



Yasir Aljarooof

Arabic Alphabet Sign Language Translator

An AI-Powered Solution for Bridging
Communication Barriers

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Project Goal

Develop an AI-based application to translate Arabic Alphabet Sign Language into text with high accuracy and real-time processing.

Social Impact

Bridges communication gaps for the deaf community by reducing reliance on human interpreters.



Problem Statement

Addressing Barriers in Deaf Communication

Deaf individuals difficulty in everyday communication due to lack of sign language knowledge. Low public and technical familiarity with Arabic Alphabet Sign Language limits effective communication.

Research Objectives

- develop an AI-powered system for accurate Arabic Alphabet Sign Language recognition and translation
- design a user-friendly interface, achieving high accuracy in sign recognition while maintaining real-time processing capabilities.

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Proposed Methodology

Data Preprocessing

resizing the image to a consistent input size

Data Augmentation

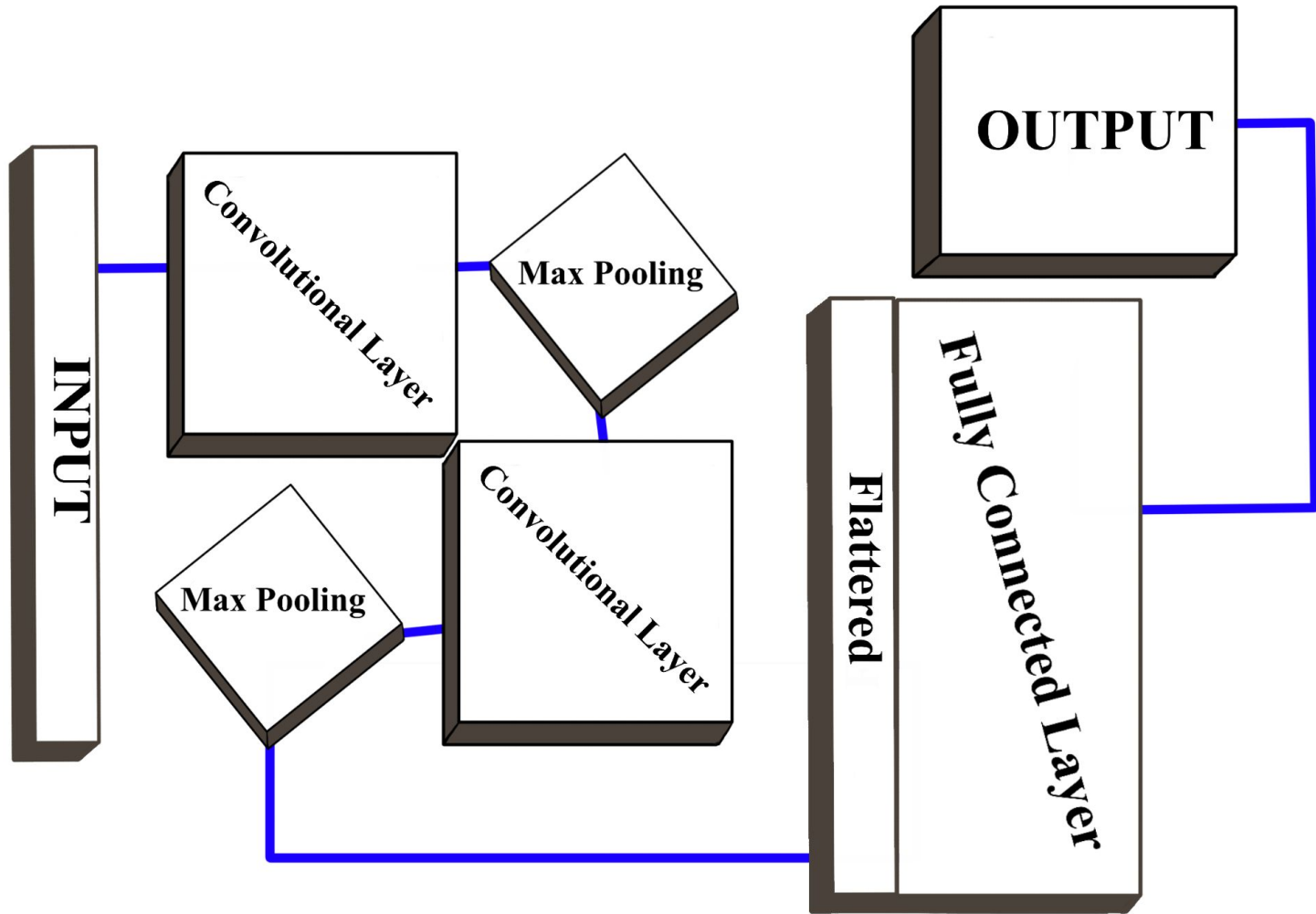
applying transformations such as rotations, flips, shifts, and zoom to images in order to balance the dataset

Model

- CNN
- 2 convolutional layers
- 2 max pools
- flatten layer
- dense layer
- dropout layer
- output layer with softmax activation function with 32 classes.

Hyperparameter Tuning

Experiment with the number of convolutional layers, filter sizes, learning rates, and dropout rates



Dataset Description

- ArSL21L: Arabic Sign Language Letters Dataset
- Provided by Munkhjargal Gochoo from United Arab Emirates University
- Total of 14,202 Images
- collected from 50 subjects with varied backgrounds.
- Includes 32 Arabic sign letter classes—28 letters plus symbols like 'أ', 'إ', 'ل', and 'ة'.

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Thank you