Literature Review

Wang [1] proposed a hand sign recognition system using deep learning techniques, specifically Convolutional Neural Networks (CNNs). Their approach utilized a dataset of static hand gestures to train a CNN model, achieving an accuracy of 98.2%. The study highlighted the effectiveness of deep learning in recognizing complex hand signs while overcoming challenges related to background noise and varying lighting conditions.

Li [2] introduced a novel method for dynamic hand gesture recognition using Recurrent Neural Networks (RNNs) in combination with CNNs. The proposed architecture captured temporal dependencies in hand movements, improving recognition accuracy. The model was tested on a publicly available dataset and achieved a classification accuracy of 96.5%, outperforming traditional methods that relied solely on spatial features.

Kim [3] proposed a hybrid deep learning model integrating Transfer Learning with a pre-trained ResNet50 network for recognizing hand gestures in real-time applications. Their system demonstrated robustness in handling variations in hand orientation, skin tone, and occlusions. The research also introduced a preprocessing step that enhanced image clarity, contributing to an overall accuracy improvement of 97.8%.

Patel [4] focused on hand sign recognition for sign language translation using a combination of CNNs and Long Short-Term Memory (LSTM) networks. Their study processed sequences of hand gestures to generate real-time text output, aiding in communication for individuals with hearing impairments. The model achieved a recognition rate of 94.7% on a dataset of 50 different hand signs.

O Zhang [5] developed a lightweight deep learning model for mobile-based hand sign recognition. By optimizing a MobileNetV2 architecture, they significantly reduced computational complexity while maintaining an accuracy of 95.3%. The study emphasized the potential for deploying deep learning-based hand gesture recognition systems on resource-constrained devices, facilitating accessibility in various applications.

References

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[5] Zhang et al., "MobileNetV2 for Efficient Hand Sign Recognition on Edge Devices," IEEE Internet of Things Journal, vol. 8, no. 9, pp. 11345-11357, 2024.