Sign Language Recognition Based on Deep Learning

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Overall Project Goals and Specific Aims

Overall Project Goals

The system will capture the image of American Sign Language(ASL) and output the alphabetic meaning of the gesture.

Specific Aims

Arduino/ ArduCam Setup(Software & Hardware)

Build CNN model in TensorFlow

Model Training and Model Testing

Connect Camera and CNN model

Technical Approach

Arduino/ ArduCam

ArduCam Initialization using ArduCam Library

Arduino Interface Design in Arduino Web Editor

Image Capture, Preprocess and Store

CNN Model

Input Layer take images of size (28,28,1)

Output Layer has 26 neurons for 26 different letters

Activation function :softmax

Database: Sign Language MNIST

Current Status

Arduino/ArduCam Setup

Hardware Setup in Breadboard

ArduCam Initialization

Model Training and Testing Based on Sign Language MNIST

Training with 27455 images

Resolve Overfitting

Test Accuracy around 97%

Next Steps

Arduino/ArduCam Setup(Software)

Arduino Interface Design

Image Preprocess

Connect Camera and CNN Model

Pass images from the camera to the model, perform prediction and output results