AI-powered Sign Language Classification and Translation (SLCT)

Develop a real-time system to recognize and translate sign language gestures.

By,

Agrata Dhore

Introduction

Sign Language Classification and Translation is a fascinating field within AI that aims to bridge the communication gap between deaf and hearing communities by automatically:

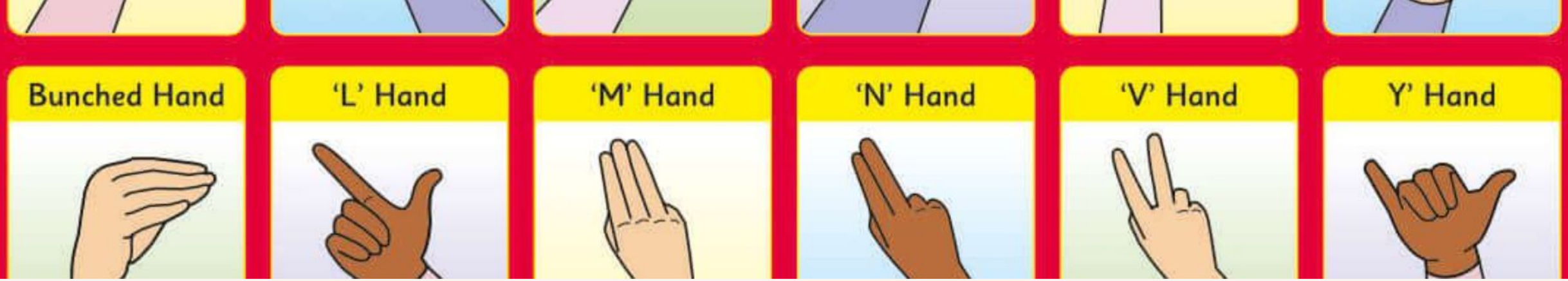
- Recognizing: SLCT models analyze visual data (usually video or images) containing hand and body gestures to identify individual signs.
- Translating: Once recognized, these signs are translated into another language, typically spoken or written text, facilitating understanding.

Introduction

- **Classification:** This involves building models using techniques like computer vision and deep learning to accurately identify different signs based on visual input.

- **Translation:** Once signs are recognized, the next step is translating them. This can involve complex language processing and understanding the context of the signs, often utilizing statistical machine translation or deep learning models trained on sign-language corpora.

- **Challenges:** Sign languages are complex and have regional variations. Additionally, facial expressions, body language, and context significantly influence meaning, adding complexity to both classification and translation. Real-time translation poses further challenges requiring efficient algorithms and computational resources.



Real-time Translation

1

Recognize Gestures

Develop a model to accurately recognize sign language.

2

Translate to Language

Translate sign language gestures into written language.

3

Enable Seamless Communication

Empower real-time, seamless communication between deaf and hearing individuals.

Need and Significance

Communication Barriers

Address challenges faced by deaf communities in education and employment.

Available Solutions

Analyze the limitations of existing solutions like sign language interpreters.

Revolutionizing Communication

Empower deaf individuals with widely accessible and affordable communication systems.

Advantages

1

For Deaf and Hard-of-Hearing Individuals

Improved Communication, Increased Independence, Enhanced Access to Information

2

For the Wider Community

Promotes Inclusivity, Raises Awareness, Economic Benefits, Improved Accessibility.

3

Educational

Personalized learning.

Stakeholders

Deaf Communities

Direct impacts on their lives and social inclusion.

Developers & Researchers

Crucial for technical expertise and continuous improvement.

Educational Institutions

Opportunity to support education and sign language teaching

General Public

Potential benefits for communication and sign language learning.

Tools/Platform Used

1 **Programming Language**

Python for building the SLCT system.

2 **Core Libraries**

TensorFlow and Keras for neural network and machine learning tasks.

3 **Technologies**

CNNs, ImageDataGenerator, Categorical Cross-Entropy Loss, Adam Optimizer.

THANK YOU