

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Abstract: In this project, we will be comparing two different emotion detection algorithms using computer vision on a dataset of facial images. We aim to determine which algorithm performs better in detecting emotions from facial expressions. We will be using FER-2013[1] dataset, which consists of 35,685 facial images labeled with 7 different emotions. We preprocess the images to extract facial features and train two different models: a Convolutional Neural Network (CNN) and Support Vector Machines (SVMs). Our scope consists of static images only.

Project Schedule:

1. **Literature Survey (April 16)**: Researching relevant resources and previous works.
2. **Model Training (April 30):** Download the FER-2013 dataset and preprocess the images to extract facial features. Since the images are already pre-cropped and gray-scaled, we will only normalize and augment the dataset.
3. **Mid-Term Report (May 8)**
4. **Model Evaluation and Comparison (May 22):** We will evaluate the performance of the CNN and SVM models using metrics such as accuracy, precision, recall, and F1-score. To ensure that the evaluation is robust and unbiased, we will use a 5-fold cross-validation. Based on the results, we will compare the performance of the two algorithms and draw conclusions. We will identify the strengths and weaknesses of each algorithm and discuss the potential implications of our findings.
5. **Final Project Report (June 5)**
6. **Presentations (June 5-8)**

List of References:

[1] https://www.kaggle.com/datasets/ananthu017/emotion-detection-fer