



MANIPAL UNIVERSITY JAIPUR
School of Information, Security and Data Science

B.Tech. Data Science and Engineering

Group Consent Form

Minor Project | DS3170 | 2 Credits | 0 0 4 2

Session: Aug-Dec 2024 | Course Coordinator: Dr. Neeraj Kr Verma | Class: B.Tech 3rd Year / 5th Semester

Faculty: 1. Dr. Neeraj Kr Verma 2. Dr. Sukhwinder Sharma 3. Dr. Ginika Mahajan

Part-A

Title of the Project: ...REAL TIME SIGN LANGUAGE TRANSLATION.....

First Presentation Date:

Second Presentation Date:

Group Information:

Group No.:

A / B / C

Sr.	Student Name	Registration No.	Semester	Section	Signature
1.	PRIYANSHU WALIA	229309211	V	C	
2.	SANSKRITI MAHORE	229309265	V	C	
3.					

Part-B

Instruction:

1. A survey on real ground could be conducted to finalize the problem statement.
2. Project work based on primary data, secondary data from different platform like Kaggle may be used for features identification, testing etc.
3. Dataset consists at least 1500- 2000 instances.
4. For Literature review consider last 2-3 years related works
5. Area of project work may be related (But not limited) to Big data, ML/DL, IoT, Cyber security, Blockchain, Image Processing, Bio- Inspired Algorithms etc.
6. This course will run as lab course, thus marking scheme will be –
(PRS: 60 Marks and PRE:40 Marks)
7. PRS & PRE Marks distribution as per the task completion by the student:

Criteria	Description	Maximum Marks
Internals (Summative)	Synopsis	10
	Mid -Term Assessment by Guide	20
	Mid -Term Presentation (Panel Marks)	30
End Term Exam (Summative)	End- Term Presentation (Panel Marks)	20
	End Term Assessment by Guide	20

8. Group No. will be provided by Course Faculty.
9. At most three members will be allowed for a single group.

Part-C

Short Project Description:

Technology used for Implementation:

Front end:

Back end:

***Attached Abstract of the project (Maximum 6000 words) with this form.**

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(Signature & Name)
Mentor

.....

(Signature & Name)
Dr. Neeraj Kumar Verma
Course Coordinator



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ABSTRACT

Title of the Project: ...REAL TIME SIGN LANGUAGE TRANSLATION.....

Group Number:

This project aims to develop a real-time system that translates sign language into speech or text, enabling seamless communication between sign language users and individuals relying on audio or written language. The development is divided into phases for efficient implementation and performance.

Phase 1: Input Capture Real-time video input of sign language is captured via a front-end built with React.js or Flutter. The video stream is transmitted to the back-end via WebSockets for low-latency processing.

Phase 2: Gesture Recognition The captured gestures are processed using deep learning models based on CNNs and RNNs, trained on datasets like RWTH-PHOENIX-Weather for ASL or Indian datasets for ISL. These models accurately recognize sign language gestures and convert them into structured data.

Phase 3: Text Generation Recognized gestures are converted into coherent text using NLP models like Hugging Face Transformers, ensuring grammatical accuracy and contextual relevance in the output.

Phase 4: Text-to-Speech Conversion The generated text is then converted to speech using TTS models such as Google Cloud TTS or Tacotron 2, providing natural-sounding audio output in real-time for users who prefer audio communication.

Phase 5: Deployment and Scaling The system is containerized using Docker and deployed on AWS or Google Cloud, with TensorFlow Serving or PyTorch Serve handling real-time inference. The use of Kubernetes ensures scalability and low-latency performance.

Phase 6: Testing and Optimization The final phase involves rigorous testing for accuracy, speed, and scalability. Databases like MongoDB or PostgreSQL are used for logging and user data management.

This phased approach delivers a robust solution for real-time translation of sign language into text or speech, with an emphasis on accuracy, scalability, and real-time responsiveness.

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(Signature & Name)
Students

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(Signature & Name)
Mentor