

**A**

**Project Proposal**

**on**

**AI for Skin Disease Detection**

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**SUPERVISOR’S RECOMMENDATION**

I hereby recommend that the report prepared under my supervision by Amisha Basnet (TU Exam Roll No. 23803/078), Saisa Koirala (TU Exam Roll No. 23832/078), Sandesh Khatiwada (TU Exam Roll No. 23832/076) entitled **“AI for Skin Disease Detection”** in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology be processed for evaluation.

**………………………….**

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# INTRODUCTION

Skin conditions are a prevalent global health problem, observed in individuals of all ages. The symptoms, which vary from widespread such as acne and eczema to life-threatening conditions such as melanoma and psoriasis, are often not diagnosed or misdiagnosed, particularly where there are no dermatology skills. Traditional diagnostic methods are plagued by human bias and inability to scale.

With advances in Artificial Intelligence (AI) technologies, particularly deep learning and image classification, it is now feasible to create systems that are capable of detecting diseases from images with high accuracy. This project aims to utilize such AI technologies using CNN, MobileNet, and DenseNet121 models to diagnose dermatological images.

The mission is to create a supportive AI product that facilitates early diagnosis, reduces healthcare infrastructure overload, and improves access to care in under-resourced regions.

## Problem Statement

Although skin diseases are common, early and accurate diagnosis remains a significant issue, especially in regions where experts lack good access. Delayed or incorrect diagnosis may lead to serious complications. Traditional visual diagnosis methods are subjective and unreliable. The project addresses these issues by proposing a deep learning-based tool to diagnose skin diseases from dermoscopic images for rapid, accurate, and low-cost diagnosis.

## Objectives

* To build a deep learning-based classification model for skin diseases using image data.
* To build and train deep learning models (CNN, MobileNet, DenseNet121) for accurate skin disease classification.
* To compare the performance of these models using evaluation metrics such as accuracy, loss, and confusion matrix.
* To deploy the model through a simple web interface for user interaction.

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## Scope and Limitations

This project focuses solely on classifying skin diseases using static clinical image data through deep learning models. It aims to provide early detection and awareness but excludes real-time diagnostics, external device integration, and live patient monitoring. The system functions as a standalone assistive tool and is not a certified medical diagnostic product. Its effectiveness depends on clear image input and the quality and diversity of the dataset.

## Development Methodology

The project follows an incremental delivery approach, dividing development into a series of small, manageable iterations. Each iteration builds upon the previous one by adding new features, enabling continuous progress and flexibility. This method suits projects with evolving requirements or high complexity by allowing regular feedback and adjustments throughout the process. For this project, the initial iteration established core functions such as web scraping for news collection and basic data processing. Later iterations enhanced classification accuracy and summarization techniques. Each stage was thoroughly tested to ensure reliability before moving forward. Overall, this approach enabled a flexible, adaptive development process that successfully delivered a functional and robust system.

**Report Organization**  
The report is structured into six chapters:

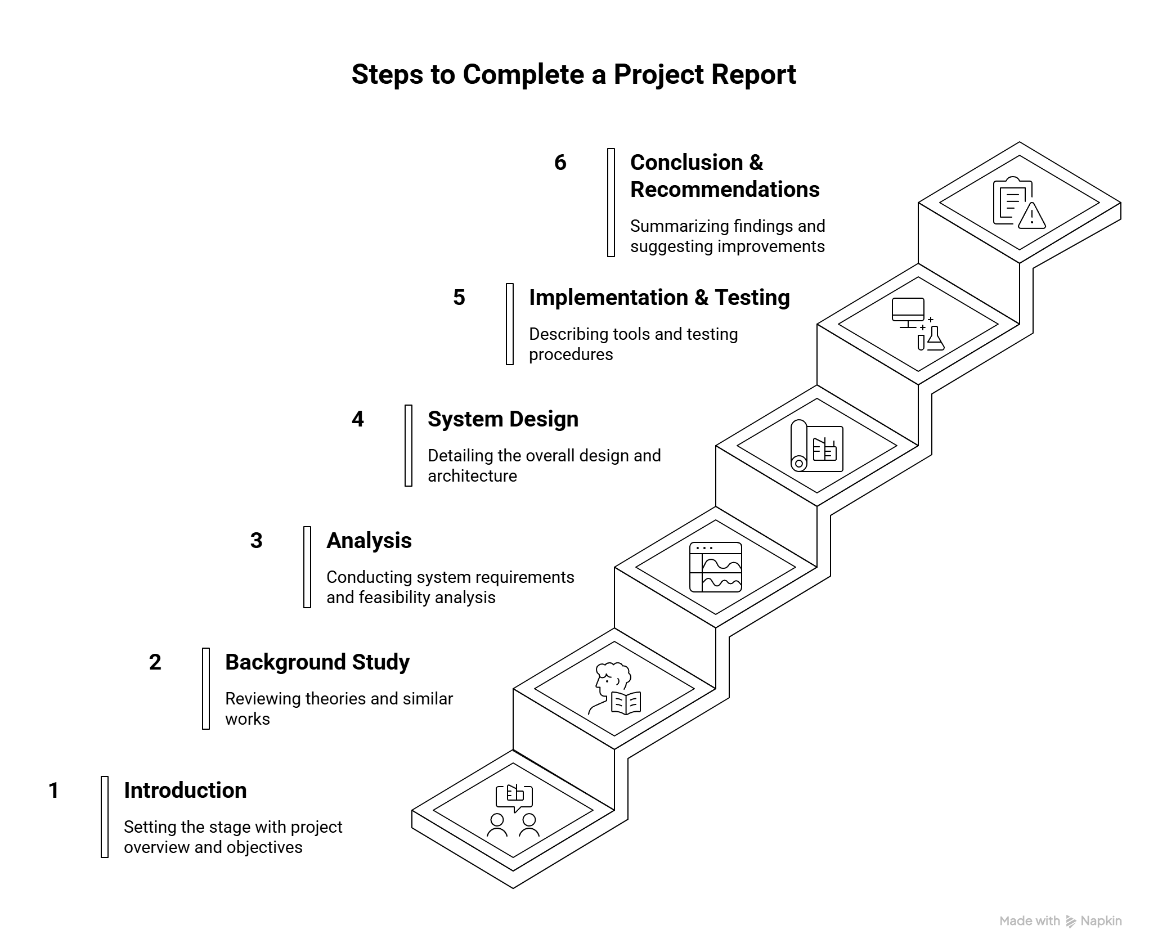
1. Introduction - covering project overview, problem statement, objectives, scope, constraints, and development methodology.
2. Background Study - reviewing relevant theories, concepts, and similar works by others.
3. Analysis - including system requirements and feasibility analysis.
4. System Design - detailing the overall design and architecture.
5. Implementation and Testing - describing tools used and testing procedures.
6. Conclusion and Future Recommendations - summarizing findings and suggesting improvements.

Figure 1.1: Report Organization

# BACKGROUND AND LITERATURE REVIEW