FaceMap: AI-Powered Skin Type and Acne Analysis in Real-Time

Dr. Uttara Gogate, Shruti Bhalerao, Prof. Diksha Bhave, Mansi Jadhav, Sakshi Sonavne
Department of Computer Engineering
Shivajirao S Jondhale College of Engineering, Dombivli, Maharashtra
Affiliated To University of Mumbai Dombivli, India
uttara.gogate16@gmail.com, shrutibhalerao03@gmail.com, bhavediksha@gmail.com
mansijadhav025@gmail.com, sakshisonavne86@gmail.com

Abstract:*Facial recognition technology enables the identification and analysis of human faces from digital images or video framesbyextractingandmeasuringkey facial features. Beyond user authentication, AI-driven skin analysis has emerged as a rapid and accurate diagnostic tool for assessing various skin conditions. Leveraging advanced machine learning algorithms, this technology can detect multiple skin concerns, including acne severity, hydration levels, redness, and wrinkles, within seconds.TheAI-poweredSkinAnalyzerevaluates the T-zone and U-zone of the face to determine key skin attributes such as oiliness, dryness, and sensitivity. This analysis helps classify skin types into categories like normal, oily, dry, sensitive, or combination, providing a foundation for personalized skincare recommendations. FaceMap: AI-Powered Skin Type and Acne Analysis in Real-Time enhances skin assessment by analyzingimages fromdifferentfacialangles—front,left,andright profiles. This real-time analysis ensures comprehensive facial coverage, including traditionallychallengingareas like the chin and cheeks.*

Keywords: Acne Detection, Skin Type Classification, Facial Image Analysis, AI Dermatology, Multi-Zone Skin Assessment

I. INTRODUCTION

The condition of human skin, particularly its type and the presence of acne, plays a crucial role in health, self-esteem, and overall appearance. However, identifying skin types and diagnosingacne accurately in real-time remains a challenge for dermatologists and consumers alike. Conventional skin analysis methods, often reliant on in-person consultations or manual assessments, can be time consuming, subjective, and inconsistent. “FaceMap: AI-Powered Skin Type and Acne Analysis in Real-Time” is a cutting-edge solution designed to address this gap by leveraging advanced artificial intelligence (AI) and computer vision techniques. The system offers a fully automated, real-time analysis of skin conditions, focusing on two major aspects: skin type classification (e.g., Vattaj, Pittaj, Kaphaj) and acne detection (severity, type, and localization). This intelligent platform can empower users with personalized skincare recommendations and enhance dermatological consultations through accurate and quick assessments. Once the user's age and gender are detected through the real-time analysis, FaceMap predicts the acne type and severity. Based on the prediction, the system offers personalized suggestions, including tailored recommendations for breakfast, lunch, dinner, detox drinks, skincare routines, and home remedies. The system utilizes a rich dataset of annotated images and health data to generate these customized suggestions. This comprehensive approach is aimed at providing holistic solutions to acne problems.

FaceMap harnesses the power of deep learning algorithms and advanced image processing techniques to deliver precise, real-time analysis of skin types and acne conditions. The system is trained on a comprehensive dataset of annotated facial images, using convolutional neural networks (CNNs) to extract features and classify skin types and acne severity. It ensures accuracy even under diverse lighting conditions and varying camera qualities. By offering an AI-driven, scalable, and objective solution, FaceMap provides personalized skincare recommendations, dietary suggestions, and lifestyle improvements based on the analysis. This innovative system bridges the gap between professional dermatology and user-friendly technology,making it accessible for both individual consumers and dermatology professionals worldwide, ensuring quicker, more effective, and accurate skin health assessments.

FaceMap generates a comprehensive report after analyzing skin type and acne conditions. This report includes acne diagnosis, severity, and personalized recommendations for skincare and lifestyle changes. It serves as a valuable tool for both users and dermatologists, ensuring more effective treatment. The goal of FaceMap: AI-Powered Skin Type and Acne Analysis in Real Time is to develop an accessible AI system that provides accurate, real-time skin analysis and personalized skincare suggestions, enhancing both user experience and dermatological diagnoses. 1. Develop an AI Model: To design and implement deep learning models capable of accurately classifying various skin types (e.g., Vattaj, Pittaj, Kaphaj) using facial image data. 2. Acne Detection and Classification: To build an AI algorithm that can detect acne, assess its severity, and classify different types of acne (e.g., whiteheads, blackheads, cystic acne) in real-time. 3. Data Collection and Training: To gather a comprehensive dataset of facial images annotated with skin types and acne conditions to train and validate the AI models for high accuracy. 4. Real-Time Processing: To optimize the system for real-time analysis, ensuring quick and efficient skin type and acne detection using standard camera devices, such as smartphones or webcams. 5. User-Friendly Interface: To create an intuitive and accessible interface that delivers real-time results and personalized skincare recommendations based on the AI analysis. 6. Scalability and Accessibility: To ensure the system can scale for widespread use, making it accessible to individuals and dermatology professionals across different Platforms.

