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SCHOOL OF ENGINEERING

DEPARTMENT OF AI & ML (IVth Year II Semester)

Application Development- Major Project(MR20-1CS0136)

Date:

Name of the Guide	Dr.Sujith Das	
Project Title	Hand Gesture Recognition and Voice Conversion for Deaf and Dumb	
Section Name & Batch Number	ZT10	
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Abstract Work	Sign Language Recognition (SLR) aims to bridge the communication gap between deaf-mute individuals and the general population by translating sign language into text or speech. This task holds significant social value but remains highly challenging due to the complexity and variability of hand gestures. Traditional methods for SLR rely on hand-crafted features to represent the motions of sign language, which are then used to build classification models. However, these methods face limitations in adapting to the large variations in hand movements and gestures, making it difficult to design features that are both reliable and effective. To overcome these challenges, we propose a Convolutional Neural Network (CNN)-based approach to automate the process of feature extraction. CNNs are highly efficient in tackling computer vision problems and are capable of identifying key spatial-temporal features with high accuracy after sufficient training. Unlike traditional methods, the proposed model directly processes raw video streams, eliminating the need for manually designed features and enabling the network to adaptively learn discriminative patterns. To enhance performance further, multi-channel video inputs are utilized, including color information, depth data, and body joint positions. This integration allows the CNN to capture rich details such as trajectory information and depth clues, leading to a more robust understanding of gestures. The model is validated using a real dataset collected with Microsoft Kinect, showcasing its effectiveness in accurately recognizing gestures compared to traditional approaches. By leveraging CNNs, this system not only simplifies the complexity of feature engineering but also significantly improves the accuracy and adaptability of sign language recognition systems, paving the way for better communication solutions for the deaf-mute community.	

GUIDE **AD MENTOR** **AD COORDINATOR** **DEAN**