

Project Proposal

Image Processing Team Project 02

**Team 08 GLOPIX
School of Computer Science and Engineering
Chung-Ang University**

Acne Detection & Classification

From Pixels to Pores : Smart Skin Analysis through Vision

Content

1. Team Introduction
2. About Our Topic
3. Development Plan



Team Introduction : Team GLOPXI

Blend of Golbal + Pixels, meaning diverse people analyzing pixels together

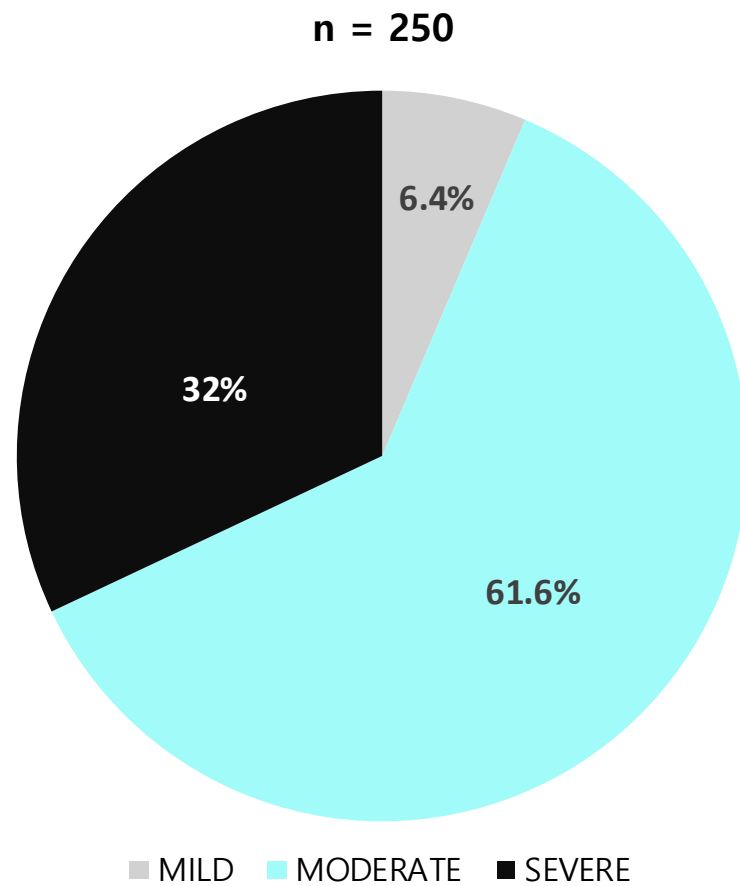


Team 01 : Global Group, One international Student + Three Korean students

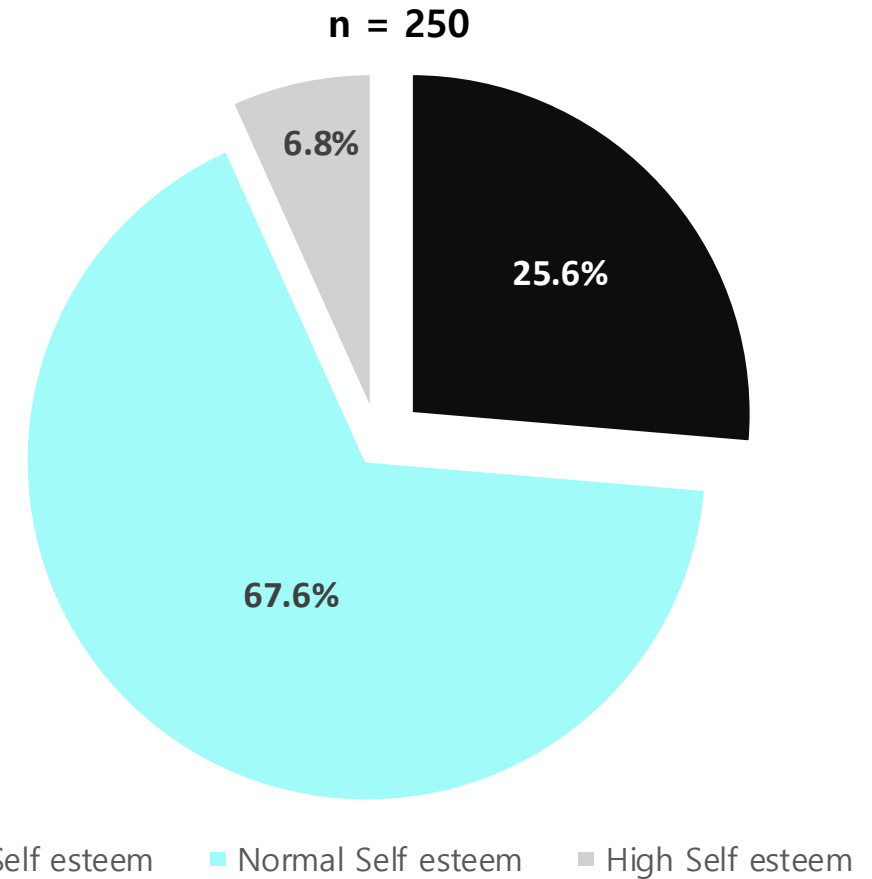
About Our Topic : Motivation 💡

1. Skin problems like acne are common and affect confidence
2. **Detecting acne** automatically can assist skincare and cosmetic analysis
3. Existing tools often rely on deep learning and heavy models —
we propose a **simpler, interpretable approach**





Severity of acne



Self-esteem among adolescents and young adults with acne

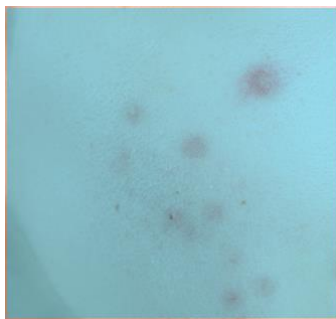
About Our Topic : Core Idea

Project: color-based acne detection

- Convert from **RGB to YCrCb** to pick skin Region Mask
