

PROJECT REPORT ON

SIGN LANGUAGE DETECTION SYSTEM

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

**MASTER OF
COMPUTER APPLICATION**

Submitted by:

Priyanka Yadav

Roll No.1102545

*Under the Guidance of
Dr. Varsha Mittal*



**Department Of Computer Application Graphic
Era (Deemed to be University) Dehradun,
Uttarakhand
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Graphic Era
Deemed to be University

CANDIDATE'S DECLARATION

I hereby certify that the work presented in this project report entitled “**Sign Language Detection System**” in partial fulfilment of the requirements for the award of the degree of Master of Computer Applications is a Bonafede work carried out by me under the supervision of **Dr. Varsha Mittal**, Department of Computer Application, Graphic Era Deemed to be University, Dehradun, India.

This work has not been submitted elsewhere for the award of a degree/diploma/certificate.

Name and Signature of Candidate

This is to certify that the above-mentioned statement in the candidate's declaration is correct to the best of my knowledge.

Date: _____

Name and Signature of Guide

Signature of Supervisor

Signature of External Examiner

HOD

CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled **SIGN LANGUAGE DETECTION SYSTEM**, submitted to **Graphic Era University, Dehradun** in partial fulfilment of the requirement for the award of the degree of **MASTER OF COMPUTER APPLICATIONS (MCA)**, is an authentic and original work carried out by **PRIYANKA YADAV** under my supervision and guidance.

The matter embodied in this project is genuine work done by the student and has not been submitted whether to this University or to any other University / Institute for the fulfilment of the requirements of any course of study.

Signature of the Student:

Date:

Enrolment No.: _____

Signature of the Guide

Date:

Name and Address
of the student:

Name, Designation and
Address of the Guide:

Special Note:

Candidate Name and Signature

Acknowledgement

In completing this project report on the project titled **SIGN LANGUAGE DETECTION SYSTEM**, I had to take the help and guidelines of a few respected people, who deserve my greatest gratitude.

The completion of this project report gives me much pleasure. I would like to show my gratitude towards **Dr. Varsha Mittal**, for guiding me throughout numerous consultations. I would also like to extend my deepest gratitude to all those who have directly and indirectly guided me in writing this project report.

Many people, especially my classmates and friends themselves, have made valuable comments and suggestions on this proposal which gave me inspiration to improve my project. Here I thank all the people for their help directly and indirectly to complete this project.

Preface

This report explores the development and implementation of a sign language recognition system, a significant stride in enhancing communication accessibility for the deaf and hard-of-hearing community. The motivation behind this project stems from the recognition of the communication barriers that individuals with hearing impairments often face, and the potential for technology to bridge this gap.

The project utilizes advanced techniques in computer vision and machine learning to accurately interpret and translate sign language gestures into written language. The aim is not only to create a functional prototype but also to lay the groundwork for future enhancements that can make the system more robust and versatile.

This report is structured to provide a comprehensive overview of the project. It begins with a background study. Following this, the methodology section details the approaches and techniques employed, including data collection, preprocessing, model selection, and training processes. The results section presents the performance metrics. Finally, the report concludes with reflections on the outcomes and potential future directions for this work.

We hope that this project contributes meaningfully to the field of assistive technologies and inspires further research and development in sign language recognition systems.

Abstract

This report presents the development and evaluation of a sign language recognition system, aimed at facilitating communication for the deaf and hard-of-hearing community. The system leverages advanced computer vision and machine learning techniques to recognize and translate sign language gestures into written language in real-time. Our approach integrates convolutional neural networks (CNNs) for feature extraction and temporal sequence modeling, ensuring high accuracy in gesture recognition.

Extensive experimentation was conducted to optimize the model's performance, including the use of various datasets and preprocessing techniques to handle the variability in signing styles and environments. The system's accuracy, robustness, and speed were evaluated against standard benchmarks and real-world scenarios, demonstrating its potential as a reliable tool for enhancing accessibility.

Furthermore, this report discusses the broader implications of sign language recognition technology, addressing challenges such as dataset diversity, model interpretability, and user privacy. Future directions for this research include expanding the system's vocabulary, improving real-time processing capabilities, and integrating it with other assistive technologies to create a comprehensive communication aid.

The findings of this study contribute to the growing field of assistive technology, highlighting the transformative impact that machine learning and computer vision can have on improving quality of life for individuals with hearing impairments.

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