A

PROJECT REPORT

On

"SIGN LANGUAGE TO TEXT AND SPEECH CONVERSION USING CNN"

For the award of degree of

Bachelor Of Technology

In

Computer Science and Engineering

By

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SCHOOL OF COMPUTER SCIENCE & ENGINEERING
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GOVT. P.G. COLLEGE DHARAMSHALA
HIMACHAL PRADESH

2020-2024

University Roll No: -20010603001 **Class Roll No.: -20539**

“SIGN LANGUAGE TO TEXT AND SPEECH CONVERSION USING CNN”

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PROJECT REPORT

Submitted in partial fulfillment of the Requirements
For the award of B. TECH (CSE) Degree

HIMACHAL PRADESH TECHNICAL UNIVERSITY
HAMIRPUR (H.P.)- INDIA

PROJECT REPORT

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SESSION: 2020-2024

CERTIFICATE BY THE SUPERVISOR/CO-SUPERVISOR

This is to certify that dissertation entitled "**Sign Language to Text and Speech Conversion**" which is being submitted by **Abhay Dhiman** having university roll no. **20010603001** for the award of the degree of **B.Tech (CSE)** is an independent and original research work carried out by her/him in the time duration of Four/Six months from **January 2024** to **June 2024**. The dissertation is worthy of consideration / Project for the award of **B.Tech. (CSE)** Degree of Himachal Pradesh Technical University, Hamirpur.

Abhay Dhiman has worked under my guidance and supervision to fulfill all requirements for the submission of this dissertation,

The conduct of the student remained excellent during the period of work

Signature of the Supervisor/Co-Supervisor

Best regards,
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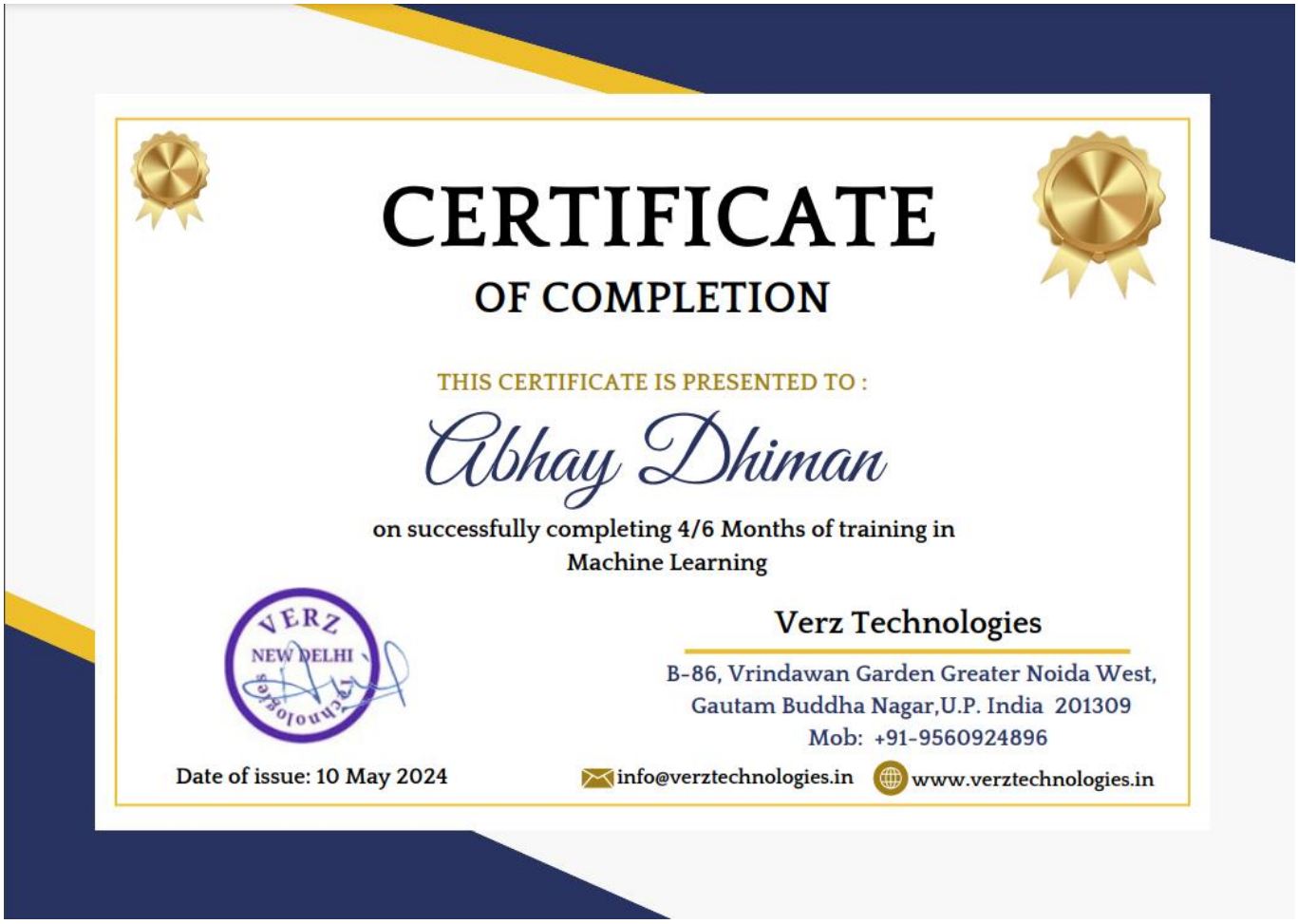