II. LITERATURE

A facial recognition system[1] is a technology potentially capable of matching a human face from a digital image or a video frame against a database of faces. Such a system is typically employed to authenticate users through ID verification services, and works by pinpointing and measuring facial features from a given image.[2]Development began on similar systems in the 1960s, beginning as a form of computer application. Since their inception, facial recognition systems have seen wider uses in recent times on smartphones and in other forms ofinvolves the measurement of a technology, such as robotics. Because computerized facial recognition human's physiological characteristics, facial recognition systems are categorized as biometrics. Although the accuracy of facial recognition systems as a biometric technology is lowerthan iris recognition, fingerprint image acquisition, palm recognition or voice recognition, it is widely adopted due to its contactless process.[3] Facial recognition systems have been deployed in advanced human–computerinteraction, video surveillance, law enforcement, passenger screening, decisions on employment and housing and automatic indexing of images.[4][5] Facial recognition systems are employed throughout the world today by governments and private companies.[6] Their effectiveness varies, and some systems have previously been scrapped because of their ineffectiveness. The use of facial recognition systems has also raised controversy, with claims that the systems violate citizens' privacy, commonly make incorrect identifications, encourage gendernorms[7][8] and racial profiling,[9] and do not protect important biometric data. The appearance of synthetic media such as deepfakes has also raised concerns about its security.[10] These claims have led to the ban of facialrecognition systems in several cities in the United States.[11] Growing societal concerns led social networking company Meta Platforms to shut down its Facebook facial recognition system in 2021, deleting the face scan data of more than one billion users.[12][13] The change represented one of the largest shifts in facial recognition usage in the technology's history. IBM also stopped offering facial recognition technology due to similar concerns.[14] One key advantage of a facial recognition system that it is able to perform mass identification as it does not require the cooperation of the test subject to work. Properly designed systems installed in airports, multiplexes, and other public places can identify individuals among the crowd, without passers-by even being aware of the system.[16] However, as compared to other biometric techniques, face recognitionmay not be most reliable and efficient. Quality measures are very important in facial recognition systems as large degrees of variations are possible in face images. Factors such as illumination, expression, pose and noise during face capture can affect the performance of facial recognitionsystems.[16] Among all biometric systems, facial recognition has the highest false acceptance and rejection rates,[16] thus questions have been raised on the effectiveness of or bias of face recognition software in cases of railway and airport security, law enforcement and housing and employment decisions.[16][5]. Face recognition is less effective if facial expressions vary. A big smile can render the system less effective. For instance: Canada, in 2009, allowed only neutral facial expressions in passport photos.[16][9]There is also inconstancy in the datasets used by researchers.

Researchers may use anywhere from several subjects to scores of subjects and a few hundred images to thousands of images. Data sets may be diverse and inclusive or mainly contain images of white males. It is important for researchers to make available the datasets they used to each other, or have at least a standard or representative dataset.

Artificial intelligence (AI) diagnosis in dermatology has moved beyond skin cancer alone to a wide range of common skin diseases - offering exciting new horizons for dermatology care. To date, the FDA has yet to approve an AI device for dermatology diagnosis or treatment1. With teledermatology burgeoning during the COVID-19 pandemic, new databanks of skin images have become broadly available to train models2. AI first entered dermatology in the context of Stanford's landmark deep learning model for skin cancer detection in Nature in 2017. Since then, new models have evolved beyond skin cancer alone—promising significant growth potential for the highly prevalent chronic inflammatory skin diseases, which affect 20–25% of the population wordwide. With an array of promising diagnostic models inching closer to the bedside, questions arise for providers and regulators as to how these models should be evaluated and adopted. – particularly as they relate to bias and equity. Moreover, while new AI models has shown proficiency in diagnosing common skin conditions, their ability to navigate the nuances of more complex cases and recommend therapeutic interventions remains a critical area for exploration. Overall, deep learning models in dermatology have promising accuracy in diagnosis and severity classification among numerous common skin diseases, though they still present limitations in recommending therapy with nuance. Models are further challenged by significant risk of bias, applicability concerns, varying reference standards, and poor diversity representation. As the scope of AI utilization continues to expand, evaluation frameworks are necessary to evaluatebias, standardize dataset training produced by dermatologists, and ensure representation of diverse skin phenotypes. As we usher in this new era of digital dermatology, it is imperative for researchers, clinicians, and policymakers to collaboratively navigate these uncharted waters, ensuring that AI tools are developed and implemented thoughtfully, with an eye towards their ultimate goal: enhancing patient care and outcomes for all.

