

# AI Skin Condition Detection Project – 10-Day Roadmap

## Day 1 – Project setup and data design

- Create a clean repo structure (/face\_detection, /enhancement, /skin\_condition, /ui).
- Define pipeline in pseudocode — detect → verify → enhance → analyze → classify.
- Plan storage for front, left, right image queues.
- Research public or semi-public facial skin datasets.

## Day 2 – Multi-angle capture and verification

- Extend face detection for face validation.
- Write logic for front, left, right profile capture.
- Save structured data paths.
- Add lighting/blur quality checks.

## Day 3 – Image enhancement module

- Integrate a pretrained super-resolution model (Real-ESRGAN).
- Test enhancement under different lighting conditions.
- Implement brightness and contrast normalization.

## Day 4 – Facial region segmentation

- Use Mediapipe or Dlib landmarks to segment face zones.
- Save region masks and verify alignment consistency.

## Day 5 – Basic condition detection prototype

- Build a simple CNN or MobileNet model.
- Train on small dataset for acne/redness/pigmentation classes.
- Focus on functional pipeline, not accuracy.

## Day 6 – Multi-angle feature fusion

- Extract embeddings from three views.
- Fuse features using mean or max pooling.
- Train classifier with fused vector and log results.

## Day 7 – Explainability and visualization

- Implement Grad-CAM or heatmap visualization.
- Highlight regions of condition detection.
- Map to segmented facial zones.

## Day 8 – Flutter front-end integration

- Build simple UI for image capture and display.
- Integrate backend pipeline with Flutter.
- Display results with overlay and explanations.

## Day 9 – Testing and fine-tuning

- Collect varied test samples.
- Validate false positives and face verification robustness.
- Fine-tune enhancement and fusion parameters.

## Day 10 – Polishing, documentation, and ethics

- Write README and system documentation.
- Add disclaimers (non-diagnostic purpose).
- Create demo video and prepare presentation.