

## Project Initialization and Planning Phase

Date	21 June 2025
Team ID	SWTID1750316859
Project Title	ASL- Alphabet image Recognition
Maximum Marks	3 Marks

### Project Proposal (Proposed Solution):

This project proposal outlines a solution to bridge the communication gap between hearing-impaired individuals and those unfamiliar with American Sign Language (ASL). With a clear objective, well-defined scope, and a focused problem statement, the proposed solution explains the technical approach, key features, and necessary resources—including hardware, software, and team roles—to develop a robust ASL alphabet recognition system.

Project Overview	
Objective	To develop an intelligent image recognition system that can accurately identify and interpret American Sign Language (ASL) alphabets from static hand gesture images.
Scope	The project is limited to the recognition of ASL alphabet letters (A-Z) and a few special signs using machine learning techniques. It includes model training, testing, and integration with a web application interface for real-time predictions.
Problem Statement	
Description	Communication between hearing-impaired individuals and those unfamiliar with sign language is often limited, especially in educational or social settings. This project addresses that barrier by using image-based recognition of ASL.
Impact	Solving this problem can enhance accessibility, promote inclusivity, and help bridge the communication gap between the deaf community and the rest of society, particularly in classrooms, public services, and digital interactions.
Proposed Solution	

Approach	A Convolutional Neural Network (CNN) model, based on VGG16 architecture, will be trained on a labeled ASL image dataset. The system will be integrated into a Flask web app, where users can upload images and receive real-time predictions.
Key Features	<ul style="list-style-type: none"> <li>-ASL letter recognition with &gt;99% accuracy</li> <li>- Simple web interface for image uploads and results</li> <li>- Integration of model with Flask backend</li> <li>- Real-time prediction and feedback</li> <li>- Scalable for future gesture/word-level additions</li> </ul>

### Resource Requirements

Resource Type	Description	Specification/Allocation
<b>Hardware</b>		
Computing Resources	CPU/GPU specifications, number of cores	e.g., 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 8 GB
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD
<b>Software</b>		
Frameworks	Python frameworks	e.g., Flask
Libraries	Additional libraries	e.g., tensorflow
Development Environment	IDE, version control	e.g., Jupyter Notebook, Git
<b>Data</b>		
Data	Source, size, format	e.g., Kaggle dataset, 10,000 images