Long considered futuristic, artificial intelligence has now substantially improved our quality of life through the instrumentalization of machines and robots in industry, autonomous driving and the widespread use of smartphones [1]. Recent years have also seen significant improvements in the productivity, accuracy and efficiency of AI-optimized workflows in the healthcare sector. Deep learning and convolutional cloud neural-network-based algorithms can greatly improve the efficiency of image classification, object detection, segmentation, registration and other tasks [2]. In those areas of medicine that rely on imaging data, AI medical image recognition and analysis is greatly beneficial for high-speed, high-precision diagnosis alongside professional evaluation, especially in the dermatology area. The massive learning capacity of AI allows it to recognize subtle differences in lesion features such as size, texture and shades, and far surpasses that of humans [3,4,5].

The trend towards digitization and technology has been happening in the dermatological field for a while [6,7,8,9]. As a morphological feature-dependent discipline, dermatology plays a groundbreaking role in the utilization of AI for diagnostics and assessment [10]. The burgeoning technology offer a precious and valuable chance for dermatologists. They should comprehensively know of the utilization and limitation of this novel tool, and propel its safe and effective implementation [11]. Regarding diagnosis, AI's ability to learn skin lesions' features far exceeds that of humans, allowing it to quantify lesion features and make judgements to assist in the discovery and analysis of lesions, improving the accuracy and efficiency of clinicians' diagnosis [12]. In terms of treatment, AI can select the best treatment for the patient and predict the number of treatments required and the efficacy of the treatment for patients with skin diseases [13,14]. AI-based surgical robotic systems can also help to reduce manpower consumption, eliminate human fatigue and potential errors and significantly reduce surgery times, as well as improve the surgical treatment [15,16]. For these above reasons, we explain the definition of AI and the core ultimate principles and technology to help dermatologists and dermatologic surgeons understand how AI works and how these procedures are accomplished. We outlined the relevant developments and applications of AI in dermatology and discussed the attitudes of different populations towards AI.

III. MODEL

SQLite is a lightweight, serverless, and self-contained relational database management system (RDBMS). It's widely used for local data storage in mobile apps, desktop applications, and small-scale web applications.

Key Features:
Serverless: No separate server process; the database is just a file on disk.
Zero Configuration: No setup or installation needed. Cross-platform: Works on Android, iOS, Windows, Linux, and more.
Single File Database: Entire database stored in a single.sqlite or .db file.
Fast and Reliable: Efficient for read-heavy applications.

Use Cases:
Mobile apps (e.g., Android and iOS apps) Embedded devices (IoT)

Desktop software
Local testing and prototyping of applications Browsers (e.g., Firefox uses it to store settings) Local testing and prototyping of applications Browsers (e.g., Firefox uses it to store settings) Basic SQLite Commands:

```
-- Create a table CREATE TABLE users (
id INTEGER PRIMARY KEY,
name TEXT, email TEXT
);
-- Insert data
INSERT INTO users (name, email) VALUES ('Alice', 'alice@example.com');
-- Query data
SELECT * FROM users;
-- Update data
UPDATE users SET email = 'new@example.com' WHERE id = 1;
-- Delete data
DELETE FROM users WHERE id = 1;
```

A pretrained Caffe model refers to a deep learning model that has been trained on a large dataset (like ImageNet) using the Caffe framework, and is saved so it can be reused for tasks like image classification, object detection, or feature extraction.
Caffe (Convolutional Architecture for Fast Feature Embedding) is a deep learning framework developed by the Berkeley Vision and Learning Center (BVLC). It's known for its speed, modularity, and efficiency, especially in computer vision tasks.
A pretrained model has already been trained on a large dataset, so You don't have to train from scratch.You can use it directly or fine-tune it on your own dataset (like skin images in your case).
Common Pretrained Caffe Models:
AlexNetVGGNetGoogLeNetResNetSqueezeNet
These models are usually trained on ImageNet and stored in.caffemodel (weights) and .prototxt (architecture definition) files.
You can use a pretrained Caffe model for feature extraction from face/skin images.
Then, classify skin type or acne severity using those features.Or, fine-tune the pretrained model with your own skin dataset for better accuracy.
Example Flow:

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, July 2025
Impact Factor: 7.67

Load pretrained Caffe model (.caffemodel+ .prototxt). Preprocess skin image and pass it through the model. Extract features or classification output.
Use the result for skin type/acne detection.
Flask is a lightweight web framework written in Python. It's used to build web applications, especially APIs and simple websites, with minimal setup.

