



SKINTELLIGENT

Revolutionizing Skincare through AI

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ABSTRACT

Skincare is vital for overall health, yet many struggle to identify their skin type and needs. Our project leverages advanced computer vision and natural language processing to empower users with personalized skincare guidance. Using Vision Transformer for facial analysis and Llama 3 with a RAG approach for NLP, our platform efficiently analyzes skin types and issues, providing tailored recommendations. From acne to wrinkles, users receive informed guidance for effective skincare routines.

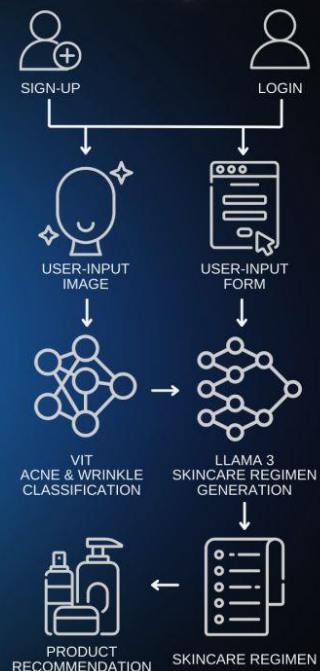
TOOLS



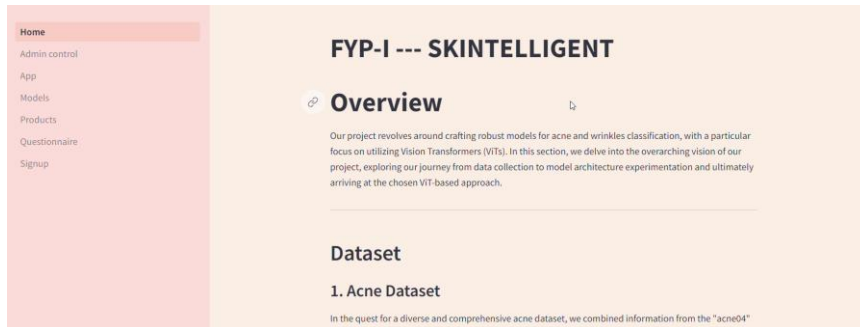
METHODOLOGY

We curated a diverse dataset of facial images comprising of acne and wrinkles to train the image model. Similarly, we scrapped the web to collect data on products, their ingredients, and pre-made skincare regimens. A Vision Transformer model was trained for acne & wrinkle classification and a Llama 3 model for skincare recommendation. Hyperparameter tuning along with prompt optimization was done to produce better results. A RAG pipeline was built using AWS cloud services. The CV and NLP models were integrated into a user-friendly platform with an intuitive interface.

Work flow

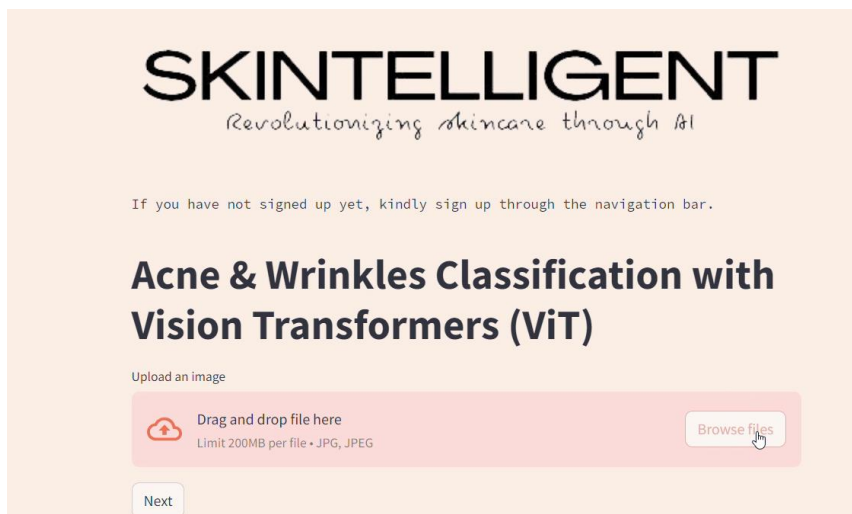


Some screenshots to show what our user interface looked like:



This screenshot shows the 'Data Formats' page. It includes a table summarizing the datasets used. The table has columns for Dataset Name, Format, Description, Source, and Link. The datasets listed are Facial Skin Problems (YOLOv8), Facial Skin Problems (MS-COCO), Acne & Blackheads (YOLOv8), and Acne04 + IMDB-Wiki (Image Folder).

Dataset Name	Format	Description	Source	Link
Facial Skin Problems	YOLOv8	Dataset contains 15 classes with facial various skin issues like acne, blackheads, etc.	Roboflow	Link
Facial Skin Problems	MS-COCO	Dataset contains 15 classes with facial various skin issues like acne, blackheads, etc.	Roboflow	Link
Acne & Blackheads	YOLOv8	Dataset originally contained 15 classes; however, only 2 classes acne & blackheads were extracted.	Roboflow	Link
Acne04 + IMDB-Wiki	Image Folder	Merged dataset for acne classification with 5 classes: clear skin - severe acne	Kaggle, Google Datasets	Link



Acne Winkles

Clear Skin: 0.9852

Mild Acne: 0.0052

Severe Acne: 0.0037

Moderate Acne: 0.0035

Occasional Spots: 0.0024

Next

If you have not signed up yet, kindly sign up through the navigation bar.

Questionnaire

What is your skin type?

☐ Normal

☐ Dry

☒ Oily

☐ Combination

☐ Sensitive

What is your age?

21 to 30

Is your skin loose or tight?

☐ Loose

☒ Tight

What is your skin tone?

Medium

How many hours do you sleep (in 24 hours)?

7 to 9

Do you have any skin diseases?

No Disease

Do you have any allergies?

Please describe your allergies.

Submit

Submit

☐ Generating a skincare regimen...

The final output:

1. Cleanse your skin with an exfoliating cleanser that contains salicylic acid, glycolic acid, or lactic acid.
2. Use a toner that contains salicylic acid, glycolic acid, or lactic acid to help balance your skin's pH and remove any remaining impurities.
3. Apply a lightweight, oil-free moisturizer that is formulated for oily skin.

EVENING:

1. Cleanse your skin with an exfoliating cleanser that contains salicylic acid, glycolic acid, or lactic acid.
2. Use a toner that contains salicylic acid, glycolic acid, or lactic acid to help balance your skin's pH and remove any remaining impurities.
3. Apply a lightweight, oil-free moisturizer that is formulated for oily skin.

RECOMMENDED PRODUCTS:

1. Exfoliating cleanser: Neutrogena Hydrating Facial Cleanser with Hyaluronic Acid and Glycerin
2. Toner: Thayers Rose Petal Witch Hazel
3. Moisturizer: Neutrogena Hydro Boost Water Gel

HOW TO USE THE RECOMMENDED PRODUCTS:

1. Cleanse your skin with the exfoliating cleanser in the morning and evening, massaging it onto your skin for about 30 seconds before rinsing with lukewarm water.
2. Apply the toner to a cotton pad and sweep it across your face and neck to help balance your skin's pH and remove any remaining impurities.