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This foregoing project work is hereby approved as a creditable study of a Computer Application Subject carried out and presented in a manner satisfactory to warranty its acceptance as a prerequisite to the degree for which it has been submitted. This project is work entitled **"SIGN LANGUAGE TO TEXT AND SPEECH CONVERSION USING CNN"** submitted by **Mr. Abhay Dhiman (20010603001)**is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein, but approve the thesis only for the purpose for which it has been submitted.

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I, **Abhay Dhiman (20010603001),** a student of **Bachelor of Technology**, **Govt. P.G.College, Dharamshala** under **Himachal Pradesh Technical University, Hamirpur** with Enrollment no. **20010603001**, do hereby declare that this dissertation is an originalwork of mine and is result of my own intellectual efforts. I have quoted tiles of all original sources i.e., original documents and name of the Authors whose work has helped me in writing this project report have been placed at appropriate places.

(Abhay Dhiman)

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IT industry is the most dynamic in the present world. The pace at which it is moving ahead makes difficult for us to cope with the coding computer technology; if we climbthe hills individually the efforts of colleagues and friends have helped me in achievingthe desired goal.

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ABSTRACT

This project aims to bridge communication gaps for individuals with hearing impairments by developing a comprehensive system that can detect and interpret sign language gestures, convert them into text, and then transform the text into speech. People with hearing impairments often face challenges in effectively communicating with those who do not understand sign language. This project addresses this issue by leveraging computer vision, natural language processing (NLP), and speech synthesis technologies to facilitate seamless communication between individuals who use sign language and those who do not. The key components of this project include, sign language detection, conversion to text and speech conversion. Sign language detection is used to precisely detect and recognize user-made sign language motions, the project makes use of computer vision techniques and deep learning models. It uses in-the-moment image or video analysis to record and decipher body language, face expressions, and hand movements. After the system picks up sign language signals, it is converted into text. The movements are transformed into coherent textual representations using Natural Language Processing (NLP) methods. Using sophisticated speech synthesis technology, the resulting text is subsequently converted to speech. This makes sure that people who don't understand sign language can nevertheless understand the intended message. Through the project's user-friendly interface, people with hearing loss can easily communicate with both people who use sign language and others who rely on spoken language. Additionally, it has the ability to be integrated into a variety of hardware and software, including PCs, tablets, and smartphones, making it usable and adaptable for a variety of users. By easing communication and promoting a more inclusive society, the "Sign Language Detection, Conversion to Text, and Speech Conversion Project" has the potential to greatly enhance the quality of life and social inclusion of people with hearing impairments.

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