Log Book Entry Sheet

Meeting No: 01.

Date: 7/10/2025

Start Time: 9:00 AM

Finish Time:

Discussion Topics:

- Discussion on suitability of U-Net architecture for skin disease detection.
- Clarification on the primary difference between classification and segmentation.
- Why DenseNet and MobileNet were chosen over U-Net.

Achievements:

- Understood U-Net's relevence in medical image segmentation and how it could technically be adapted.
- Gained clarity on the limitations of the dataset in supporting segmentation-based models like U-Net.

PCA

Problems (if any):

- Uncertainty over whether U-Net could outperform current models given lack of segmentation labels.

Tasks for Next Meeting:

- Research a comparative analysis of U-Net architecture, performance and how it doesnot align with our project's objective.

Student Name:

Sandesh Khatiwada (Present)
Amisha Basnet (Present)
Saisa Koirala (Absent).

Supervisor Signature:

Log Book Entry Sheet

Meeting No: 02.

Date: 7/17/2025

Start Time: 9:00 AM

Finish Time:

Discussion Topics:

- Review of PCA (Principal Component Analysis)
- Comparison between PCA and feature extraction methods in CNN, DenseNet, MobileNet
- Justification of not Implementing PCA in current deep learning pipeline.

Achievements:

- Studied PCA in depth and understood it's application in dimensionality reduction for traditional ML.
- Identified that CNN-based architectures inherently perform learned feature extraction, making PCA redundant in deep learning.

Problems (if any):

Tasks for Next Meeting:

- Understand use of pooling (global average) and max pooling instead of traditional PCA technique.

Student Name:

Sandesh Khatiwada (Present)
Amisha Basnet (Present)
Saisa Koirala (Present)

Supervisor Signature:

Log Book Entry Sheet

Meeting No: 03

Date: 7/18/2025

Start Time: 9:00 A.M

Finish Time:

Discussion Topics:

Mid term defense

Achievements:

Evaluation/differentiation.

Image format/size/

lossy/lossless Color/skewness/

Problems (if any): transformation. orientation of

image/lighting.

Tasks for Next Meeting:

20%

Student Name:

Amisha Baonet

Saisa Koirala

Sandesh Khatiwada

Supervisor Signature:

18/7/25

Log Book Entry Sheet

Meeting No: 04 **Date:** 7/21/2025

Start Time: 9:00 AM **Finish Time:**

Discussion Topics:

- Handling multiple image formats uploaded by users (e.g. PNG, JPEG, TIFF)
- Enhancing image brightness and contrast to improve model accuracy

Achievements:

- Decided to convert all uploded images to RGB for consistency regardless of original format
- Planned to apply Histogram Equalization to automatically adjust brightness and contrast of images that are too dark or too bright.

Problems (if any):

- Need to carefully test RGB Conversion to handle unusual image types or corrupt files.
- lighting variation in user images still pose a challenge; histogram equilization may not fix extreme cases.

Tasks for Next Meeting:

- Study image upscaling techniques and other alternatives of Histogram Equalization if possible.

Student Name:

Sandesh Khatiwada
Amisha Basnet
Saisa Koirala

Supervisor Signature:

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Log Book Entry Sheet

Meeting No: 05 **Date:** 7/24/2025

Start Time: 9:00 AM **Finish Time:**

Discussion Topics:

- Use of ImageDataGenerator which resulted 80% accuracy instead of manual image processing
- Use of PBKDF2-HMAC-SHA256 algorithm for flask

3DES/AES/ Behind

Achievements:

- Achieved 80% accuracy from 50% accuracy with help of ImageDataGenerator
- Used generate_hash() and check_password_hash() functions from werkzeug.security which helped in password security.

Problems (if any):

- Manual RGB conversion caused redundancy and was limited to certain types.

Tasks for Next Meeting:

- Try increasing accuracy from 80% if possible.

Student Name:

Amisha Basnet (present)
Saisa Koirala (present)
Sandesh Khatiwada (present)

Supervisor Signature:

24/7/2025

Log Book Entry Sheet

Meeting No: 06 **Date:** 7/28/2025

Start Time: 9:00 A.M. **Finish Time:**

Discussion Topics:

- Integration of DenseNet121 with custom classifier head for skin disease classification.
- Use of kaggle notebook for accelerated experiment.

Achievements:

- Successfully setup training pipeline on kaggle which allowed faster experimentation with hyperparameters and batch size.

Problems (if any):

- Kaagle notebook execution slightly reduced overall accuracy due to resource constraints compared to local setup.

Tasks for Next Meeting:

- Explore fine-tuning strategies to improve performance.

Student Name:

Amisha Basnet
Saisa Koirala
Sandesh Khatiwada

Supervisor Signature:

Hemu'

Log Book Entry Sheet

Meeting No: 07 **Date:** 08/01/2025

Start Time: 9:00 A.M. **Finish Time:**

Discussion Topics:

- MixUp data augmentation implementation to improve model generalization.
- Label smoothing to reduce overconfidence in predictions.

Achievements:

- Implemented MixUp successfully, which helped in better regularization of the model.
-

Problems (if any):

- Need careful tuning of MixUp alpha; higher apha caused some images to appear unrealistic.

Tasks for Next Meeting:

Student Name:

Amisha Basnet
Saisa Koirala
Sandesh Khatiwada

Supervisor Signature:

Hemu

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Log Book Entry Sheet

Meeting No: 08 **Date:** 08/04/2025

Start Time: 9:00 A.M. **Finish Time:**

Discussion Topics:

- Open-set detection strategy: handling unseen or foreign objects.
- Computing threshold using correct predictions percentile for deciding unknown image.

Achievements:

- Model calibrated to detect foreign objects: if a random non-skin is shown, model shows error.
- Established open-set threshold based on validation subset predictions.

Problems (if any):

- Model's detection of foreign objects is not flawless due to machine and dataset limitations

Tasks for Next Meeting:

Student Name:

Amisha Basnet
Salsa Basnet
Sandesh Khatiwada

Supervisor Signature:

Hemu'

Log Book Entry Sheet

Meeting No: 09 **Date:** 08/08/2025

Start Time: 9:00 A.M. **Finish Time:**

Discussion Topics:

- Evaluation of the trained model across 9 skin disease classes.
- Analysis of confusion matrix and class-wise performance.

Achievements:

- Obtained overall accuracy of 82% on validation set.
- Model successfully differentiates the 9 skin disease classes while maintaining resonable balance
- Model is partially robust to unknown input, highlig- highlighting open-set detection capability.

Problems (if any):

- Model sometimes misclassifies images that are visually ambiguous, causing hallucination into one of the 9 classe
- Further fine-tuning and data augmentation needed for minority/low-performing classes.

Tasks for Next Meeting:

Student Name:

Amisha Basnet
Saisa Koirala
Sandesh Khatiwada

Supervisor Signature:

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Log Book Entry Sheet

Meeting No: 10 **Date:** 09/08/2025

Start Time: 9:00 A.M. **Finish Time:**

Discussion Topics:

- Refinement diagrams

Achievements:

- System vision and flow finalized
- No huge refinement in the system performed

Problems (if any):

- No deviation in process and lack of changes doesnot give huge space for creating refinement UML diagram

Tasks for Next Meeting:

Student Name:

Amisha Basnet

Saisa Koirala

Sandesh Khatiwada

Supervisor Signature:

Nawsh

08-09-2025