Project Proposal: American Sign Language Recognition using Deep Learning

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Introduction:

American Sign Language (ASL) is a visual language used by the Deaf and hard-of-hearing community. The ability to recognize and interpret ASL signs is an essential skill that can help facilitate communication between hearing and non-hearing individuals. The use of computer vision and machine learning techniques can provide an efficient and accurate means of recognizing ASL signs.

Objectives:

The primary objective of this project is to develop a system that can recognize ASL signs in real-time using computer vision and machine learning. The system will be trained on a dataset of ASL signs using PyTorch, and will utilize OpenCV to enable real-time recognition. The system will be designed to operate in real-time, and will be capable of recognizing a wide range of ASL signs.

Methodology:

The proposed system will be built using the following methodology:

1. Dataset Collection: A dataset of ASL signs will be collected and prepared for training. The dataset will consist of a wide range of ASL signs, and will be split into training and testing sets.

2. Training: The system will be trained using PyTorch, a popular deep learning framework. The training process will involve the optimization of the model's parameters to achieve high accuracy on the testing set.

3. Real-time Recognition: Once the system is trained, it will be integrated with OpenCV to enable real-time recognition of ASL signs. The system will be designed to recognize signs in varying lighting conditions and camera angles.

Conclusion:

The proposed system is expected to achieve high accuracy in recognizing ASL signs in real-time. The system can be used to improve communication between hearing and non-hearing individuals, and can be used in a wide range of applications such as education, healthcare, and entertainment.