



Project Title: Spot On: Automated Detection of Skin Faults and Blemishes Using Python

Theme: Facial Blemishes Recognition and Automated Measures

Team Members:

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Project Description:

Spot On is an advanced image analysis tool using various Python modules that recognizes and analyzes facial features, specifically blemishes such as acne, aging lines, blackheads, or other facial marks that require attention. By utilizing open source libraries that allow the application to image analyzation such as OpenCV and TensorFlow, the application will scan real-time images/visuals to identify the addressable issues given. The application will provide specified facial issues, highlight areas, and possibly provide an extensive report regarding treatment and preventive measures.

Project Goals:

- To design a system that accurately detects facial blemishes such as acne and blackheads through image processing techniques.
- To highlight and label the type of skin blemish detected.
- To provide possible medications for treatment of the skin blemish, according to the analysis of the skin blemish.
- To recommend lifestyle habits for the prevention of the recurrence of the skin blemish.

Tentative Project Timeline

- Target start date: 4th of November, 2024
- Target completion date: 3rd of December, 2024
- Classification Model training date/s: 4th to 8th of November, 2024
- Coding of Implementation dates: 11th to 25th of November, 2024
- Product testing and debugging: 26th of November, 2024 to 2nd of December, 2024



Required Resources

- Virtual Machine / Physical computer that can run for hours, or days at the worst:
 - <https://cloud.google.com/vertex-ai/docs/image-data/classification/train-model>
- Python: <https://www.python.org/>
- OpenCV python library / API:
 - https://docs.opencv.org/4.x/d6/d00/tutorial_py_root.html
- Tensorflow python library / API:
 - https://www.tensorflow.org/api_docs/python/tf/all_symbols
- Dataset for training classification model:
 - <https://www.kaggle.com/datasets/trainingdatapro/skin-defects-acne-redness-and-bags-under-the-eyes>
 - <https://www.kaggle.com/datasets/jessicali9530/celeba-dataset>

Classes to be used:

- Cystic Acne
- Perioral Dermatitis
- Rosacea
- Pustular acne
- Closed Comedone - Whiteheads
- Open Comedone - Blackheads
- Excoriated Acne (Can be combined with cystic acne)
- Acne Scar (Can be combined with cystic acne)



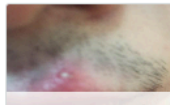
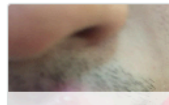





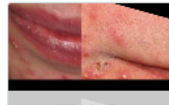
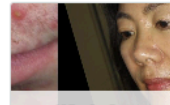
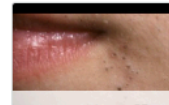
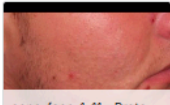


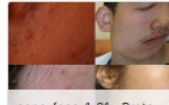

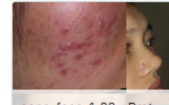
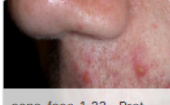
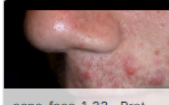

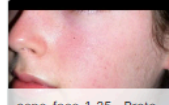

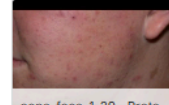


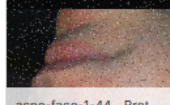
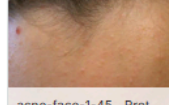
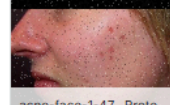
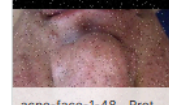
Rejected:

