Proposed Solution

ASL – Alphabet Image Recognition

Team-592820

Kanishk Prasad – 21BCE2054 Ebi John Sinjin – 21BCE2082

Mudit Agrawal – 21BCE2008 Divyansh Jain – 21BCE2072

Parameter	Description
Problem Statement	The problem we aim to solve is the communication gap between the deaf and hard of hearing community and the hearing world. ASL (American Sign Language) is a critical means of communication for this community. However, many people in the hearing world do not understand ASL. Our solution seeks to bridge this gap by developing an ASL Alphabet Image Recognition system. This system will enable users to communicate with the deaf and hard of hearing community by recognizing and translating ASL alphabet signs from images and providing a textual or audio output.
Idea / Solution description	Our solution leverages machine learning techniques, including deep learning and computer vision, to recognize ASL alphabet signs from images. Users can capture or upload images of ASL signs, and our system will process these images to recognize the corresponding sign. We plan to employ Convolutional Neural Networks (CNNs) to train our image recognition model. The user interface will be user-friendly, allowing users to interact with the system easily. Upon recognition, the system will provide the corresponding textual and audio representations of the ASL sign.

Novelty / Uniqueness	Our solution's novelty lies in its focus on ASL alphabet recognition, which is often overlooked in favor of full ASL sentence recognition. This fine-grained approach allows for quicker and more accurate recognition. We also plan to incorporate continuous learning capabilities, allowing the system to adapt to new signs and improve over time. The integration of user feedback and correction suggestions will enhance the uniqueness of the solution.
Social Impact / Customer Satisfaction	Our solution has a significant social impact as it enhances accessibility for the deaf and hard of hearing community. It enables them to communicate more effectively with the hearing world. The system can be used in various settings, such as educational institutions, healthcare, and everyday communication. By improving accessibility, it contributes to social inclusion and empowers the community. Customer satisfaction will be paramount, and user feedback will guide system improvements to meet evolving needs.
Business Model (Revenue Model)	Our business model is based on a freemium approach. The core ASL Alphabet Image Recognition service will be available for free, ensuring accessibility for all. We will offer premium subscription plans for advanced features, such as ad-free usage, offline support, and more extensive ASL recognition capabilities. Additionally, partnerships with educational institutions, ASL training centres, and assistive technology providers will generate revenue.
Scalability of the Solution	Our solution is designed with scalability in mind. It can handle an increasing number of users and a growing dataset of ASL signs. We plan to use cloud-based infrastructure to ensure scalability and accommodate demand spikes. As the user base expands, we will continually optimize our infrastructure and algorithms to maintain high performance and reliability. Moreover, we envision future extensions to include support for other sign languages and gestures, further increasing the solution's scalability and reach.