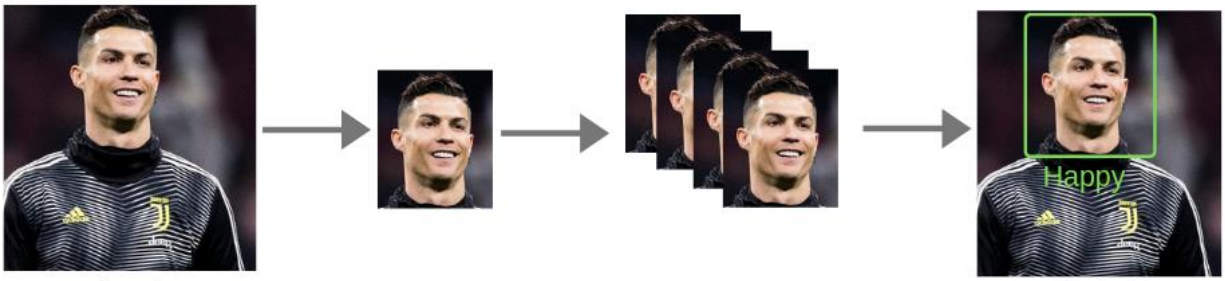

Input

Output

HUMAN EMOTION RECOGNITION

Contents

Project Name & Description:

Human Emotion Recognition: Emotions play an important role in mediating and facilitating human interactions. Thus, understanding emotions often provides context to social communications that seem strange or complex. There are several ways to recognize emotions, including voice intonation and body language, as well as more complex methods like electroencephalography. One of the simplest and most effective methods is to observe facial expressions. Human beings express seven basic emotions: angry, happiness, fear, disgust, sad, surprise and neutral. These emotions are universal across cultures. Based on the facts above, it is evident that human emotions have a deep impact on actions and reactions. So, in this project, we are going to identify principal human emotions in real time.

Participants:

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Workflow:

Communication:

- Weekly zoom meetings with the team.
- Email correspondence.
- Microsoft team communications

Google drive:

- We will use google drive for our shared documents and files.

Github Repository:

- Our code and data will be stored here.
- Used for version control.

Goal and Objectives:

Motivation:

Studying human emotion will open many possibilities for research currently underway on human emotion, humanoid robots, medical research, etc. Identifying human emotions remains one of the most challenging research topics today. Human behavior is better understood by understanding human emotions. This has a large contribution to the well-being of society, which is explained by its importance.

Significance:

Our application helps in identifying the human emotions by extracting the facial features in real time. There are many applications that revolve around emotion recognition. By understanding human emotions, professors can analyze the students' engagement in class and improve their methods of teaching. Autistic individuals have difficulty interpreting emotions. A system that recognizes emotions would help them improve their interactions with others. By identifying human emotion in places like restaurants, customer service can be enhanced and human-robot interaction can be improved.

Literature Survey:

In order to improve human-machine interaction, emotion recognition is an important area of research. It is more difficult to acquire emotions due to their complexity. It has been proposed that Quondam works capture emotion by capturing unimodal signals, such as only facial expressions or vocal inputs. With the introduction of the idea of multimodal emotion recognition, the detection of the machine has become more accurate. Additionally, deep learning with neural networks increased the success rate of machines in recognizing emotion. Researchers have studied deep learning techniques with diverse types of inputs such as audio-visual input, facial expressions, body movements, EEG signals, and brainwaves related to human behavior. Several issues in this area still need to be addressed to build an effective system that can recognize and classify emotions with greater accuracy.

Milestones:

1. Requirement Analysis
2. System Design
3. Implementation
4. Testing

The application development is divided into 5 phases.

1. Collection and preprocessing of data.
2. Extracting features.
3. Train the data on different classification models.
4. Perform hyper parameter tuning and cross validation.
5. Comparing different model performances.

Task	Week End Date
1. Collection and preprocessing of data.	02/14/2021
2. Extracting features.	02/21/2021
3. Train the data on different classification models.	02/28/2021
4. Perform hyper parameter tuning and cross validation.	03/07/2021
5. Comparing different model performances.	03/14/2021

Objectives:

The goal of this project is to construct a model that categorizes the main emotions of humans. Initially, we perform data cleaning and augmentation techniques such as rotating and resizing images, normalizing and affine transforming them. Then we remove noise and extract Gabor, Local Binary Pattern (LBP), HOG, and Spatial features. Finally, features are fed into deep learning models such as CNN and LSTM, and performance is measured with metrics such as AUC ROC and classification report.

Features:

- Gabor
- LBP (Local Binary Pattern)
- Spatial
- HOG
- Noise

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