

VISVESVARAYATECHNOLOGICAL UNIVERSITY
"Jnana Sangama", Belagavi-560014, Karnataka



A PROJECT REPORT ON
**"A DEEP LEARNING APPROACH FOR SKIN CANCER
CLASSIFICATION"**

*SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE*

**BACHELOR OF ENGINEERING
IN
INFORMATION SCIENCE & ENGINEERING**

Submitted By

Mr. DARSHAN NAYAK B M [1SV20IS002]
Mr. SHESHADRI T [1SV20IS012]

Under the guidance of

Mrs. Lavanya K .B.E., M. Tech.
Assistant. Prof., Dept. of ISE



Department of Information Science and Engineering
SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Affiliated To Visvesvaraya Technological University)
Sira Road, Tumakuru – 572106, Karnataka.
2023-2024



SHRIDEVI
EDUCATION

Sri Shridevi Charitable Trust (R.)

SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY

Sira Road, Tumkur - 572 106, Karnataka, India.

Phone: 0816 - 2212629 | Principal: 0816 - 2212627, 9686114899 | Telefax: 0816 - 2212628

Email: info@shrideviengineering.org, principal@shrideviengineering.org | Website: www.shrideviengineering.org

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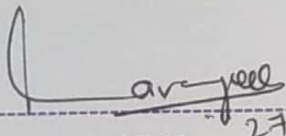
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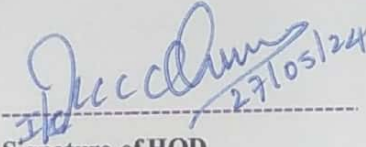
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

CERTIFICATE

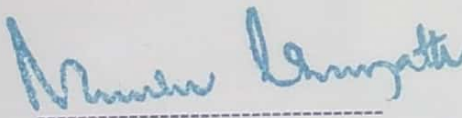
This is to certify that, Project work Phase II entitled "A DEEP LEARNING APPROACH FOR SKIN CANCER CLASSIFICATION" has been Successfully carried out by Mr. DARSHAN NAYAK B M [1SV20IS002], Mr. SHESHADRI T [1SV20IS012], in partial fulfillment for the award of **Bachelor of Engineering in Information Science & Engineering** of the **Visvesvaraya Technological University, Belagavi** during the academic year **2023-24**. It is certified that all the corrections/suggestions indicated for internal assessments have been incorporated in the report. The Project report has been approved as it certifies the academic requirements in respect of Project work Phase II prescribed for the Bachelor of Engineering Degree.


Signature of Guide

Mrs. Lavanya K B.E., M. Tech.
Asst. Prof., Dept. of ISE


Signature of HOD

Dr. Rekha H Ph.D., MISTE
Prof. & HOD, Dept. of ISE



Signature of Principal


Dr. Narendra Viswanath M.E., Ph.D., MIE, MISTE, MIWS, FIV.,
Principal, SIET, Tumakuru

External Viva

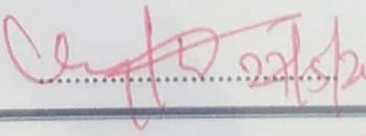
Name of the Examiners

Signature with date

1. Dr. Shakunthala B.S

 27/5/24

2. Venugopal D

 27/5/24



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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

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Sira Road, Tumakuru - 572 106, Karnataka.

Phone: 0816-2212629 | Fax: 0816-2212628 | Email: info@shrideviengineering.org | Web: http://www.shrideviengineering.org



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We, Mr. DARSHAN NAYAK B M [1SV20IS002], Mr. SHESHADRI T [1SV20IS012], student of VIII semester **B.E** in Information Science & Engineering, at Shridevi Institute of Engineering & Technology, Tumakuru, here by declare that, the Project work Phase II entitled "A DEEP LEARNING APPROACH FOR SKIN CANCER CLASSIFICATION" embodies the report of our Project work carried out under the guidance of **Mrs. Lavanya K, Assistant Professor, Department of ISE, SIET, Tumakuru** as partial fulfillment of requirements for the award of degree in **Bachelor of Engineering in Information Science & Engineering of Visvesvaraya Technological University, Belagavi**, during the academic year **2023-24**. The Project has been approved as it satisfies the academic requirements in respect to the Project work Phase II.

