**SAVEETHA ENGINEERING COLLEGE**
**DEPARTMENT OF ELECTRONICS&COMMUNICATION ENGINEERING**
**19EC701 MINI PROJECT WORK (2023-2024)ODD**

**Title of the Mini Project: SIGN LANGUAGE RECOGNITION**

**Mini Project Members:**

| | | | |
|---|---|---|---|
| Passport size photo |  |  |  |
| Name with initial at the end | REHAN NAVEID.R | RAJESH KUMAR.M | SAIKUMAR.V |
| Register Number | 212222060197 | 212222060190 | 212222060211 |
| Mobile | 6374333934 | 8489270903 | 8825685758 |
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| Signature | | | |

**Aim of the Mini Project**:

- Developing Real-time Sign Language Recognition
- Enabling and improving the ease and effectiveness of communication for individuals with hearing impairment
- Promoting Inclusivity

**Scope of the Mini Project**:

This project endeavors to create a system capable of real-time sign language recognition, leveraging technology to interpret and display gestures instantly. By enhancing communication accessibility, it aims to break barriers and facilitate seamless interaction for individuals with hearing impairments. Additionally, this project lays the groundwork for future advancements

**Internal**

Supervisor name and Designation

Supervisor signature

| | |
|---|---|
| | |

Approval of HOD/Authorized signatory

**Abstract of the Mini Project**

Sign language serves as a crucial mode of communication for individuals with hearing impairments. The project aims to facilitate real-time recognition of basic sign language gestures using computer vision techniques and machine learning algorithms. Leveraging OpenCV, a robust computer vision library, and employing a Random Forest classifier model, this system interprets hand gestures captured via a webcam to recognize and interpret predefined sign language gestures.

The process involves capturing live video feed, segmenting hand gestures, extracting relevant features utilizing image processing techniques, and feeding this data into a trained Random Forest classifier model. The model is trained on a dataset containing various sign language gestures to enable accurate classification. The system's interface displays the recognized gestures in real-time, aiding in seamless communication between users and the system.

Through this project, a foundation for real-time sign language recognition has been established, providing a stepping stone for more advanced applications. The fusion of computer vision and machine learning technologies paves the way for assisting individuals with hearing impairments by enabling efficient and accurate interpretation of basic sign language gestures.

This project not only showcases the integration of OpenCV and machine learning for sign language recognition but also presents opportunities for further enhancements and applications in assistive technologies for the hearing-impaired community

**Signature of the Supervisor** **Signature of the Project Coordinator**

**MINI PROJECT WORK**
**PROJECT WORK FOR THE YEAR (2023-2024)**

## FIRST REVIEW APPROVAL

Date of Review:
Supervisor Remarks:
Seminar Presentation Material was shown by the students' on_____. I have gone through the progress of the work and the presentation. The suggestions given in the zeroth review and by the supervisor were incorporated in the presentation.

**RECOMMENDED FOR PRESENTATION** **Supervisor Signature**

## FIRST REVIEW EVALUATION SHEET

| Sl.No. | Name of the Student | Register No. | Mark Allocation | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Team performance | | | Individual performance | | |
| | | | Literature review | Experimental work | Observation | Knowledge on work executed | Insight on expected outcomes | Total |
| | | | 10 | 20 | 20 | 30 | 20 | 100 |
| 1. | REHAN NAVEID.R | 212222060197 | | | | | | |
| 2. | RAJESH KUMAR.M | 212222060190 | | | | | | |
| 3. | SAIKUMAR.V | 212222060211 | | | | | | |

**Remarks of the Evaluators (Comments and Major Weaknesses Identified):**

**Signature of the Evaluators** **Project Coordinator**

## SECOND REVIEW APPROVAL

Date of Review:
Supervisor Remarks:
Seminar Presentation Material was shown by the students' on ---------. I have gone through the progress of the work and the presentation. The suggestions given in the first review and by the supervisor were incorporated in the presentation.

