Sign Language MNIST Dataset

The **Sign Language MNIST** dataset is a collection of images representing hand gestures of American Sign Language (ASL) letters. This dataset is designed as a more challenging alternative to the classic MNIST dataset, with 24 classes of ASL letters (excluding J and Z, which require motion).

The dataset follows the same format as MNIST, where each image is a 28x28 grayscale image with pixel values ranging from 0 to 255. It consists of 27,455 training samples and 7,172 test samples. Each image corresponds to a label (0-25), which maps to the letters A-Z (except for J and Z).

The images in this dataset were collected by capturing multiple users performing ASL gestures against various backgrounds. Data augmentation techniques, such as cropping, gray-scaling, resizing, pixelation, brightness/contrast adjustments, and rotation, were applied to create over 50 variations of each image, significantly increasing the dataset size.

This dataset offers a challenging problem for computer vision models, particularly for Convolutional Neural Networks (CNNs). It can be used to develop real-world applications that can help bridge communication gaps for the deaf and hard-of-hearing communities, such as automated sign language translation systems.

The purpose of the **Sign Language MNIST** dataset is to provide a benchmark for building and testing machine learning models that can recognize hand gestures representing the American Sign Language (ASL) alphabet (excluding J and Z, which involve motion). The main goal of this dataset is to develop models that can classify images of hand gestures into the corresponding ASL letters.

What you need to solve:

The task is a **multi-class classification problem**, where each image (a 28x28 pixel grayscale image) needs to be classified into one of 24 classes (representing the letters A-I, K-Y in the ASL alphabet). The classification task is to predict which ASL letter the hand gesture corresponds to based on the image.

In summary, you are trying to:

1. **Build a machine learning model** (such as a Convolutional Neural Network - CNN) that can accurately classify hand gestures.
2. **Develop a solution** that can help automate ASL gesture recognition, which could have practical applications for improving communication for the deaf and hard-of-hearing communities.

If you're looking to implement this model, you would need to train it using the training dataset (27,455 images) and evaluate it using the test dataset (7,172 images) to measure accuracy and other performance metrics.