Project Design Phase-II
Data Flow Diagram & User Stories

Date	21 November 2023
Team ID	Team-592184
Project Name	Alphabet Image Recognition
Maximum Marks	4 Marks

Data Flow Diagrams:

The project begins with inputting alphabet images, initiating essential steps in recognition. Initially, hand detection and segmentation accurately isolate hands from backgrounds for precise analysis. Image preprocessing enhances quality, preparing data for machine learning. Image augmentation introduces diversity in the dataset, systematically organized and stored for efficient retrieval during training. The core involves training a deep learning model, fine-tuning it for optimal recognition. A user-friendly web app allows image uploads, utilizing the trained model to interpret hand signs and provide corresponding text, promoting streamlined communication for the hearing-impaired. This

comprehensive pipeline advances in recognition and fosters inclusivity by enhancing communication accessibility.

Example:
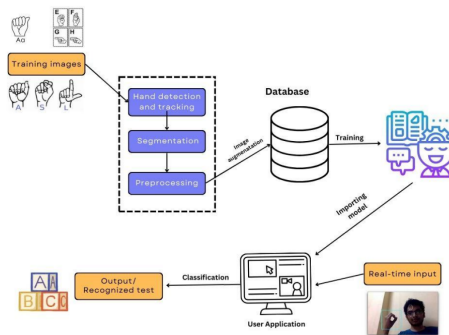
User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Deaf of hard communities	Project setup and infrastructure	USN-1	Establish the development environment by installing the necessary tools and frameworks to initiate the alphabet image recognition system.	The setup is complete, incorporating all essential tools and frameworks.	High	Sprint-1
Deaf or Hard-of-Hearing Individuals	Devloping environment	USN-2	Collect a varied image dataset featuring diverse ASL alphabet signs to train the deep learning model effectively, ensuring it can accurately recognize and interpret a broad range of American Sign Language gestures for optimal performance.	Assembled a diverse image dataset illustrating different categories of ASL signs.	High	Sprint-1
Normal (Hearing)	Data Collection	USN-3	Prepare the acquired dataset through resizing images,	Prepared the dataset.	High	Sprint-2

individuals			standardizing pixel values, and partitioning it into training and validation sets.			
Researchers and Academics	Data processing	USN-4	Examine and assess various deep learning architectures to choose the most appropriate model for the alphabet image recognition system.	We have the option to investigate different deep learning models.	High	Sprint-2
	Model devlopment	USN-5	Train the chosen deep learning model with the preprocessed dataset and assess its performance on the validation set.	Validation can be performed.	High	Sprint-3
	Training	USN-6	Incorporate data augmentation techniques, such as rotation and flipping, to enhance the model's resilience and accuracy.	Test can be performed	High	Sprint-3
	Model deployment & Integration	USN-7	Deploy the trained deep learning model as an API or web service for accessible alphabet image recognition. Integrate the model's API into a user-friendly web interface, allowing users to upload images and obtain classification results for garbage recognition.	We can assess scalability.	Medium	Sprint-4
	Testing and quality assurance.	USN-8	Perform comprehensive testing on the model and web interface to detect and report any issues or bugs. Refine the model hyperparameters and optimize performance based on user feedback and testing results.	We have the option to develop a web application.	Medium	Sprint-5