

# **Capturing Non-manual features of Indian Sign Language and Converting it into Text**

**A PROJECT REPORT**

*Submitted by,*

<b>Ms. MAMATHA S</b>	<b>- 20211CSG0048</b>
<b>Ms. PRACHI</b>	<b>- 20211CSG0025</b>
<b>Ms. NARMADA RADHIKA J S</b>	<b>- 20211CSG0028</b>
<b>Ms. NITHYA T M</b>	<b>- 20211CSG0006</b>

*Under the guidance of,*

**Dr. LEELAMBIKA K V**

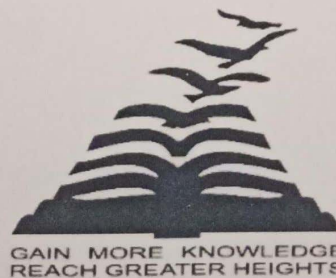
*in partial fulfillment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**At**



**PRESIDENCY UNIVERSITY**

**BENGALURU**

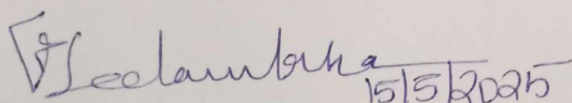
**May 2025**

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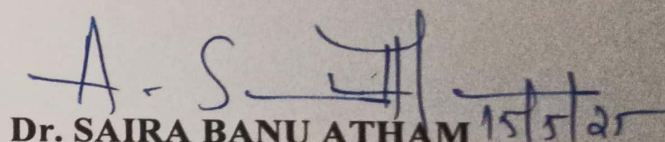
## SCHOOL OF COMPUTER SCIENCE ENGINEERING

### CERTIFICATE

This is to certify that the Project report “Capturing Non-manual features of Indian Sign Language and Converting it into Text” being submitted by “Mamatha S, Prachi, Narmada Radhika J S, Nithya T M” bearing roll number(s) “20211CSG0048, 20211CSG0025, 20211CSG0028, 20211CSG0006” in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a bonafide work carried out under my supervision.



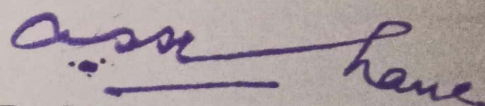
**Dr. LEELAMBIKA K V**  
Assistant Professor (Senior Scale)  
School of CSE  
Presidency University



**Dr. SAIRA BANU ATHAM**  
Professor & HoD  
School of CSE  
Presidency University



**Dr. MYDHILI NAIR**  
Associate Dean  
School of CSE  
Presidency University



**Dr. SAMEERUDDIN KHAN**  
Pro-VC School of Engineering  
Dean - School of CSE&IS  
Presidency University



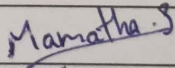
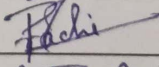
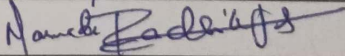
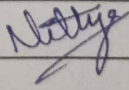
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### DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **Capturing Non-manual features of Indian Sign Language and Converting it into Text** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Technology**, is a record of our own investigations carried under the guidance of **Dr. LEELAMBIKA K V, Assistant Professor (Senior Scale), School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

NAME	ROLL NUMBER	SIGNATURE OF THE STUDENT
Ms. MAMATHA S	20211CSG0048	
Ms. PRACHI	20211CSG0025	
Ms. NARMADA RADHIKA J S	20211CSG0028	
Ms. NITHYA T M	20211CSG0006	

## ABSTRACT

The project "Capturing Non-manual features of Indian Sign Language and Converting it into Text " aims to bridge the communication gap between the deaf and hard-of-hearing individuals and the general public by utilizing artificial intelligence and machine learning techniques. The project leverages the American Sign Language (ASL) dataset and the YOLO v8 model to recognize live sign language gestures performed by the user and convert them into corresponding text, enabling real-time communication. Additionally, the project includes a speech-to-text conversion module that allows users to speak, and the system transcribes their speech into text using speech recognition libraries. The entire system is developed using Flask, offering an efficient and user-friendly platform. By integrating both sign language and speech recognition, this project promotes enhanced communication, fostering inclusivity and accessibility. The combined functionalities of sign language translation and speech-to-text ensure that both visual and auditory communication needs are addressed, making the system suitable for a wide range of applications in real-time communication.

Furthermore, the predicted words can be converted into Kannada language, ensuring that users in regions where Kannada is spoken can also benefit from the system. Using a pretrained model, we are recognizing these gestures: 'okay', 'peace', 'thumbs up', 'thumbs down', 'call me', 'stop', 'rock', 'live long', 'fist'.

**Keywords:** Speech-to-Text, Sign Language Recognition, YOLO v8, ASL Dataset, Flask, Deep Learning, Real-Time Translation, Accessibility, Communication Enhancement, AI-based System