



**PRESIDENCY UNIVERSITY**

Private University Estd. in Karnataka State by Act No. 41 of 2013

Itgalpura, Rajajinagar, Yelahanka | Bengaluru - 560064



# **AI-BASED TOOL FOR PRELIMINARY DIAGNOSIS OF DERMATOLOGICAL MANIFESTATIONS**

**A PROJECT REPORT**

*Submitted by*

**ARMAAN KHAN- 20221CAI0037**

**SHAIK MAHAMMAD SAIF- 20221CAI0008**

**SYED BASIM – 20221CAI0048**

*Under the guidance of,*

**Mr. JAI KUMAR B**

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING  
(ARTIFICIAL INTELLIGENCE AND MACHINE  
LEARNING)**

**PRESIDENCY UNIVERSITY**

**BENGALURU**

**DECEMBER 2025**



# PRESIDENCY UNIVERSITY

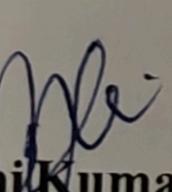
Private University Estd. in Karnataka State by Act No. 41 of 2013  
Itgalpura, Rajankunte, Yelahanka, Bengaluru - 560064

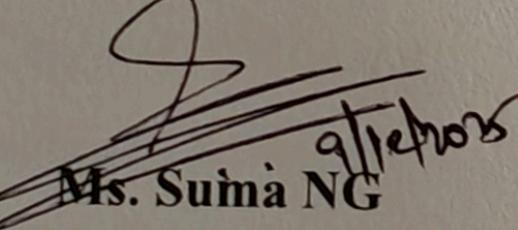


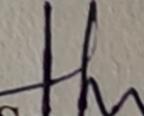
## PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

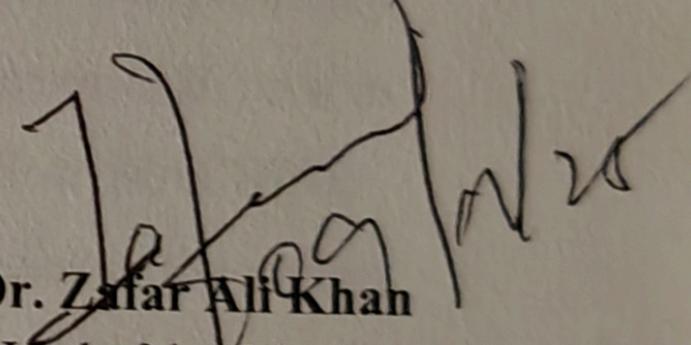
### BONAFIDE CERTIFICATE

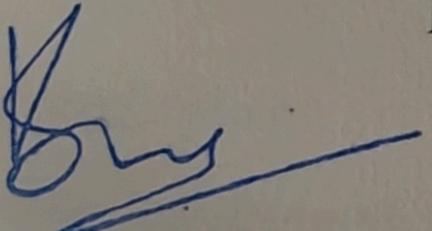
Certified that this report "AI-BASED TOOL FOR PRELIMINARY DIAGNOSIS OF DERMATOLOGICAL MANIFESTATIONS" is a bonafide work of "ARMAAN KHAN (20221CAI0037), SHAIK MAHAMMAD SAIF (20221CAI0008) and SYED BASIM (20221CAI0048)", who have successfully carried out the project work and submitted the report for partial fulfilment of the requirements for the award of the degree of BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE ENGINEERING, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING during 2025-26.

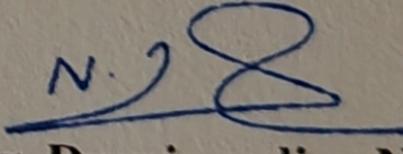
  
**Mr. Jai Kumar B**  
Project Guide  
PSCS  
Presidency University

  
**Ms. Suma NG**  
Program Project  
Coordinator  
PSCS  
Presidency University

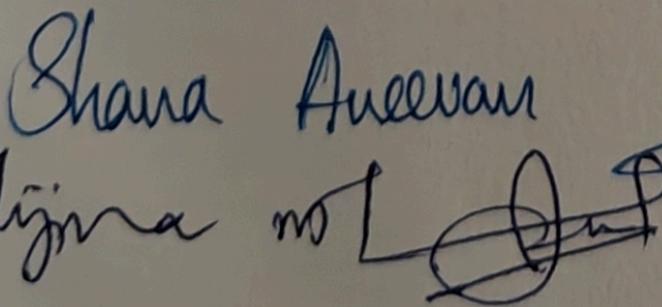
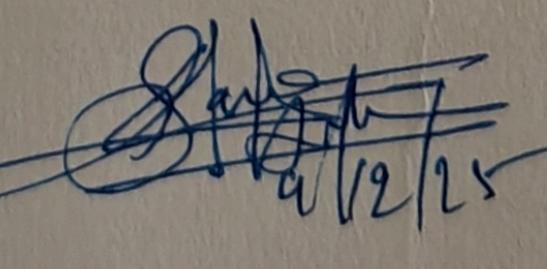
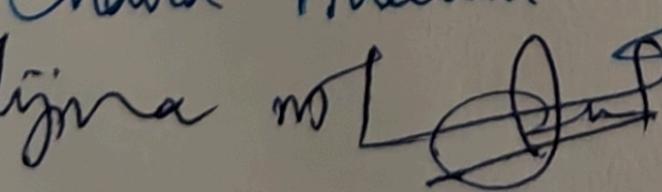
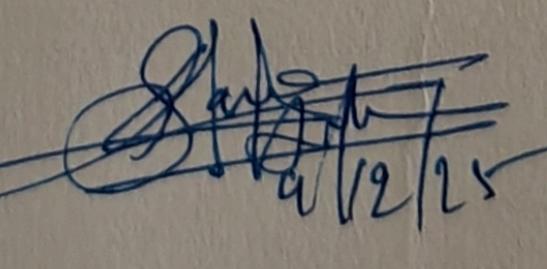
  