- Millia
- Minocycline Pigmentation
- Rhynophyma

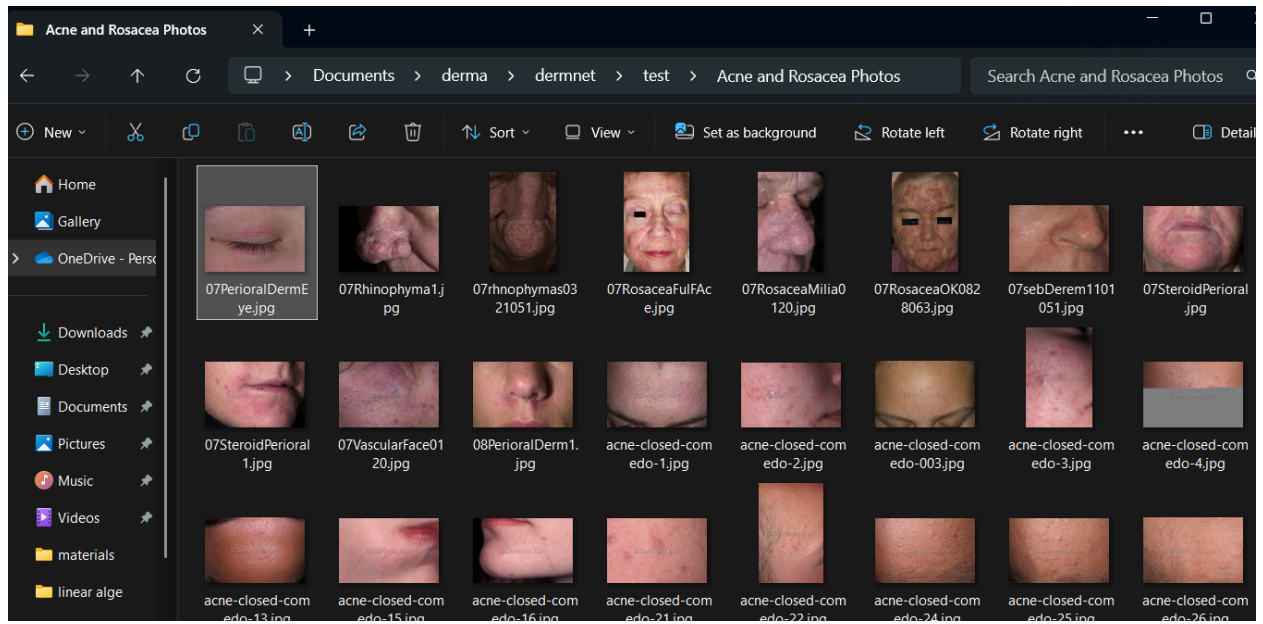


Validated data:

Acne (292 files) ⌵

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 acne-face-1-11__Prote... 18.78 kB	 acne-face-1-1__Protec... 27.85 kB	 acne-face-1-1__Protec... 23.03 kB	 acne-face-1-21__Prote... 25.55 kB	 acne-face-1-22__Prot... 19.01 kB	 acne-face-1-22__Prot... 26.06 kB
 acne-face-1-23__Prot... 19.96 kB	 acne-face-1-23__Prot... 16.7 kB	 acne-face-1-24__Prot... 22 kB	 acne-face-1-25__Prote... 19.33 kB	 acne-face-1-28__Prot... 37.2 kB	 acne-face-1-29__Prote... 15.68 kB
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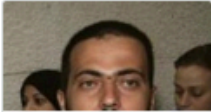
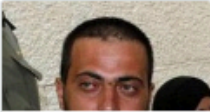


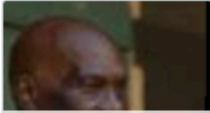








This preview shows 30 out of 292 items. [Load more](#)





Checking of the skin disease if found on face:

Clear (4773 files) ⌂ >

 AJ_Cook_0001.jpg 17.06 kB	 AJ_Lamas_0001.jpg 20.68 kB	 Aaron_Eckhart_0001.jpg 14.84 kB	 Aaron_Guiel_0001.jpg 19.89 kB	 Aaron_Patterson_0001.jpg 14.91 kB
 Aaron_Peirsol_0001.jpg 16.87 kB	 Aaron_Peirsol_0002.jpg 20.59 kB	 Aaron_Peirsol_0003.jpg 18.95 kB	 Aaron_Peirsol_0004.jpg 21.51 kB	 Aaron_Pena_0001.jpg 17.43 kB
 Aaron_Sorkin_0001.jpg 17.55 kB	 Aaron_Sorkin_0002.jpg 16.93 kB	 Aaron_Tippin_0001.jpg 19.28 kB	 Abba_Eban_0001.jpg 15.67 kB	 Abbas_Kiarostami_0001.jpg 18.42 kB
 Abdel_Aziz_Al-Hakim_0001.jpg 25.66 kB	 Abdel_Madi_Shabneh_0001.jpg 19.87 kB	 Abdel_Nasser_Assidi_0001.jpg 19.94 kB	 Abdel_Nasser_Assidi_0002.jpg 28.94 kB	 Abdoulaye_Wade_0001.jpg 18.52 kB
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 Abdulaziz_Kamilov_0001.jpg 19.29 kB	 Abdullah_0001.jpg 14.84 kB	 Abdullah_0002.jpg 19.26 kB	 Abdullah_0003.jpg 14.48 kB	 Abdullah_0004.jpg 16.52 kB

Utilized datasets:

<https://www.kaggle.com/code/xtvgie/acne-detection>

<https://www.kaggle.com/datasets/shubhamgoel27/dermnet/data>