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# DERMDETECT: SKIN CANCER IDENTIFICATION WITH VOICE CHATBOT ASSISTANCE CNN AND RESTNET FOR SKIN CANCER IDENTIFICATION WITH VOICE CHATBOT ASSISTANCE

**Anand Gadge**
**Mahesh Tambe**
**Yash Bhugul**
**Soham Shelke**
Department Of Information Technology D.Y. Patil College Of Engineering Akurdi, Pune-411044, Maharashtra, India 2024-2025

**ABSTRACT**
Dermatology, due to its complexity, remains one of the most challenging fields for accurate diagnosis. Often, diagnosing skin conditions requires multiple tests and relies on practitioner expertise, making it time-consuming and inaccessible for many. This paper proposes an automated image-based system leveraging machine learning to classify and diagnose skin diseases, aiming to reduce dependency on traditional methods. This system enhances the quality of patient care by providing accessible, accurate, and timely skin disease assessments.

## 1. INTRODUCTION
The increasing prevalence of dermatological diseases worldwide necessitates improved diagnostic methods. According to studies, nearly 24% of patients consult general practitioners for skin-related issues each year. With a significant burden on healthcare providers and limited availability of dermatologists, there is a need for an automated system that can assist in early diagnosis and care. This study explores a machine learning-based approach, using convolutional neural networks (CNN), to classify skin diseases accurately, potentially improving treatment outcomes and accessibility.

## 2. LITERATURE REVIEW
1. **Diagnosis of Skin Diseases Using Convolutional Neural Networks** - Jainesh Rathod et al. discussed the need for automated systems in dermatology, suggesting CNN-based classification of skin conditions.
2. **Mobile Skin Cancer Detection** - Cahyo Adhi Hartanto demonstrated the feasibility of early cancer detection using smartphone-based Faster R-CNN and MobileNet models for image classification.
3. **Android Application for Skin Cancer Prediction** - Sneha N. et al. developed a smartphone app for melanoma risk assessment, employing support vector machines for classification.

These studies indicate the effectiveness of machine learning in medical diagnosis and the potential for mobile applications to deliver at-home assessments (Healthcare and skin dis…).

## 3. PROBLEM STATEMENT
Access to dermatology services is limited, with personal consultations often costly and time-consuming. Common skin ailments such as acne, alopecia, and eczema require timely interventions, yet routine check-ups can be a burden for patients. By implementing a machine-learning-based diagnostic system, healthcare access can be extended to local communities, offering instant analysis and recommendations.

## 4. OBJECTIVES
The primary objectives of this research are:

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- To develop an accessible system for early diagnosis of skin conditions.
- To offer healthcare recommendations efficiently through a user-friendly interface.
- To provide immediate consultancy for minor skin health issues, reducing hospital visits.

## 5. METHODOLOGY

### 5.1 System Design

- **Data Acquisition**: The system collects images of skin conditions, either captured via a camera or uploaded from a library.
- **Preprocessing**: The images undergo filtering and enhancement to remove noise, using image processing techniques.
- **Feature Extraction and Classification**: Key features are extracted using Asymmetry, Border, Colour, Diameter (ABCD) methodology, and classified through a CNN model.
- **User Interaction**: The system includes a chatbot module to assist users by answering queries and providing recommendations based on symptom input.

### 5.2 Hardware and Software Requirements

- **Hardware**: Intel i5 Processor, 8GB RAM, 500GB hard disk.
- **Software**: Python with DB SQLite, using the Spyder IDE on a Windows 10 OS (Healthcare and skin dis…).

## 6. ARCHITECTURE

The system consists of two primary components:

1. **Skin Disease Detection Module**: This module uses CNN for image classification, training the model to detect diseases based on visual features.
2. **Chatbot Interface**: Utilizing NLP techniques, the chatbot interacts with users, facilitating easy access to healthcare advice and information retrieval on disease patterns and treatments.