**RECOMMENDED FOR PRESENTATION** **Supervisor Signature**

## SECOND REVIEW EVALUATION SHEET

| Sl. No. | Name of the Student | Register No. | Mark Allocation | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Team performance | | | Individual performance | | | |
| | | | Results and discussion | Conclusion / future scope | Organization of the project draft report | Contribution/ presentation | Individual knowledge on the | Insight on Results and discussion | Total |
| | | | 20 | 5 | 25 | 20 | 10 | 20 | 100 |
| 1. | REHAN NAVEID.R | 212222060197 | | | | | | | |
| 2. | RAJESH KUMAR.M | 212222060190 | | | | | | | |
| 3. | SAIKUMAR.V | 212222060211 | | | | | | | |

**Remarks of the Evaluators (Comments and Major Weaknesses Identified):**

**Signature of the Evaluators** **Project Coordinator**

## THIRD REVIEW APPROVAL

Date of Review:
Supervisor Remarks:
Project report/Seminar Presentation Material was shown by the student's on_____. I have gone through the progress of the work and the presentation. The suggestions given in the second review and by the supervisor were incorporated in the presentation. Subsequently I have verified the project report chapter wise and it is prepared as per Anna University guidelines.

**RECOMMENDED FOR PRESENTATION** **Supervisor Signature**

## THIRD REVIEW EVALUATION SHEET

| Sl. No. | Name of the Student | Register No. | Mark Allocation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Team performance | | | | | Individual performance | | | |
| | | | Literature review | Experimental work – results and discussion | Limitations / contributions/ future scope | Organization of Project report | Societal Relevance | Contribution/ presentation | Individual knowledge on the field of work | Insight of conclusion | Total |
| | | | 5 | 20 | 10 | 10 | 5 | 20 | 20 | 10 | 100 |
| 1. | REHAN NAVEID.R | 212222060197 | | | | | | | | | |
| 2. | RAJESH KUMAR.M | 212222060190 | | | | | | | | | |
| 3. | SAIKUMAR.V | 212222060211 | | | | | | | | | |
| 4. | | | | | | | | | | | |

**Remarks of the Evaluators**

a) **Can this work be published in conference/Journal : YES / NO**
b) **Can this work be patented : YES / NO**
c) **Can this work be further enhanced for project proposal : YES / NO**

**Signature of the Evaluators** **Project Coordinator**

**CONCLUSION OF THE MINI PROJECT**

In conclusion, the development and implementation of a real-time sign language recognition system utilizing OpenCV and a Random Forest classifier have demonstrated the feasibility of capturing video frames and effectively detecting sign language gestures without explicitly measuring accuracy or precision. This project aimed to bridge the communication gap for individuals with hearing impairments by providing a tool for real-time interpretation of basic sign language gestures.

Throughout this project, the system showcased its capability to capture live video frames, process them using computer vision techniques, and display recognized sign language gestures in a user-friendly interface. While specific performance metrics were not quantified, the visual outcomes highlighted the system's ability to detect and represent sign language gestures in varying environments, showcasing robustness and adaptability.

The significance of this endeavor lies in its potential to contribute to assistive technologies, fostering inclusivity and improving communication accessibility for the hearing-impaired community. Despite certain limitations and challenges faced during development, the project lays a foundation for further advancements and improvements in the domain of sign language recognition and assistive technologies.

Signature of the Student:

1.
2.
3. **Signature of the Supervisor**

# SAVEETHA ENGINEERING COLLEGE

**DEPARTMENT OF ELECTRONICS &COMMUNICATION ENGINEERING - MINI PROJECT OUTCOME ATTAINMENT**

| **Sub. Code & Name:** | | **19EC701 Mini Project Work** | | **ODD Sem. - (2023-24)** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Year and Sem. :** | | **II Year and III Sem.** | | | | | | | |
| | | | | | | | | | |
| **Sl. No.** | **Register No.** | **Name of the Student** | | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **UNIV** |
| | 212222060197 | REHAN NAVEID.R | | | | | | | |
| | 212222060190 | RAJESH KUMAR.M | | | | | | | |
| | 212222060211 | SAIKUMAR.V | | | | | | | |

| **COURSE CODE:** | 19EC701 | **SEMESTER:** | 3 | **Year of study**: 2023-24 |
|---|---|---|---|---|
| **COURSE NAME:** | Mini Project Work | | | |
| At the end of the course the students will be able to: | | | | |
| CO1 | Demonstrate the role of Electronic Engineers in the Design, Processing and Testing stages of product / system with ethical responsibility. | | | |
| CO2 | Approach, identify, demonstrate and solve the technical problems using various available modern tools and techniques | | | |
| CO3 | Outline the past, present and expected performance of a product / system in Engineering practice, knowledge of safety and environmental standards, cost estimation, scheduling of project, team management and ethical practice. | | | |
| CO4 | Develop new product / system / Provide scientific outcome in association of multidisciplinary team which is useful to society, cost effective and understand the importance of rendering service after sales. | | | |
| CO5 | Analyze, summarize, infer and communicate their chosen domain problems and results optimistically by means of oral presentation and written reports. | | | |