**AI Project Proposal**

**Topic:** Facial Expression Recognition using CNN

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**Abstract**

This project focuses on implementing Convolutional Neural Networks (CNN) for facial expression recognition. CNN is a class of deep learning neural networks that can automatically learn and recognize different features in images. In this project, Python will be used as the programming language to implement techniques such as pre-processing, training the CNN, and multi-class recognition.

Pre-processing involves resizing, normalization, and cropping of images to ensure they are suitable for input to the CNN. The CNN will be trained using a dataset of labelled facial images, which it can use to learn and identify patterns that correspond to different facial expressions. Multi-class recognition can be designed to recognize various facial expressions, such as happiness, sadness, anger, surprise, and disgust.

Accuracy is an essential feature of the facial expression recognition system, as it determines how well the system can recognize facial expressions in various lighting conditions, angles, and facial variations. Therefore, the project will focus on improving the accuracy of the system.

By leveraging CNN, this project aims to enhance the accuracy and robustness of facial expression recognition. CNN works by breaking down an image into smaller parts and analysing each part to identify specific patterns or shapes. The more layers the network has, the more complex features it can detect. CNN is a powerful algorithm and can be used for tasks such as object recognition or image classification, which can help improve the accuracy of facial expression recognition. Overall, this project will provide an efficient and reliable system for facial expression recognition using CNN.

**Introduction**

There are various techniques used to train neural network algorithms to do different tasks, such as classifying objects such as in the analysis of images. In this project, we will be utilizing techniques such as CNN (Convolutional Neural Networks) for image processing and detection.

Using CNN, we will be implementing techniques such as identifying the features in an image, as automated processing of the image. This is a class of deep learning neural networks.

**Methods used**

We will be implementing CNN in our project. This is a powerful algorithm that can automatically learn and recognize different features in images. It works by breaking down an image into smaller parts and analyzing each part to identify specific patterns or shapes. The more layers the network has, the more complex the features it can detect.

Once the CNN has identified these features, it can make a prediction about what the image contains. This makes CNNs great for tasks like object recognition or image classification, and can help improve the accuracy of our project.

We will be using Python as the programming language in the project.

**Features**

* Pre-processing: Pre-processing of images can include tasks such as resizing, normalization, and cropping, to make sure that the images are suitable for input to the CNN.
* Training the CNN: Training the CNN involves providing a dataset of labeled facial images to the network, which it can use to learn and identify patterns that correspond to different facial expressions.
* Multi-class recognition: Facial expression recognition using CNN can be designed to recognize multiple facial expressions, such as happiness, sadness, anger, surprise, and disgust.
* Accuracy: The accuracy of the facial expression recognition system is an important feature, as it determines how well the system can recognize facial expressions in various lighting conditions, angles, and facial variations.