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Sign Language Recognition using Python

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Abstract: *Sign language recognition (SLR) using Python offers a promising avenue for enhancing communication accessibility for the deaf and hard of hearing community. In this project, we explore the implementation and scope of a computer system for SLR, leveraging Python's rich ecosystem of libraries and frameworks for machine learning and computer vision. The project encompasses data collection, preprocessing, model selection, training, evaluation, and deployment phases. Data collection involves gathering a diverse dataset of sign language gestures, while preprocessing encompasses tasks such as resizing, normalization, and augmentation. Model selection involves choosing a suitable architecture, with convolutional neural networks (CNNs) being a prevalent choice for image-based tasks like SLR. Following model selection, the system undergoes training, during which the model learns the patterns and features of different sign language gestures. Evaluation metrics such as accuracy, precision, recall, and F1-score are utilized to assess the model's performance on a separate test dataset. Finally, the trained model is deployed into a Python application, providing a user-friendly interface for real-time gesture recognition. Through this project, we aim to contribute to the advancement of assistive technologies for the deaf and hard of hearing community, fostering inclusive communication environments through the utilization of Python-based SLR systems.*

Keywords: Sign language recognition

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