- Convert from RGB to HSV and find read peaks in the Hue Histogram (Get candidates)
- Use Gaussian Blur, morphological operations and contour detection to locate acne spots
- Optional classification by lesion type or severity



Input image



Ycrbc Color
Space

About Our Topic : Core Idea

Project: color-based acne detection

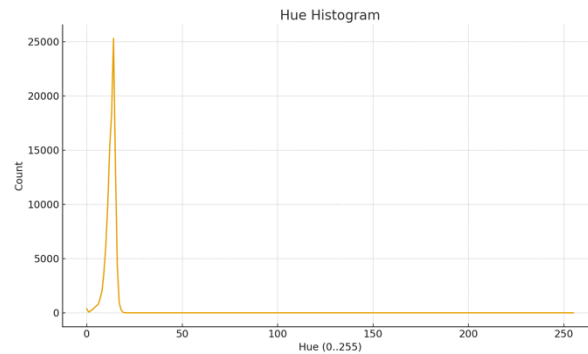
- Convert from RGB to YCrCb to pick skin Region Mask
- Convert from **RGB to HSV** and find **read peaks** in the Hue Histogram (**Get candidates**)
- Use Gaussian Blur, morphological operations and contour detection to locate acne spots
- Optional classification by lesion type or severity



Input image



Ycrbc Color
Space



Hue Histogram

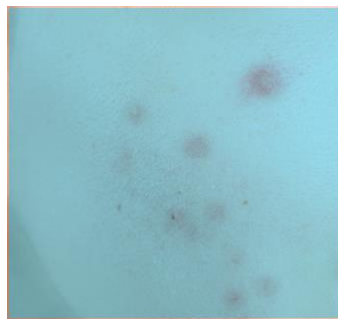
About Our Topic : Core Idea

Project: color-based acne detection

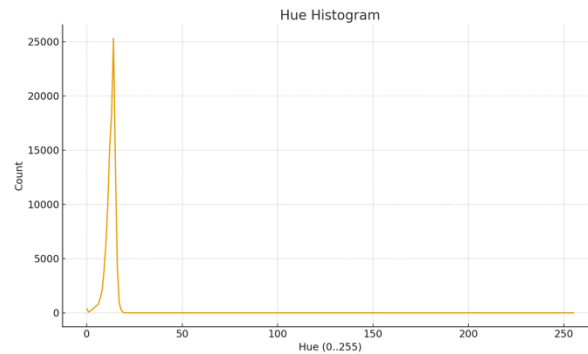
- Convert from RGB to YCrCb to pick skin Region Mask
- Convert from RGB to HSV and find read peaks in the Hue Histogram (Get candidates)
- Use **Gaussian Blur**, **morphological operations** and **contour detection** to locate acne spots
- Optional classification by lesion type or severity