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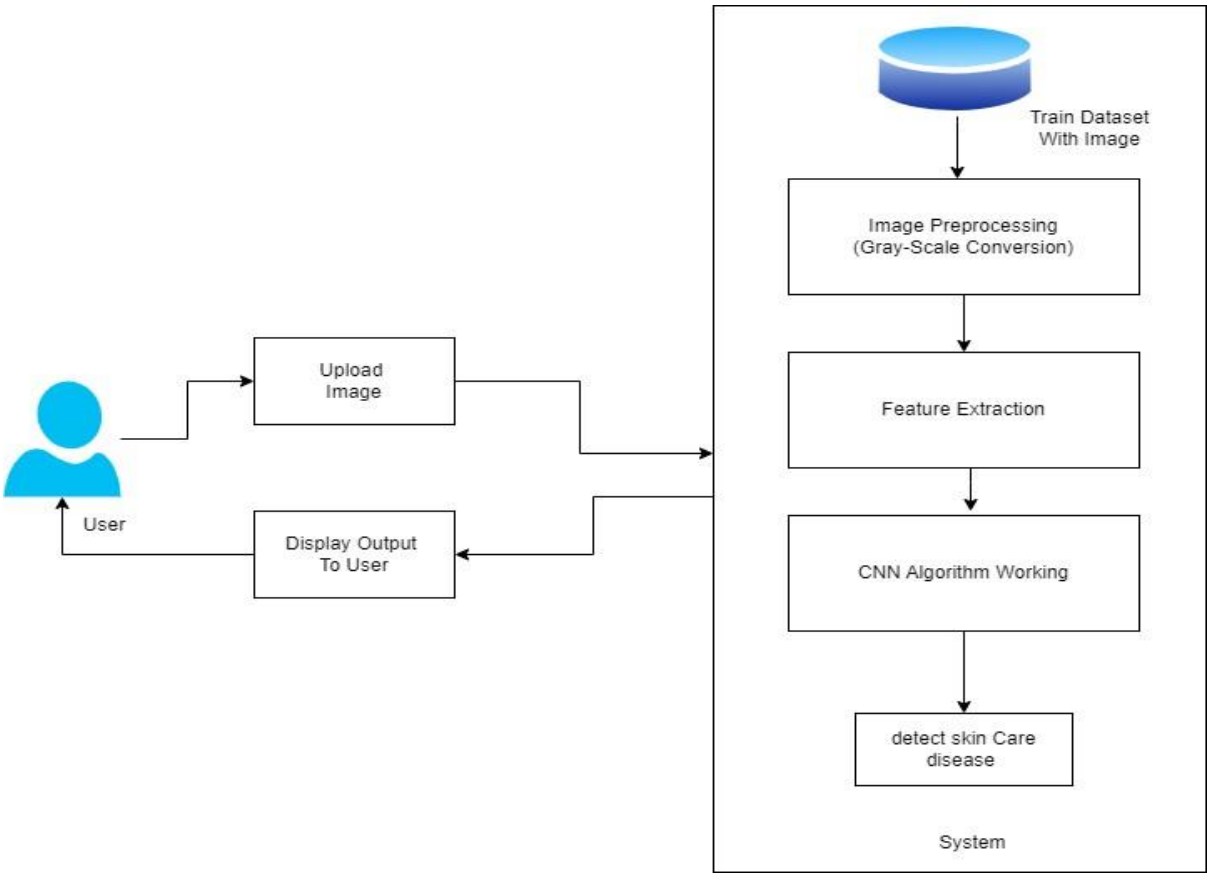


## 7. RESULTS AND DISCUSSION

The system demonstrated a high classification accuracy rate (reported around 88%) when tested on various skin conditions. By enabling users to upload images for analysis, the model provides real-time preliminary diagnostic feedback, promoting early medical consultation. The chatbot enhances user experience by guiding them through the assessment process and offering healthcare insights.

## 8. CONCLUSION

This research demonstrates that skin diseases can be effectively classified using CNN, making dermatological consultations more accessible. The integration of computational techniques into dermatology promises a shift toward digital healthcare, where early diagnosis and quality patient care can be realized without geographic constraints. Future advancements could involve expanding the dataset and improving model accuracy for a broader range of skin conditions, further enhancing this system's utility.

## REFERENCES

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