**Synopsis Document for PBL**

**of**

**Bachelors of Computer Application (Cloud Computing)**

**in**

**“SKIN GPT”**

**Submitted to**



**SAGE UNIVERSITY**

**BHOPAL (M.P.)**

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**Statement about the Problem**

Skin diseases are one of the most common health issues affecting people of all ages globally. According to the World Health Organization, around 2 billion people worldwide are affected by dermatological conditions, ranging from mild skin conditions to severe diseases like skin cancer. Early diagnosis and treatment of skin diseases are essential for better patient outcomes, but there is often a shortage of dermatologists, especially in rural areas.

To address this problem, an AI-based skin disease detection app can be developed that can help people identify and diagnose skin diseases with high accuracy and speed. The app would allow users to take a photo of the affected area and use AI algorithms to detect and diagnose the skin condition. The app would also provide information on the disease, possible causes, and treatment options.

However, developing an AI-based skin disease detection app poses several challenges. One of the main challenges is collecting and annotating a large dataset of skin images to train the AI model. Another challenge is ensuring the accuracy and reliability of the AI model, as misdiagnosis could have serious consequences. Additionally, privacy concerns must be addressed as skin images can be sensitive information.

Overall, the development of an AI-based skin disease detection app has the potential to revolutionize dermatological care by providing faster, more accessible, and more accurate diagnoses. It could also help address the shortage of dermatologists in certain regions and improve patient outcomes.

**Why is the particular topic chosen?**

Skin diseases are prevalent worldwide, affecting millions of people each year. The early detection and treatment of skin diseases are crucial to prevent further complications and improve the quality of life for patients. Unfortunately, the traditional method of skin disease diagnosis involves manual inspection by a dermatologist, which is time-consuming and costly. Moreover, there is a shortage of dermatologists in many parts of the world, particularly in rural and remote areas, leading to delayed diagnosis and treatment.

The development of artificial intelligence (AI) has revolutionized the healthcare industry, particularly in the field of disease diagnosis. AI has the potential to accurately detect skin diseases using images of skin lesions, which can be captured using a smartphone camera. The integration of AI in a mobile application can provide an efficient and cost-effective solution for early skin disease detection, enabling individuals to receive prompt medical attention and treatment.

Therefore, the topic of a skin disease detection AI app has been chosen to address the need for an accessible, convenient, and accurate skin disease diagnosis tool that can be used by individuals in any part of the world. The proposed AI app will use a deep learning algorithm to analyze images of skin lesions, compare them to a database of known skin diseases, and provide a diagnosis with a high degree of accuracy. The app will also provide recommendations for treatment and connect users with dermatologists for further evaluation if necessary.

Overall, the skin disease detection AI app has the potential to significantly improve the diagnosis and treatment of skin diseases, particularly in areas with limited access to healthcare services. The app can also help raise awareness about skin diseases and empower individuals to take control of their health.

**Objective and Scope of the Project**

**Objective**

The objective of the skin disease detection AI app is to provide a user-friendly and efficient tool for detecting various skin diseases using artificial intelligence. The app aims to make the diagnosis process faster and more accurate, allowing for early detection and prompt treatment of skin conditions.

**Scope**

The skin disease detection AI app will primarily focus on identifying common skin diseases such as acne, psoriasis, eczema, and skin cancer. The app will analyze images of the affected area and provide the user with a diagnosis and recommended course of action. The scope of the app includes providing educational resources and information about various skin conditions, as well as the ability to book appointments with dermatologists if needed.

The app will also have a user-friendly interface that allows for easy navigation and interaction with the features. Users will be able to upload images of their skin condition and receive immediate feedback on their diagnosis. Additionally, the app will have a feature that allows users to track the progression of their condition over time.

The skin disease detection AI app will be developed with the latest advancements in artificial intelligence and machine learning. The app will use algorithms that can accurately detect and classify skin conditions based on the input image. The app will also continuously learn and improve its accuracy over time as more data is inputted into the system.

