SignMaster

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PROBLEM STATEMENT

How can a digital learning application empower deaf and mute students by integrating sign language translation and interactive learning modules

SOLUTION OVERVIEW

Our Sign Language Learning Platform bridges the communication gap for the deaf and mute community by offering a structured ASL learning experience with interactive **quizzes, games, AI-powered converters, and personalized learning plans**. Using computer vision, speech recognition, and AI, the platform enables real-time sign translation, progress tracking, and engaging learning tools, making ASL accessible, fun, and efficient for all users.

Key Features

- Structured Learning with Three Levels (Beginner, Intermediate, Advanced)
- Interactive Quizzes with Timer
- Match the Word Game
- Flashcard Game
- Type the Sign Game (Speed-Based Challenge)
- Speech to ASL Sign Converter
- Text to ASL Sign Converter
- AI Roadmap Planner (Personalized Learning Plan)

Technologies Used

- Backend: Django (Python)
- Database: SQLite
- Frontend: HTML, CSS, JavaScript
- Computer Vision: OpenCV (for image/video processing)
- AI Planner API: LemmeBuild API Builder for generating personalized learning roadmaps

Workflow of the Project

- **User Registration & Login** – Users sign up and access personalized content.
- **Course Selection** – Choose from Beginner, Intermediate, or Advanced levels.
- **Interactive Learning** – Learn through images, and real-time practice.
- **Quizzes & Games** – Test knowledge with quizzes, flashcards, and typing challenges.
- **AI-Powered Tools** – Speech-to-ASL, Text-to-ASL, and Sign Recognition for learning support.
- **Progress Tracking** – Monitor learning progress and leaderboard rankings.
- **AI Planner** – Personalized learning schedule using LemmeBuild API.

Future Goals

- **More Interactive Games** – Enhancing learning through fun activities.
- **AI Sign Language Tutor** – Chatbot for instant learning assistance.
- **Mobile App Version** – Bringing ASL learning to smartphones.