Place: Tumakuru

Student name & signature

Date

Darshan Nayak B M [1SV20IS002]

Darshan Nayak B M

Sheshadri T

[1SV20IS012]

Sheshadri T



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ESTD: 2002



BONAFIDE CERTIFICATE

This is to certify that the Project work Phase II entitled "A DEEP LEARNING APPROACH FOR SKIN CANCER CLASSIFICATION" is a bonafide in the work of, Mr. DARSHAN NAYAK B M [1SV20IS002], Mr. SHESHADRI T[1SV20IS012], of VIII semester of **B.E** in Information Science and Engineering carried out at Shridevi Institute of Engineering and Technology in partial fulfillment of requirements for the award of **Bachelor of Engineering in Information Science and Engineering of the Visvesvaraya Technological University, Belagavi** under my supervision and guidance. Certified to the best of my knowledge the work reported here is not a part of any other thesis on the basis of which degree or award was conferred on earlier occasion to these or any other candidates.

Guide:

Mrs. Lavanya K B.E., M.Tech.

Asst. Prof., Dept. of ISE

ACKNOWLEDGEMENT

This Project will be incomplete without thanking the personalities responsible for this venture, which otherwise would not have become a reality.

We express our profound gratitude to **Dr. Narendra Viswanath**, Principal, S.I.E.T, for his moral support towards completing our Project work.

We would like to thank Head of Department **Dr. Rekha H** Head, Department of ISE, SIET for providing all the support and facility.

We would like to thank our guide **Mrs. Lavanya K** Assistant Professor, Department of Information Science and Engineering, SIET for her help, sharing him technical expertise and timely advice.

We would like to thank our Project Coordinator, **Prof. Venugopal D** Assistant Professor, Department of Information Science and Engineering, SIET for providing all the support and faculty.

We would like to express our sincere gratitude to all teaching and non-teaching faculty of the department of ISE for guiding us of this project by giving valuable suggestion and encouragement.

By,

Darshan Nayak B M [1SV20IS002]

Sheshadri T [1SV20IS012]

ABSTRACT

Skin cancer is one of the most rapidly spreading illnesses in the world and because of the limited resources available. Early detection of skin cancer is crucial accurate diagnosis of skin cancer identification for preventive approach in general. Detecting skin cancer at an early stage is challenging for dermatologists, as well in recent years, both supervised and unsupervised learning tasks have made extensive use of deep learning. One of these models, Convolutional Neural Networks (CNN), has surpassed all others in object detection and classification tests. The dataset is screened from MNIST: HAM10000 which consists of seven different types of skin lesions with the sample size of 10015 is used for the experimentation. The data pre-processing techniques like sampling, dull razor and segmentation using autoencoder and decoder is employed. Transfer learning techniques like DenseNet169 and Resnet 50 were used to train the model to obtain the results.

In cancer, there are over 200 different forms. Out of 200, melanoma is the deadliest form of skin cancer. The diagnostic procedure for melanoma starts with clinical screening, followed by dermoscopic analysis and histopathological examination. Melanoma skin cancer is highly curable if it gets identified at the early stages. The first step of Melanoma skin cancer diagnosis is to conduct a visual examination of the skin's affected area. Dermatologists take the dermoscopic images of the skin lesions by the high-speed camera, which have an accuracy of 65-80% in the melanoma diagnosis without any additional technical support. With further visual examination by cancer treatment specialists and dermoscopic images, the overall prediction rate of melanoma diagnosis raised to 75-84% accuracy. The project aims to build an automated classification system based on image processing techniques to classify skin cancer using skin lesions images.