The target audience for the skin disease detection AI app includes individuals who are concerned about their skin health and want a convenient and reliable tool to monitor and diagnose their skin conditions. The app will also be useful for medical professionals, including dermatologists and primary care physicians, as a tool for diagnosing and tracking skin conditions.

In summary, the skin disease detection AI app aims to provide a convenient and reliable tool for the early detection and diagnosis of various skin conditions using the latest advancements in artificial intelligence and machine learning. The app's scope includes providing educational resources and information about various skin conditions, as well as the ability to book appointments with dermatologists if needed. The target audience includes individuals concerned about their skin health and medical professionals.

**Methodology**

The methodology of the skin disease detection AI app involves several key steps.

Data Collection: The first step is to collect a large dataset of images of skin diseases. This dataset can be obtained from publicly available sources or by partnering with hospitals and dermatologists to collect images. The dataset should be diverse and contain images of a wide range of skin diseases.

Data Preprocessing: Once the dataset is collected, it needs to be preprocessed to prepare it for training the AI model. This includes resizing the images, converting them to grayscale, and normalizing the pixel values.

Model Training: The next step is to train an AI model on the preprocessed dataset. This involves using a convolutional neural network (CNN) to learn features from the images and classify them into different skin diseases. The CNN can be trained using a variety of techniques, including transfer learning, where a pre-trained model is used as a starting point and fine-tuned for skin disease detection.

Testing and Validation: After training the model, it needs to be tested and validated to ensure it is accurate and reliable. This involves using a separate dataset of images to test the model's performance and measure its accuracy, precision, and recall.

Deployment: Finally, the AI model can be deployed in the form of a skin disease detection app. The app should be user-friendly and allow users to upload images of their skin to get a diagnosis. The app should also provide additional information about the skin disease, such as its symptoms, causes, and treatment options.

Overall, the methodology of the skin disease detection AI app involves collecting a diverse dataset of skin disease images, preprocessing the data, training an AI model using a CNN, testing and validating the model, and deploying the model in the form of a user-friendly app. This approach has the potential to improve the accuracy and accessibility of skin disease diagnosis and help patients receive timely treatment.

**Hardware & Software to be Used**

**Hardware**

* RAM - 4 GB
* Processor - i3 (min)

**Software**

* Operating System - Android(10 and above), Windows(10 and above)

**What contribution would the project make?**

The skin disease detection AI app has the potential to make a significant contribution in the field of dermatology and public health. By providing accurate and efficient skin disease diagnosis, the app can improve early detection of skin diseases, which is essential for timely and effective treatment. This can ultimately improve the quality of life of patients and reduce healthcare costs.

In addition, the app can also provide a cost-effective solution to the shortage of dermatologists in certain regions, especially in rural or underserved areas. By using the app, patients can receive an initial diagnosis without having to travel to a specialist, which can save time and money.

Furthermore, the app can also contribute to medical research by collecting and analyzing data on skin diseases. The app can track the frequency and prevalence of different skin diseases, which can help researchers identify patterns and risk factors, and ultimately lead to the development of more effective treatments.

Overall, the skin disease detection AI app has the potential to improve patient outcomes, reduce healthcare costs, and contribute to medical research.

**The Schedule of Project**

**[Gantt Chart/ PERT Chart]**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TASK | Date | Abhimanyu | Rajul | Hardik |
| Concept  Development | 10-04-23 to 12-04-23  13-04-23 to 15-04-23 | Django  Android Studio | Pandas and Numpy  Artificial Intelligence and Machine Learning | Pandas and Numpy  Artificial Intelligence and Machine Learning |
| Research and data collection | 24-04-23 to  25-04-23 | Skin diseases different images | Details related to skin diseases | Details related to skin diseases |
| User interface design | 26-04-23 to  03-05-23 | Designing of the app | Designing of the app |  |
| App devlopment and testing | 04-05-23 to  10-05-23 |  |  |  |
| Integration with AI model | 11-05-23 to  15-05-23 |  |  |  |
| Quality assurance and bug fixing | 16-05-23 to  20-05-23 |  |  |  |

**References**

* <https://archive.ics.uci.edu/ml/index.php>
* <https://www.kaggle.com>