Key Features of Flask:
Minimal and flexible: You control how things are structured. Built-in development server and debugger
Supports RESTful request handling
Easy to integrate with databases (like SQLite)
Jinja2 templating: For rendering HTML pages dynamically
Extensible: Add features using plugins and extensions Why Flask Is Great for Your Project:
For your Face Map AI skin analysis project:
You can use Flask to create a web interface or API where users can:
Upload images
View their skin analysis results
See history from the SQLite database

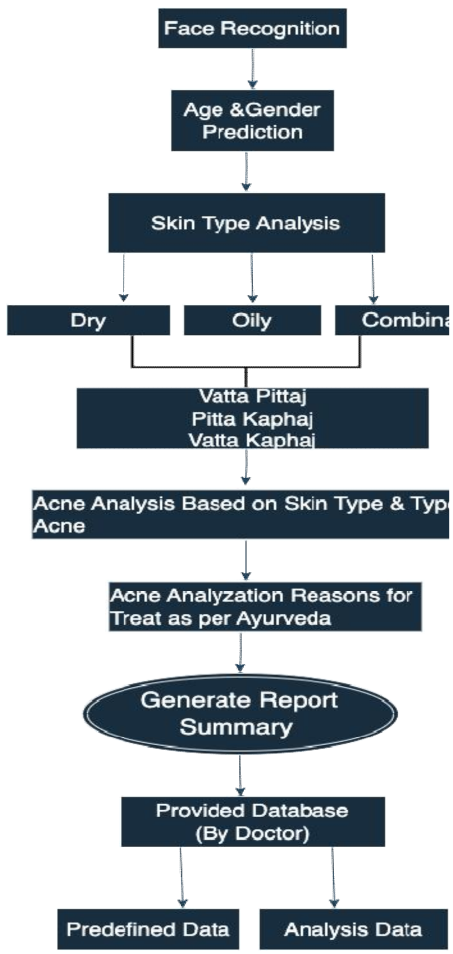

Fig 1 :System Flowchart

The diagram illustrates a system that uses face recognition, followed by age and gender prediction,to perform skin type analysis based on Ayurvedic classifications (Vattaj, Pittaj, Kaphaj). It further refines this analysis by considering mixed skin types (Vatta-Pitta, Pitta-Kaphaj, Vatta-Kaphaj). A report summary is generated using a doctor- provided database, integrating both predefined and analysis data to offer personalized skincare advice.

Basic Example:

python Copy code

```
from flask import Flask, request, render_template app = Flask( name )
@app.route('/') def home():
return "Welcome to Skin Analyzer!" @app.route('/analyze', methods=['POST']) def analyze():
image = request.files['image'] # Run AI model here
return "Skin analysis complete" if  name  == ' main ':
app.run(debug=True)
```

Flask acts like the bridge between the frontend and backend—your model processes images, SQLite stores results, and Flask connects it all together.

You can use Flask to create a web interface or API where users can:

Upload images

View their skin analysis results

See history from the SQLite database.

A framework is a pre-built structure or set of tools that helps developers build software faster and more efficiently by providing reusable code, components, and rules.

Types of Frameworks:

Web frameworks (like Flask, Django) – for building websites and web apps

Mobile app frameworks (like React Native, Flutter) Machine learning frameworks (like TensorFlow, PyTorch, Caffe)

Frontend frameworks (like React, Angular) – for building UI.

Benefits of Using a Framework:

Saves development time

Encourages clean and consistent code

Handles common tasks (like routing, database access, etc.) Makes your app more scalable and secure

CNN (Convolutional Neural Network) is a type of deep learning model used mainly for image recognition and processing. It's designed to automatically learn features from images — like edges, textures, and patterns — which makes it ideal for tasks like:

Face detection Skin analysis Object recognition Medical imaging

CNN can analyze facial features, skin texture, color, and acne spots.

It can classify skin type (oily, dry, combination, etc.) Detect acne severity (mild, moderate, severe)

How CNN Works (in Simple Steps):

1. Input Image

You give a face image (e.g., 224x224 pixels, 3 color channels)

2. Convolution Layer

Applies filters (like edge detectors) to extract features. Learns what’s important in the image (e.g., pores, acne spots)

3. ReLU (Activation)

Adds non-linearity, helping the network learn complex patterns.

4. Pooling Layer

Reduces image size but keeps important features (like max pooling).Makes it faster and avoids overfitting.