**Dr. Sampath AK**  
**Dr. Geetha A**  
School Project  
Coordinators  
PSCS  
Presidency University

  
**Dr. Zafar Ali Khan**  
Head of the Department  
PSCS  
Presidency University

  
**Dr. Shakkeera L**  
Associate Dean  
PSCS  
Presidency University

  
**Dr. Duraipandian N**  
Dean  
PSCS & PSIS  
Presidency University

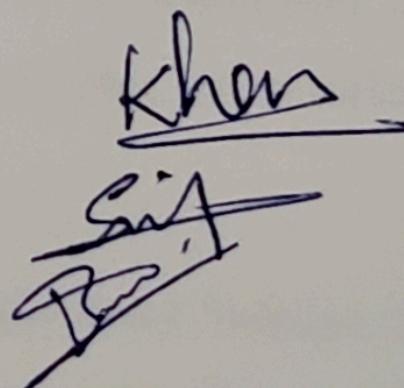
#### Name and Signature

- 1)    
Armaan Khan
- 2)    
Syed Basim

**PRESIDENCY UNIVERSITY**  
**PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND**  
**ENGINEERING**  
**DECLARATION**

We the students of final year B.Tech in COMPUTER SCIENCE ENGINEERING, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING at Presidency University, Bengaluru, named ARMAAN KHAN, SHAIK MAHAMMAD SAIF and SYED BASIM, hereby declare that the project work titled "**AI-BASED TOOL FOR PRELIMINARY DIAGNOSIS OF DERMATOLOGICAL MANIFESTATIONS**" has been independently carried out by us and submitted in partial fulfillment for the award of the degree of B.Tech in COMPUTER SCIENCE ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING) during the academic year of 2025-26. Further, the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

Armaan Khan	USN: 20221CAI0037
Shaik Muhammad Saif	USN: 20221CAI0008
Syed Basim	USN: 20221CAI0048



PLACE: BENGALURU

DATE: 9/12/25

## ACKNOWLEDGEMENT

For completing this project work, We/I have received the support and the guidance from many people whom I would like to mention with deep sense of gratitude and indebtedness. We extend our gratitude to our beloved **Chancellor, Pro-Vice Chancellor, and Registrar** for their support and encouragement in completion of the project.

I would like to sincerely thank my internal guide, Mr. Jai Kumar B, Assistant Professor, Presidency School of Computer Science and Engineering, Presidency University, for his moral support, motivation, timely guidance and encouragement provided to us during the period of our project work.

I am also thankful to **Dr. Zafar Ali Khan N, Professor and Head of the Department, Presidency School of Computer Science and Engineering**, Presidency University, for his mentorship and encouragement.

We express our cordial thanks to **Dr. Duraipandian N**, Dean PSCS & PSIS, **Dr. Shakkeera L**, Associate Dean, Presidency School of computer Science and Engineering and the Management of Presidency University for providing the required facilities and intellectually stimulating environment that aided in the completion of my project work.

We are grateful to **Dr. Sampath A K, and Dr. Geetha A, PSCS Project Coordinators and Ms. Suma N G, Program Project Coordinator**, Presidency School of Computer Science and Engineering, or facilitating problem statements, coordinating reviews, monitoring progress, and providing their valuable support and guidance.

We are also grateful to Teaching and Non-Teaching staff of Presidency School of Computer Science and Engineering and also staff from other departments who have extended their valuable help and cooperation.

ARMAAN KHAN  
SHAIK MAHAMMAD SAIF  
SYED BASIM

## Abstract

Dermatological disorders impact millions of people worldwide and rank among the most frequently occurring causes of clinical visits, but their timely diagnosis is still a significant issue, and particularly in rural and underserved areas, due to the extremely low access to dermatologists. Late-stage diagnosis of skin cancer like melanoma, basal cell carcinoma, and squamous cell carcinoma may end up causing a lot of morbidity and mortality. Amid the swift progress of deep learning and image-based diagnostic systems, artificial intelligence has proven to be an influential tool that can be used to facilitate early screening and enhancing accessibility to healthcare.

The proposed project is an artificial intelligence-based tool that will diagnose the initial appearance of dermatological manifestations with the help of dermoscopic images. The system combines deep learning, transfer learning, and explainable AI to categorize typical skin lesions and give a clear and understandable output to medical personnel. The model consists of the main core, which is constructed on the basis of the pretrained convolutional neural network, supplemented by the large-scale image preprocesses and augmentation methods to increase the generalization. Also, explainability is integrated with Grad-CAM heatmaps that would allow clinicians to see the exact areas of the lesions that the model is basing its predictions on. The system is also expanded with real-time web interface which can make inferences and also provide localized suggestions to local clinics or hospitals.

The experimental analysis on big benchmark dermoscopic data indicates good diagnostic abilities. The accuracy, precision and recall of the proposed model is 92.5, 91.2 and 90.8, the F1-score of the proposed model is 91.0 which surpasses a number of well established baseline architectures. The findings suggest that the invented AI tool could be effective to support early screening and help clinicians to make more reliable and quicker assessments, which eventually leads to the enhancement of dermatological care provision, especially in resource-limited settings.