Input image



Ycrbc Color
Space



Hue Histogram



Candidate mask
(모폴로지 + Gaussian Blur)

About Our Topic : Core Idea

Project: color-based acne detection

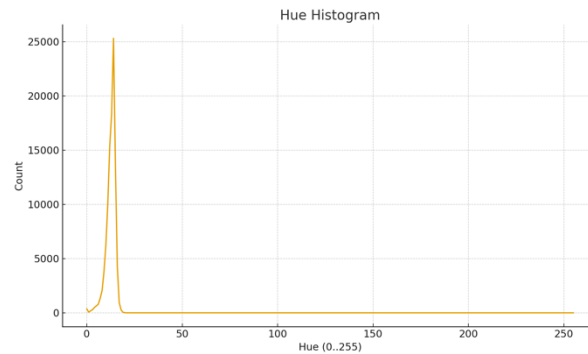
- Convert from RGB to YCrCb to pick skin Region Mask
- Convert from RGB to HSV and find read peaks in the Hue Histogram (Get candidates)
- Use Gaussian Blur, morphological operations and contour detection to locate acne spots
- **Optional classification by lesion type or severity**



Input image



Ycrbc Color Space



Hue Histogram



Candidate mask
(모폴로지 + Gaussian Blur)



Development Plan : Pipeline

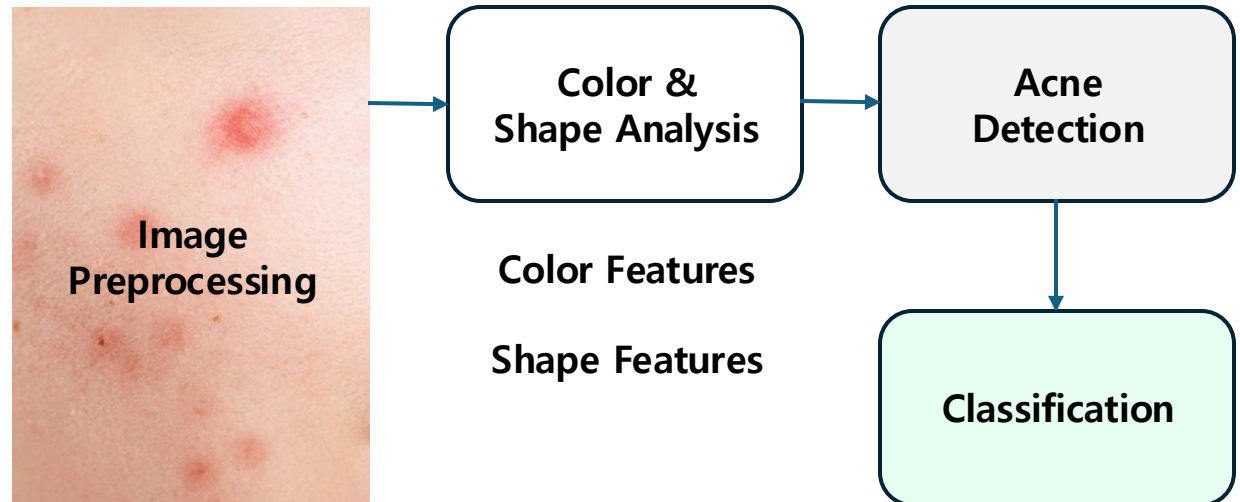
Tools : Python & OpenCV



Each member handles coding, testing, GUI, and documentation

Development Plan : Pipeline

1. Image input
2. Preprocessing (denoise & resize)
3. Color-space conversion (YCrCb, HSV)
4. Morphological filtering
5. Contour extraction & classification
6. Visualization & result display



Future Development : Goals 🧐

1. Add acne-type classification using small CNN
2. Improve performance on blurred or uneven lighting conditions
3. Build a simple GUI for visualization



Our goal is to create a simple, interpretable, and globally collaborative acne detection system !

Thank You !

**Team 08 GLOPIX
School of Computer Science and Engineering
Chung-Ang University**