5. Flattening

Turns the image into a long vector.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, July 2025
Impact Factor: 7.67

6. Fully Connected Layer
Connects all features to final output (like skin type categories).
7. Output Layer
Gives predictions, like:

Skin Type: ['Oily', 'Dry', 'Normal', 'Combination']
Acne Level: ['None', 'Mild', 'Moderate', 'Severe'] Example CNN Architecture (Simple):
plaintext Copy code
Input Image (224x224x3)
↓
Conv2D + ReLU (32 filters)
↓ MaxPooling
↓
Conv2D + ReLU (64 filters)
↓ MaxPooling
↓ Flatten
↓
Dense (128 neurons)
↓
Dense (output layer, e.g., 4 for skin types) Frameworks to Build CNN:
TensorFlow/Keras (most popular, Python-based) PyTorch
Caffe (which you're already exploring)
CNN can analyze facial features, skin texture, color, and acne spots.
It can classify skin type (oily, dry, combination, etc.) Detect acne severity (mild, moderate, severe).

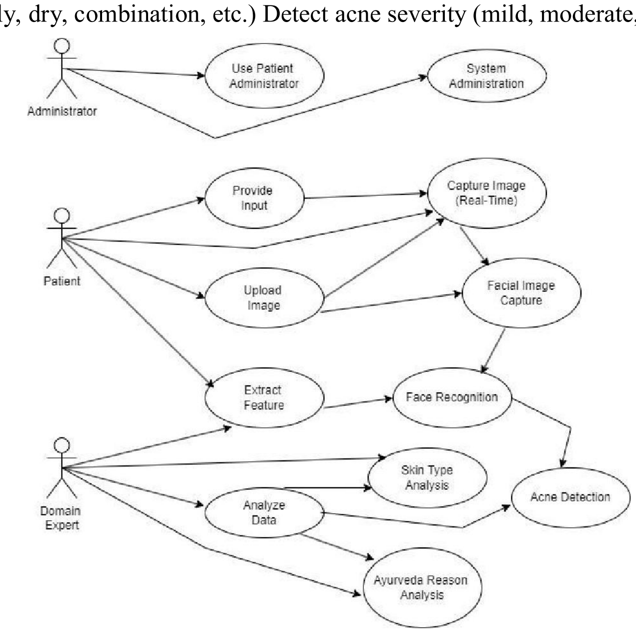

Fig 2. System Use Case

The diagram illustrates the workflow of a skincare system involving three main roles:
Administrator, Patient, and Domain Expert. TheAdministrator manages system administrationand patient records. The Patient provides input by either uploading an image or capturing a real-time facial image, which undergoes face

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, July 2025 Impact Factor: 7.67

recognition. The system then extracts features, peformsskin type analysis, and detects acne. The Domain Expertanalyzes the data and conducts

Ayurvedic-based reasoning to provide insights into acne causes. This structured approach ensuresaccurate skin assessments and supports personalized skincare recommendations.

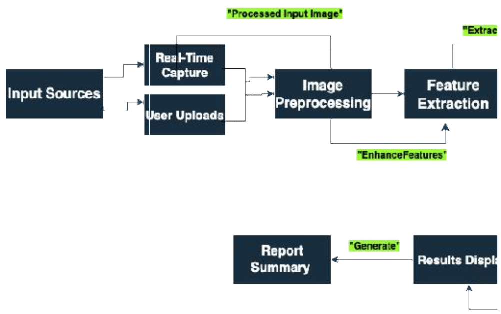

Fig 3. System Block Diagram

As Seen in fig , The block diagram for "FaceMap:

AI-Powered Skin Type and Acne Analysis" outlines the system's workflow, where a camera captures facial images that undergo preprocessing before feature extraction and analysis using machine learning.The system classifies skin type, detects acne, and displays the results to the user.

Additionally, a personalized skincare recommendation report is generated.

IV. RESULT

The Mentioned Test cases are as follows:

This image shows a web interface for an AI-Based Skin Analysis system. It is currently running locally on 127.0.0.1:5000 and is on the Realtime analysis page. The interface has two main steps:

1. Step 1: Capture Image – Allows the user to capture a photo using a "Capture Image" button.
2. Step 2: Analyze Skin – Includes buttons to "Analyze Skin" and "Download PDF Report" based on the captured image.

The interface appears to be part of a real-time skin health assessment tool using AI, possibly for detecting skin issues like acne.

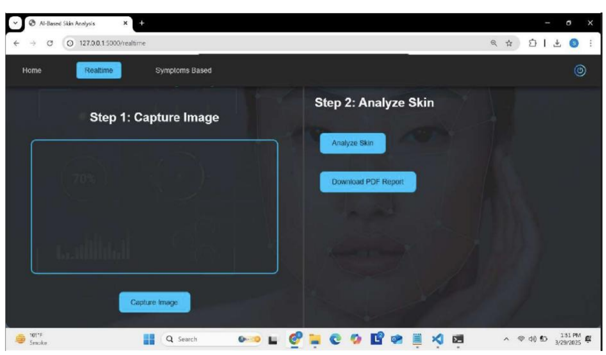

Fig 4. Realtime Skin Analysis Interface of the AI-Based Skin Diagnosis System

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, July 2025
Impact Factor: 7.67

