

# AI DERMATOLOGICAL ASSISTANCE

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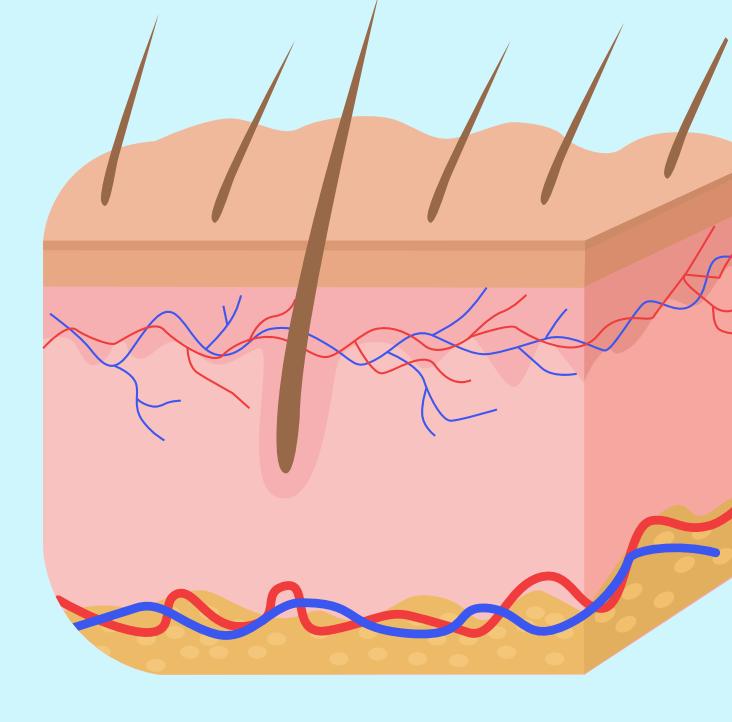
## 1 ABSTRACT

Skin diseases affect over 900 million people globally, but a shortage of dermatologists, high costs, and lack of access in rural areas impede timely diagnosis and treatment. AI and deep learning advancements enable developing automated systems for preliminary skin lesion analysis and probable diagnoses, improving accessibility, reducing costs, and expediting screening, especially in underserved communities.

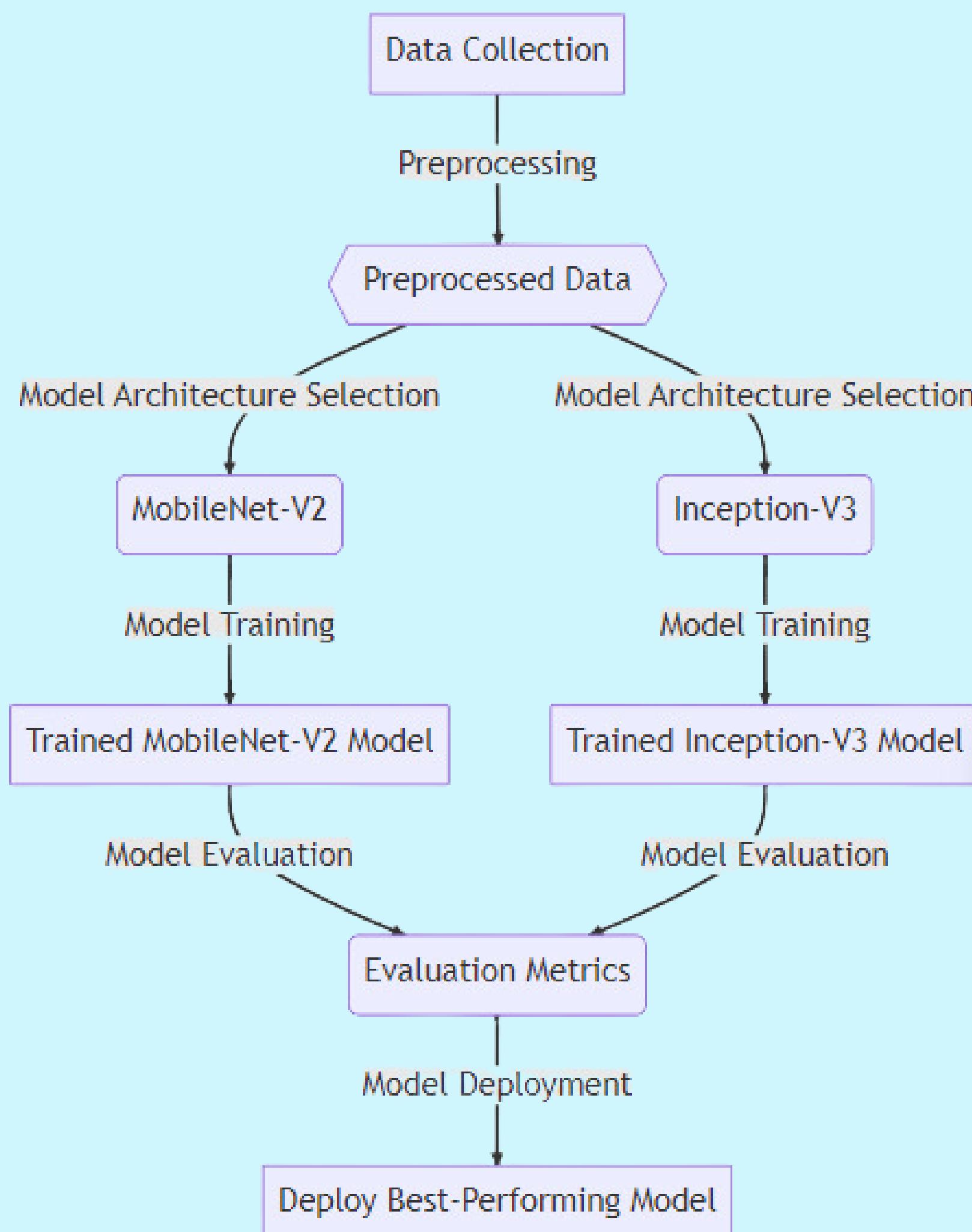
## 2 INTRODUCTION

The goal is to create an accessible and cost-effective solution to address the shortage of dermatologists and improve access to dermatological care.

