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 3nd 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.	KUNAL YADAV	229309237	V	C	
2.	MAYANK V CHOPRA	229309229	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.**

…….

(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 focuses on developing a real-time system that converts speech or text into sign language, enabling inclusive communication between hearing individuals and those using sign language. The project is divided into several phases to ensure a smooth and scalable implementation process.

Phase 1: Speech and Text Input Capture The system captures speech input through Web Speech API or Google Cloud Speech-to-Text, and text input directly from the user interface. The front-end, built using React.js or Flutter, processes the input and sends it to the back-end via WebSockets for real-time processing.

Phase 2: Speech-to-Text Conversion If the input is in the form of speech, models like Google Cloud Speech-to-Text or Mozilla DeepSpeech are used to convert it into text in real-time. The text is then prepared for translation into sign language.

Phase 3: Text Processing for Sign Language Translation Natural Language Processing (NLP) models, such as Hugging Face Transformers, process the text for simplified grammar and syntax, making it suitable for translation into sign language. The models ensure that the text is contextually appropriate and simplified for accurate sign language conversion.

Phase 4: Sign Language Generation The processed text is converted into sign language gestures using pre-trained models for ASL or ISL. These gestures are rendered on the front-end using 3D visualization tools like Three.js, providing real-time visual output to the user.

Phase 5: Model Deployment and Integration The models for text processing and sign language generation are containerized using Docker and deployed on cloud platforms like AWS or Google Cloud. TensorFlow Serving or PyTorch Serve ensures efficient real-time inference, while Kubernetes handles scaling.

Phase 6: Testing and Optimization The final phase includes testing for accuracy, latency, and scalability. Performance optimizations are made to ensure real-time responsiveness, and databases like MongoDB or PostgreSQL are used to store logs and user preferences for ongoing improvements.

By following this phased approach, the project delivers a comprehensive system for real-time translation of speech or text into sign language, ensuring inclusivity and seamless communication.

…….
(Signature & Name)
Students

…….
(Signature & Name)
Mentor