Assiut
University

Computer Vision

Faculty of Computer Science

about

Team(40)

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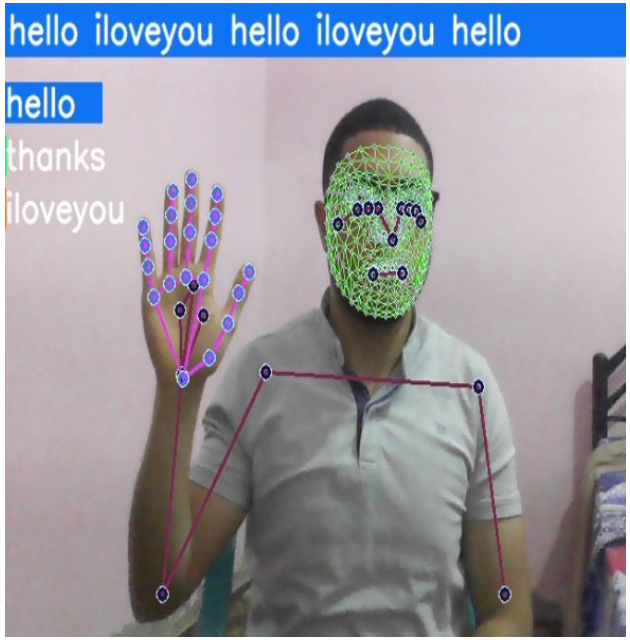
Task description :

Sign Language Detection using ACTION RECOGNITION by LSTM Deep Learning Model

DEMO



GitHub link to us project : https://github.com/KareemAlassal/CV_Project_1

Contribution

1. Import and Install Dependencies (tensorflow ,opencv,mediapipe,sklearn and matplot Libraries)

2. Draw Keypoints using mediapipe Holistic

3. Extract Keypoint Values

4. Setup Folders for Collection

Contribution

5. Collect Keypoint Values for Training and Testing

6. Preprocess Data and Create Labels and Features

7. Build and Train LSTM Neural Network by using :

- Tensorflow: It provides a flexible architecture for building and deploying machine learning models, where nodes represent operations and edges.
- Keras: it provides a simple and intuitive interface that allows users to define and train deep learning models with minimal code.

Data

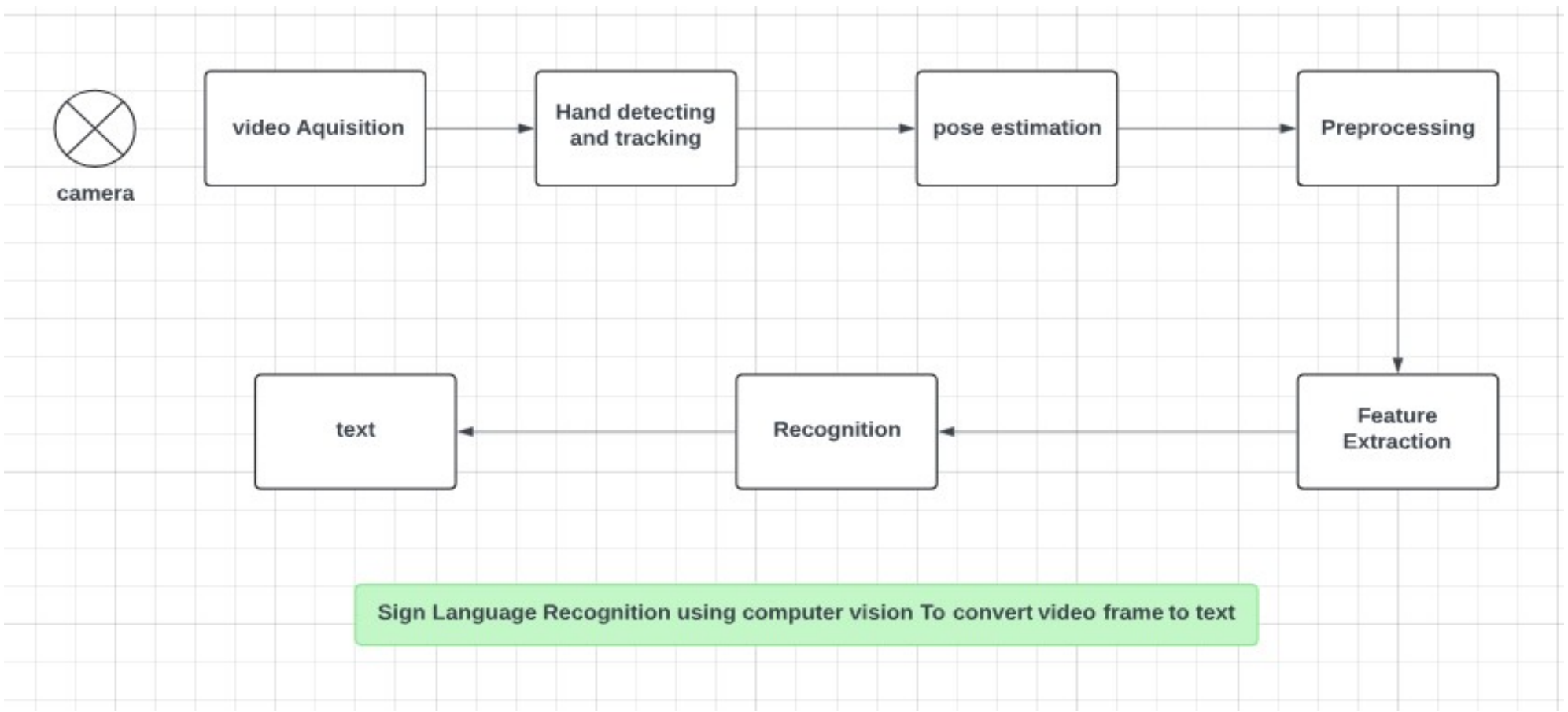
Data collection in numpy from mediapipe holistic

Training a deep neural network with LSTM layer for sequences

Perform real time sign language detection opencv using web camera

E.X: Hello, Thanks, I love you

Project architecture



Methods

- Use MediaPipe Holistic for landmark detection.
- Optimizer adam
- Loss Function categorical_crossentropy
- Metric categorical_accuracy
- Epochs: 2000

Methods

We use LSTM (DL) :

- Long Short-Term Memory (LSTM) is a type of feedback neural networks that is designed to solve the problem of gradually disappearing regression in standard feedback neural networks.
- LSTM does this by adding memory units called cells to the network, which allow information to be stored for long periods of time.

Results

- The measure categorical_accuracy
- The model achieves 78% accuracy on the test data.

```
3/3 [==============================] - 1s 151ms/step - loss: 0.5621 - categorical_accuracy: 0.7882
```

Thanks