The project aims to develop an AI-based tool for preliminary diagnosis of various dermatological conditions using deep learning techniques, specifically convolutional neural networks (CNNs).



## 3 METHODOLOGY



### MobileNet-V2:

A lightweight CNN architecture specifically designed for mobile and embedded vision applications, offering a balance between model size and accuracy, making it suitable for resource-constrained devices.

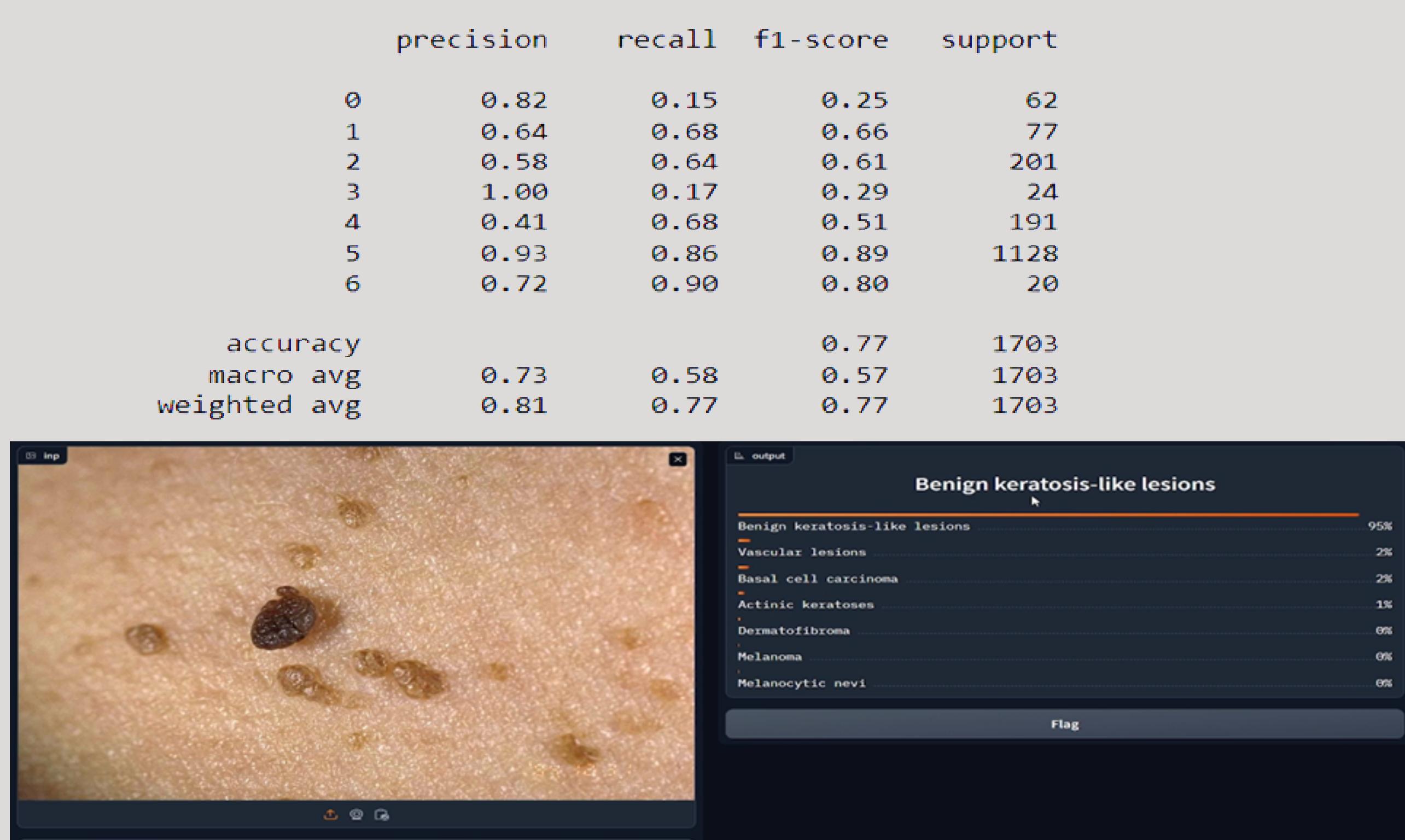
### Inception-V3:

A 48-layer CNN architecture developed by Google, capable of image analysis and object detection with an accuracy of over 78.1% on the ImageNet dataset.



## 4 Results

- Using the MobileNet-V2 pre-trained CNN model, an accuracy of around 77% was achieved on the HAM10000 dataset for classifying the 7 skin disease categories.
- The Inception-V3 pre-trained CNN model also demonstrated good performance, with an accuracy over 75% on the HAM10000 dataset.
- The trained models were integrated into a user-friendly web application interface using Gradio, allowing users to upload skin lesion images and receive the predicted disease classification.



## 5 CONCLUSION

AI/Deep learning revolutionizes dermatology assistance via improved accuracy, efficiency, accessibility, but data quality, interpretability, ethics, clinical integration challenges remain.

### Future Scope:

Improve data diversity, model interpretability. Integrate clinical workflows, ethical frameworks for real-world implementation

## 6 REFERENCES

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