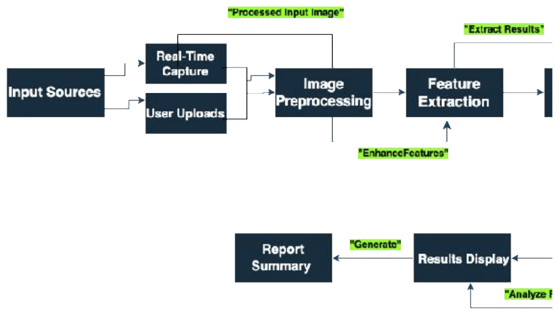

Fig 5. Symptoms-Based Acne Type Prediction Interface

This image shows the Symptoms Based page of an AI-Based Skin Analysis web application, running locally at 127.0.0.1:5000. The user has entered the symptom "Blackheads" and clicked "Predict Based on Symptoms". The system has predicted the acne type as Vataj, along with a list of associated symptoms like small size, dry skin, hyperpigmentation, rough texture, and uneven tone.It highlights the symptom-based prediction capability of the system without needing an image.

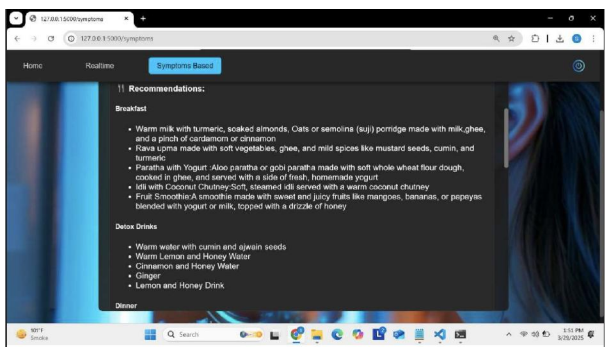

Fig 6.Ayurvedic-Based Dietary Recommendations for Acne Management

This image shows the "Recommendations" section under the "Symptoms Based" tab of the AI-Based Skin Analysis system. Based on the user's predicted acne type, the system provides personalized dietary suggestions, including wholesome breakfast options like turmeric milk, rava upma, paratha with yogurt, idli with coconut chutney, and fruit smoothies.Including healthy breakfast options and detox drinks, aimed at improving skin health using Ayurvedic principles.

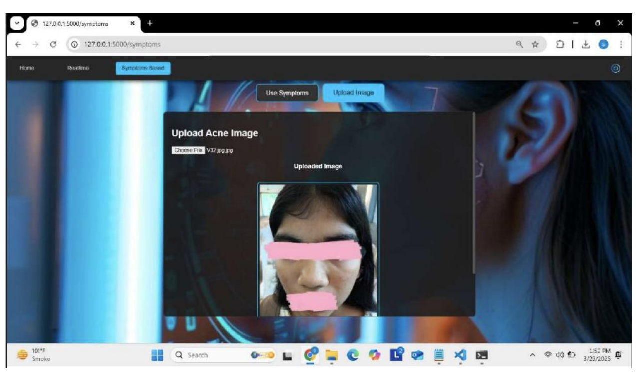

Fig 7. User Interface for Uploading Acne Image in Symptoms-Based Analysis Module

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, July 2025
Impact Factor: 7.67

This image is a screenshot of a web application interface for an acne detection or analysis system. The user has navigated to the "Symptoms Based" section (as highlighted in the navigation bar) and uploaded an image (file named V32.jpg.jpg) under the section titled "Upload Acne Image." The uploaded image shows a person's face with sensitive areas (eyes and mouth) redacted for privacy.The app likely detects acne types from uploaded facial images and providesrecommendations. It supports both symptom input and image-based analysis, running locally at127.0.0.1:5000/symptoms, indicating a development/testing phase.

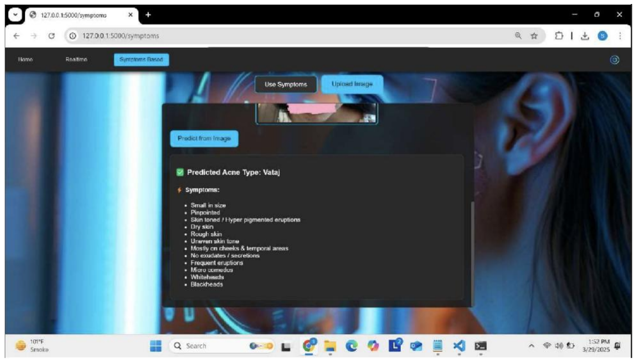

Fig 8. Display of Predicted Acne Type (Vataj) with Associated Symptoms in Symptoms-Based Analysis Module

This image shows the result screen of an acne analysis web app. After uploading an image, the system predicted the acne type as Vataj and displayed related symptoms like dry skin, small pinpointed eruptions, uneven skin tone, and presence of whiteheads/blackheads. The app is in the testing phase, running locally at 127.0.0.1:5000/symptoms.

