Sign Language Translator and Detector

Hackathon Project Phases

Project Title:

Sign language translator and detector

Team Name:

Big-Byte

Team Members:

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Phase-1: Brainstorming & Ideation

Objective:

- To tackle the language barrier between the people with listening and speaking problems,general public.
- To make **social interaction** easy for the people with listening and speaking problems.

Key Points:

1. **Problem Statement:** To tackle the language barrier between the people with listening and speaking problems.
2. **Proposed Solution:** The model detects the image and display the sign language into the captions.
3. **Target Users:** For the Dumb and Deaf people.
4. **Expected Outcome:** The model aims to Detect the signs and display the captions.

Phase-2: Requirement Analysis

Objective:

Define technical and functional requirements for Sign language translator and detector.

Key Points:

- **Technical Requirements:** Programming language - Python
  Frontend - Web Framework
  Backend - Google Gemini API
- **Functional Requirements:** Sign Language Recognition
  User Interface
- **Constraints & Challenges:**
  - Providing a smooth UI experience
  - Speech impairment constitutes a challenge to an individual's ability to communicate effectively through speech and hearing.

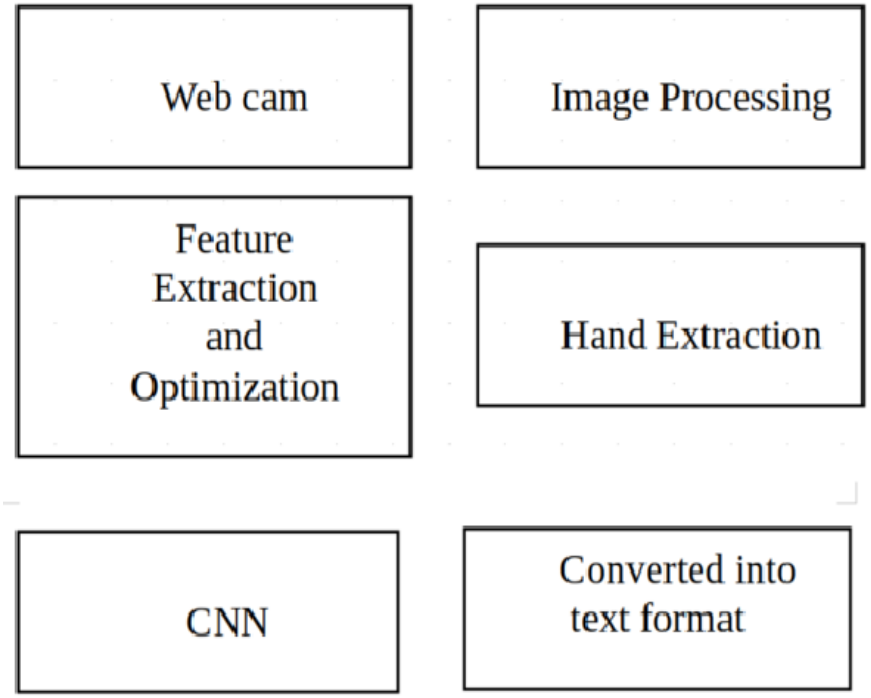
Phase-3: Project Design

Objective:

- Develop the architecture and user flow of the application.

Key Points:

1. **System Architecture Diagram:**



2. **User Flow:**

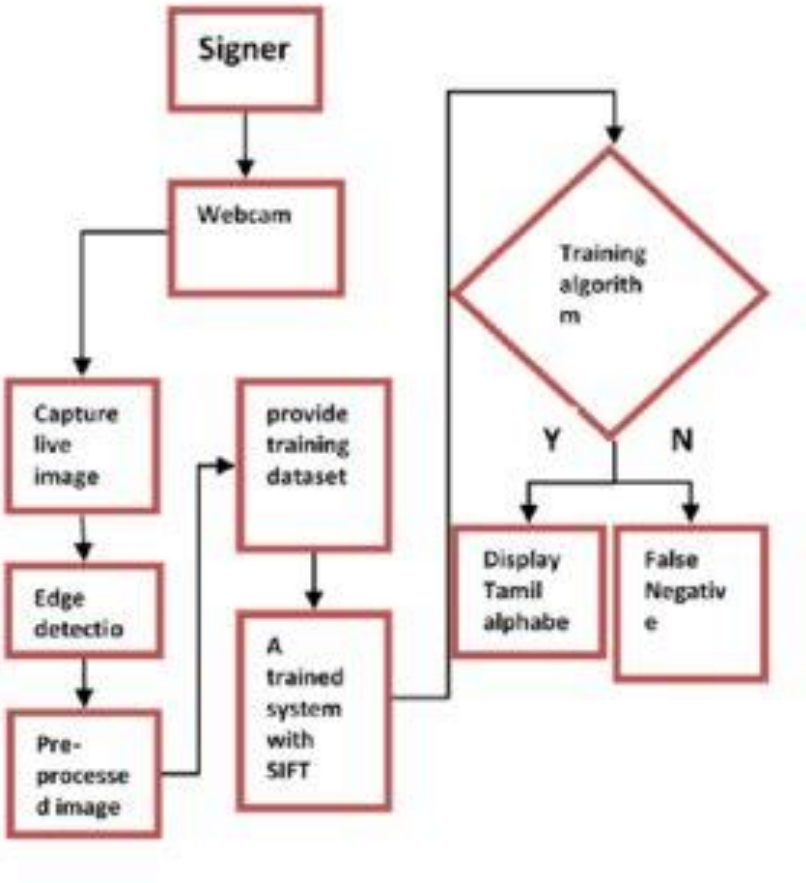
   - Step 1: User uploads or webcam caputures the image.
   - Step 2: The backend calls the Gemini Flash API to retrieve the data.
   - Step 3: The app processes the data and displays results in an easy-to-read format i.e,Captions.

3. **UI/UX Considerations:**
   - n UI design, a layout refers to the arrangement and organization of visual elements on a screen or webpage.

Phase-4: Project Planning (Agile Methodologies)

Objective:

- Break down the tasks using Agile methodologies.



Day 1:

- Collection of resources and accessing the Api keys.
- Dividing the task over the group.

Day 2:

- Code integration and data collection of signs.
- Debugging and Testing the code
- Submission.

Phase-5: Project Development

Objective:

- Implement the core features of sign language translator.

Key Points:

1. **Technology Stack Used:**
   - Programming language: Python
   - Frontend: Web Framework
   - Backend: Google Gemini API
2. **Development Process:**

   - Implement API key authentication and Gemini API integration.
   - Optimize search queries for performance and relevance.

Phase-6: Functional & Performance Testing

Objective:

- The model aims to detect the sign language and translate to text.

Key Points:

1. **Test Cases Executed:**
   - Performed the sign language and captured to the folder.
   - Trained with some signs like **Hello,Thankyou.**
2. **Final Validation:**
   - The Model has detecting the signs as per user requirement.

Final Submission

1. **Project Report Based on the Sign Language Translator and detector**
2. **Demo Video (3-5 Minutes)**
3. **GitHub/Code Repository Link**
4. **Presentation**
