**Skin Disorders**

**Team ID**: - PTID-CDS-MAR-24-1874

**Project** ID: - PRCP-1027

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**Objective**: - The objective of this project is to develop a machine learning model to classify skin disorders based on clinical features and medical data. The project aims to explore various classification algorithms and evaluate their performance to assist in automated diagnosis and risk assessment of skin disorders.

**Abstract:** - This project aimed to develop a machine learning model for classifying skin disorders based on clinical features and medical data. The project began with an exploratory data analysis (EDA) process to understand the characteristics of the skin disorder dataset. Various data preprocessing techniques, including handling missing values, scaling features, and encoding categorical variables, were applied to prepare the data for modeling.

The following machine learning models were implemented and evaluated:

1. **Logistic Regression:**

* Training Accuracy: 0.9628
* Testing Accuracy: 0.9704

1. **Decision Tree Classifier:**

* Training Accuracy: 1.0
* Testing Accuracy: 0.9704

1. **Random Forest Classifier:**

* Training Accuracy: 1.0
* Testing Accuracy: 0.9778

1. **Gradient Boosting Classifier:**

* Training Accuracy: 1.0
* Testing Accuracy: 0.9852

1. **Support Vector Classifier (SVC):**

* Training Accuracy: 0.9683
* Testing Accuracy: 0.9778

1. **MLPClassifier (Neural Network):**

* Training Accuracy: 0.9497
* Testing Accuracy: 0.9556

The project's success was driven not only by the selection of appropriate machine learning algorithms but also by thorough exploratory data analysis, effective data preprocessing techniques, and careful model evaluation. The results indicate that the Gradient Boosting Classifier achieved the highest testing accuracy of 98.52%, followed closely by the Random Forest Classifier at 97.78%. These models show promising performance in classifying skin disorders.

**Conclusion: -**

In conclusion, the machine learning models trained in this project demonstrate strong capabilities in classifying skin disorders based on the provided data. The Gradient Boosting Classifier stand out as top-performing model with high testing accuracies, showcasing the potential for real-world applications in automated diagnosis and risk assessment of skin disorders.