SIGN LANGUAGE RECOGNITION SYSTEM

TEAM MEMBERS:

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LANGUAGE USED: Python

OBJECTIVE: To empower communication for the hearing-impaired by providing a tool that translates sign language gestures into textual representation in real-time.

GITHUB LINK: https://github.com/SarmithaVD/Sign-Language-Recognition-System.git

MODEL USED: RandomForestClassifier

DESCRIPTION:
The system captures hand gestures through a camera, processes them using MediaPipe, and predicts the corresponding sign language character using a trained machine learning model. Utilizing computer vision and machine learning, it detects and interprets hand gestures in real-time, empowering seamless communication for the hearing-impaired.

MODULES:

- `os:` To interact with the operating system, used for file and directory operations.
- `pickle:` Enables the serialization and deserialization of Python objects, employed for saving and loading data.
- `mediapipe:` Offers solutions for various media processing tasks, specifically used for hand landmark detection.
- `cv2 (OpenCV):` A computer vision library used for image and video processing, crucial for capturing and manipulating frames.
- `sklearn.ensemble:` Part of scikit-learn, used for implementing the RandomForestClassifier machine learning model.
- `sklearn.model_selection:` Facilitates data splitting for training and testing the machine learning model.
- `sklearn.metrics:` Includes functions for evaluating the performance of machine learning models, specifically used for accuracy measurement.
- `numpy:` A fundamental package for scientific computing with Python, used for numerical operations and data manipulation.