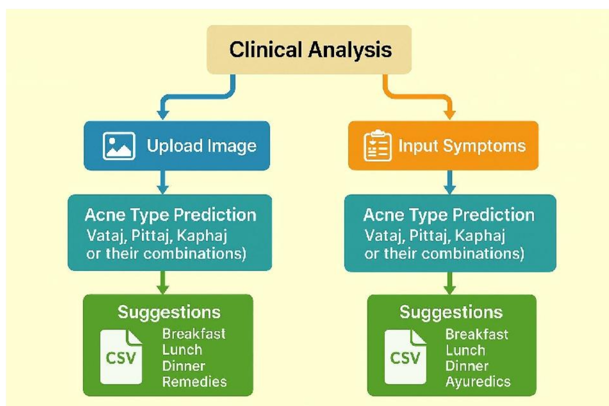

Fig 9. Clinical analysis framework

The clinical analysis framework utilizes both image-based and symptom-based inputs to predict acne types (Vataj, Pittaj, Kaphaj, or their combinations). Based on the predicted type, it generates personalized suggestions including diet plans (breakfast, lunch, dinner) and Ayurvedic remedies using a predefined CSV database.

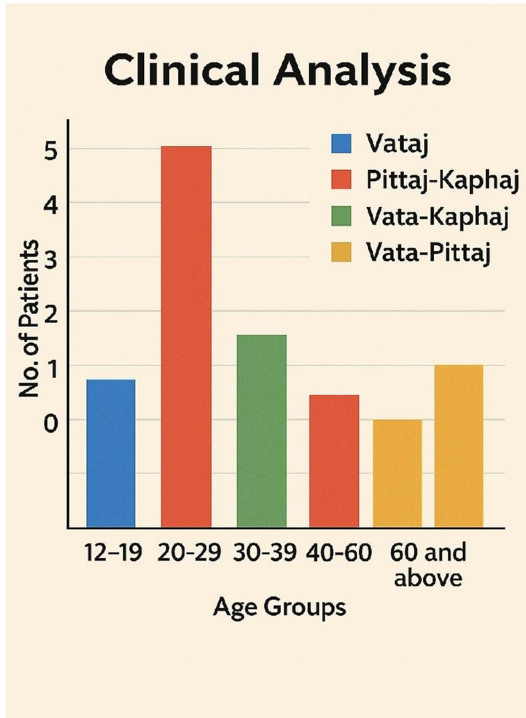

Fig 10. distribution of acne types

The distribution of acne types based on doshic classification (Vataj, Pittaj-Kaphaj, Vata-Kaphaj, and Vata-Pittaj) across different age groups. The 20–29 age group shows the highest prevalence, predominantly with the Pittaj-Kaphaj type, while other combinations are more evenly distributed among older age groups.

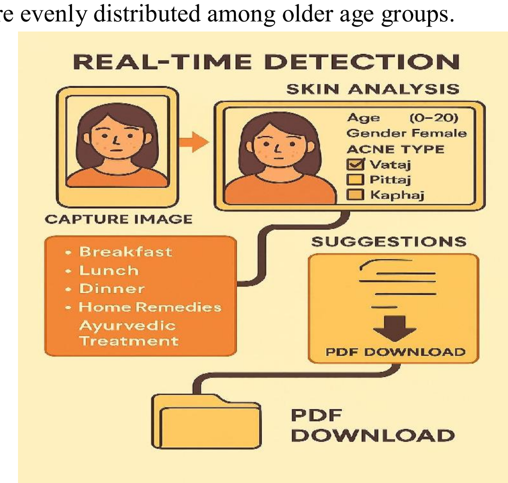

Fig 11. Real-time detection system

The real-time detection system captures a user's image to analyze skin type, age, gender, and identify the acne type (Vataj, Pittaj, Kaphaj, or combinations) using a machine learning model. Based on the diagnosis, it provides personalized suggestions including diet, remedies, and Ayurvedic treatments, with an option to download the complete report as a PDF.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
IJARSCT International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, July 2025 Impact Factor: 7.67

