# CodeVerse

Round 1: Idea Pitch - Presentation Template

# Team Introduction

- Team Name

  - Innovate4Impact

- Team Members (Name, College)
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- Contact Details of Team Lead

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# Problem Statement

○ What real-world problem are we addressing?

Our project addresses the communication barrier between the deaf-mute community and hearing individuals. Despite the presence of interpreters on select platforms (e.g., government broadcasts), there is a massive lack of access to spoken content like news, educational videos, and documentaries for the hearing-impaired population.

○ Why is this problem significant?

Communication is a basic human right. The lack of access to auditory information isolates a large portion of the population, making it difficult for them to access services, understand current affairs, or simply engage with society. Our solution promotes inclusivity and equal access to information.

# Proposed Solution

○ Overview of our solution

We are developing a web application that converts spoken language into sign language using animation or video. This real-time solution bridges the communication gap by converting audio inputs into sign outputs.

○ Key features and functionalities

The following will be the key features of the webapp:
- Real-time audio input processing.
- Conversion of spoken content to sign language.
- Video or 3D animated output of hand signs.
- Adjustable playback speed for user preference.

○ What makes our solution unique?

Most current solutions translate sign language to speech or text. Ours does the reverse — translating speech to signs. This approach directly addresses the needs of the hearing-impaired, especially in consuming mainstream content, which is often audio-based.

# Technical Approach

- Tools, technologies, and frameworks to be used

The tools ,technologies, and frameworks that were used are:

- Frontend: React, Next.js, Tailwind CSS
- Backend: FastAPI
- AI/ML: TensorFlow, MediaPipe, OpenCV
- 3D Modeling: Blender (optional for animation)

- Hardware/Software details (if applicable):

- No additional hardware required.
- Can run on standard laptops/desktops with microphone input.

- Workflow or architecture diagram (if relevant):

Audio Input -> Speech to Text Coverter API -> Sign Language Mapper -> Video Output (3D model if time permits).

# Feasibility and Impact

- How feasible is our solution (time, cost, resources)?
  - Feasible within hackathon timeline.
  - Cost: Minimal (open-source libraries used).
  - Resources: Basic computing setup with internet and microphone.

- Expected impact or benefits of our solution
  - Improved accessibility for the deaf and mute community.
  - Helps make mainstream content more inclusive.
  - Promotes equal participation and social engagement.

# Timeline and Goals

- Plan of action for the hackathon

  - 30-May-2025: Build basic UI and frontend template.
  - 15-June-2025: Integrate backend API for speech-to-text and sign mapping.
  - 12-July-2025: Finalize prototype, add 3D animation feature, refine UI/UX.

- Key milestones and deliverables

  - Frontend & backend integration complete.
  - Working audio-to-sign video output.
  - Optional: 3D sign language model.
  - Support for regional dialects (if possible).

- Final objectives

  Deliver a functional MVP that news and educational platforms can use to make spoken content accessible to the hearing-impaired.

# Conclusion

○ ## Summary of our idea and its importance

SignBridge enables real-time translation of speech into sign language, bridging a major gap in accessibility. It ensures that the hearing-impaired are not left behind in the information age.

○ ## What do we aim to achieve?

To build a practical, scalable, and inclusive tool that allows the deaf and mute community to access spoken content in an understandable form.

○ ## Why should our idea be considered?

Our solution is innovative, inclusive, and highly impactful. It addresses a real-world communication barrier with technology that's both feasible and scalable. It promotes accessibility, equality, and human rights through a practical digital solution.

# THANK YOU