Image-based Bengali Sign Language Alphabet Recognition for Deaf and Dumb Community

**Summary:**

The thesis paper proposes a method for automatic detection of Bengali Sign Language (BdSL) alphabets using a VGG19-based convolutional neural network (CNN). The system relies solely on images of bare hands, allowing users to interact with the system in a natural way. The authors collected a dataset of 12,581 hand signs for the 38 BdSL alphabets in collaboration with the Bangladesh National Federation of the Deaf. The proposed system achieved an overall test accuracy of 89.6%.

**Advantages:**

1. The proposed system addresses a real-world problem faced by the D&D community in Bangladesh, where there is a shortage of BdSL interpreters.
2. The use of a CNN allows for automated recognition of BdSL alphabets without the need for human interpreters.
3. The system only requires images of bare hands, making it easy and natural for users to interact with.

**Disadvantages:**

1. The dataset collected for this study only covers the 38 BdSL alphabets, which may limit the system's applicability for more complex signs or phrases.
2. The proposed system may not work as well for users with physical disabilities or variations in hand shape or size.
3. The system's performance may be affected by variations in lighting, hand orientation, or other environmental factors.

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