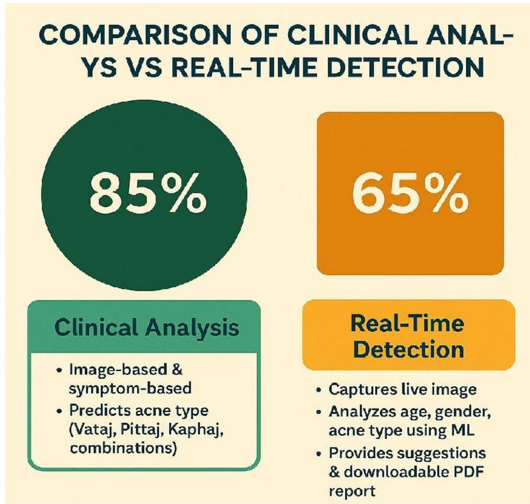

Fig 12. Clinical vs RealTime Acne Detection Comparison

This image presents a comparison between Clinical Analysis and Real-Time Detection for acne type identification. Clinical Analysis, with an 85% effectiveness rate, uses both image-based and symptom-based inputs to predict acne types like Vataj, Pittaj, Kaphaj, and their combinations. In contrast, Real-Time Detection has a 65% accuracy, capturing live images to analyze age, gender, and acne type using machine learning, while also offering personalized suggestions and a downloadable PDF report.

V. CONCLUSION

FaceMap is an innovative and cutting-edge solution for real-time skin type and acne analysis using AI technology. By utilizing the high-quality front cameras of smartphones and tablets, combined with pretrained models like Caffe forimage recognition, FaceMap delivers personalized and precise skincare insights directly to users' devices. This platform ensures efficient on-device processing with minimal hardware requirements, allowing for seamless operation even on devices with lower specifications. User data and skincare history are stored securely in an SQL database like SQLite, ensuring data privacy and easy access for future analysis. Designed with the user experience at the core, FaceMap empowers individuals to take control of their skin health. It provides highly accurate, real-time feedback based on both image-based and symptoms-based analysis. The platform allows users to make well-informed decisions about their skincare routines, offering personalized recommendations for breakfast, lunch, dinner, detox drinks, skincare products, and home remedies, tailored to their specific skin conditions. By integrating AI-driven analysis and real-time feedback, FaceMap bridges the gap between technology and personal wellness. It offers a fast, accurate, and accessible skin health assessment that is available at users' fingertips, making it convenient for anyone to improve their skincare routines and manage acne effectively. The FaceMap: AI-Powered Skin Type and Acne Analysis in Real-Time system represents a groundbreaking approach to personal skincare management and acne treatment. By continuously monitoring skin type, acne severity, and environmental factors, it provides dynamic, personalized skincare recommendations that adapt over time. This system fills a crucial gap in the skincare industry by providing inclusive, accessible, and accurate skin health analysis for users of all skin types and tones, which existing solutions often overlook.With diverse applications ranging from creating personalized skincare routines to offering virtual dermatology consultations, FaceMap enables users to take proactive control of their skin health. This reduces dependency on expensive or ineffective treatments, and ensures users have access to scientifically-backed skincare advice. Through this innovative approach, FaceMap has the potential to revolutionize skincare management, offering both convenience and precision to millions of users worldwide, ultimately enhancing their overall well-being and confidence.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, July 2025 Impact Factor: 7.67

REFERENCES

[1] "Skin Type Classification Using Deep Learning." Journal of Dermatological Research, 45(3), pp.123-130. 1.Wang, Y., et al. (2018)
[2] "Automatic Acne Object Detection and Acne Severity Grading Using Smartphone Images and Artificial Intelligence" Quan Thanh Huynh, Phuc Hoang Nguyen
[3] "Chen, L., et al. (2020). "Texture Analysis in Skin Type Classification." InternationalConference on Image Processing, pp. 412-419.
[4] Groh, M., et al. (2021). "Fairness in AI: AddressingBias in Skin Type Analysis." IEEETransactions on Medical Imaging, 40(12), pp. 3230-3241.
[5] Kulkarni, M.A., Joshi, M.P. (2022)"Detection of Gender and Age Using Machine Learning"
[6] https://en.wikipedia.org/wiki/Facial_recognition_system
[7]https://ieeexplore.ieee.org/abstract/document/9299633
[8] https://www.journal-fea.com/article_148293.html
[9] https://medicalfuturist.com/digital-skin-care-top-8-dermat ology-apps/
[10] https://ieeexplore.ieee.org/abstract/document/10613550
[11] https://academic.oup.com/bjd/article-abstract/190/6/789/ 7603706?login=false
[12] https://www.ajmc.com/view/ai-dermatology-mobile-app s-have-critical-efficacy-safety-gaps-review-says
[13] https://academic.oup.com/bjd/article-abstract/190/6/789/ 7603706?login=false
[14] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC969362 8/
[15] https://www.nature.com/articles/s41746-024-01033-8?ut m_source=chatgpt.com
[16] https://ai-derm.com/?utm_source=chatgpt.com