K. S. GROUP OF INSTITUTIONS

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU-109

SOCIALLY RELATED PROJECTS- ECE

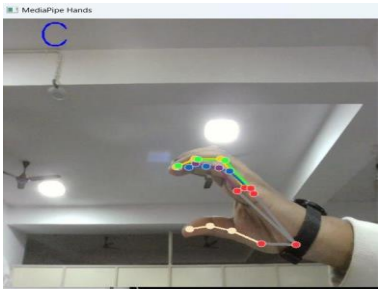
HAND GESTURE RECOGNITION TO TEXT AND SPEECH CONVERSION USING IMAGE PROCESSING

The abstract introduces a real-time vision-based system for hand gesture recognition, leveraging advanced technologies such as OpenCV and TensorFlow. The prototype employs a Raspberry Pi Camera module to capture live video feeds of hand gestures, subsequently processed by a Raspberry Pi board running a sophisticated gesture recognition model. The integration of OpenCV and TensorFlow enhances the system's capability to accurately analyse and classify hand gestures.

The recognized gestures are seamlessly displayed on a connected monitor or display, offering users an intuitive and responsive interface. The system operates within predefined parameters, assuming users are positioned within a specified perimeter area, at a defined distance, and utilizing bare hands without obstruction. Considering the limitations of the selected camera under certain conditions.

With a keen emphasis on user-friendly interaction and efficient power management, this prototype showcases the seamless integration of OpenCV and TensorFlow for robust hand gesture recognition. The combination of these technologies not only enhances the accuracy of gesture interpretation but also opens avenues for diverse applications in human computer interaction and beyond.

In pushing the boundaries of hand gesture recognition, this prototype incorporates a multi model fusion approach, harnessing the power of both OpenCV and TensorFlow. OpenCV facilitates real-time computer vision capabilities, aiding in the extraction of relevant features from the video feed, while TensorFlow provides a versatile platform for implementing and training intricate machine learning models. This synergistic integration enables the system to handle a broad spectrum of hand gestures with precision, enhancing its adaptability across various applications.



IDENTIFICATION OF RIGHT AND LEFT VENTRICULAR HYPERTROPHY FROM ECG USING MACHINE LEARNING

In this project, titled "Identification of Right Ventricular Hypertrophy (RVH) and Left Ventricular Hypertrophy (LVH) from ECG using Machine Learning," we aim to leverage machine learning techniques to accurately classify ECG signals into categories of RVH, LVH, or normal. Early and precise detection of these cardiac conditions is crucial for effective treatment and management, making this an important area of research. We collected comprehensive datasets comprising ECG signals from individuals diagnosed with RVH, LVH, and those with normal cardiac function. These datasets were preprocessed to ensure data integrity by converting

them to digital format and handling any NaN or Infinity values. The preprocessed data was then used to train a Random Forest classifier model, following a systematic methodology to optimize the learning process. After training, the model was tested with new ECG datasets to validate its performance. The classifier demonstrated a high level of accuracy in distinguishing between RVH, LVH, and normal signals, showcasing the potential of

machine learning in enhancing diagnostic capabilities in cardiology. The results of this project indicate significant promise for the application of machine learning in medical diagnostics, with future work potentially expanding the classifier's capabilities to include additional cardiac conditions and integrating the system into real-time monitoring devices. Such advancements could greatly improve the accessibility and effectiveness of cardiac care, particularly in remote or underserved areas.