DermDetect

Skin Disease Diagnosis App

Vitality Squad

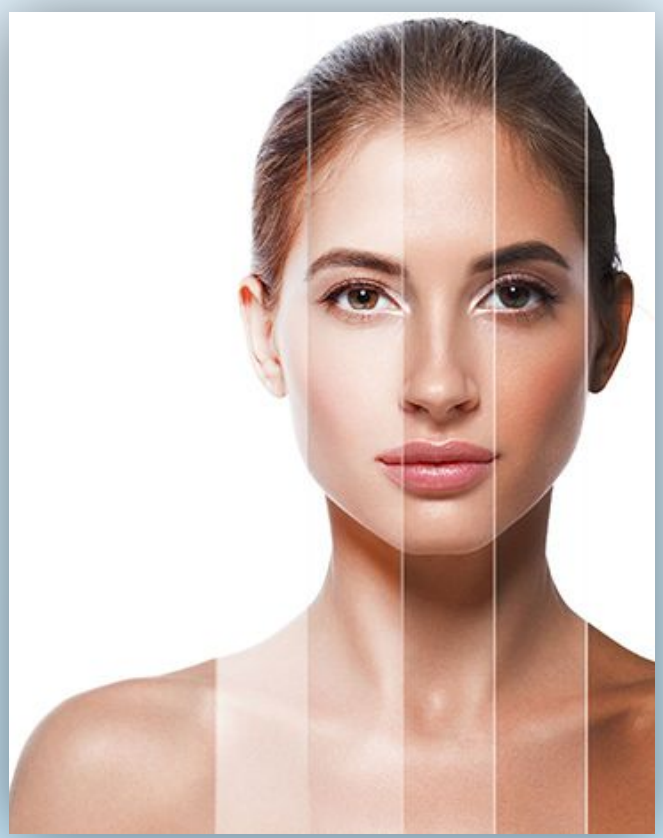


Table of contents

01

Team→

Giordano

Franklin

Giacomo

Isha

Vidya

Luis

02

Problems→

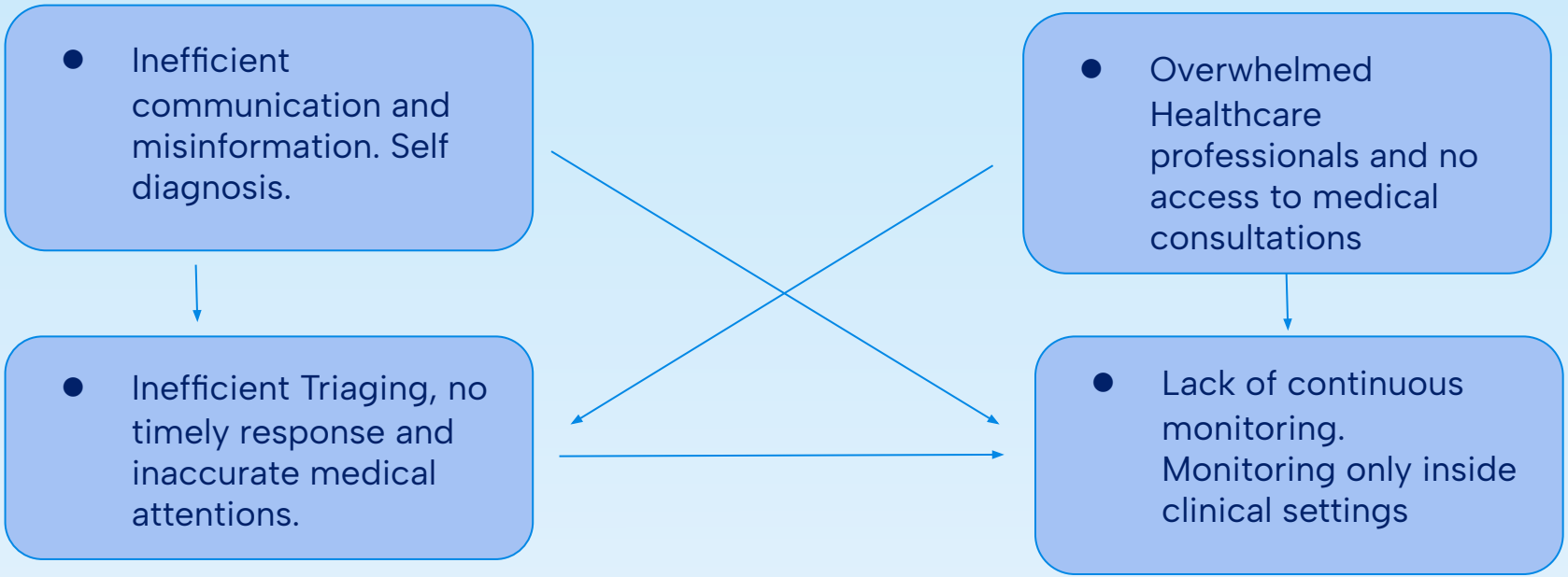
List of problems:

- Inefficient communication and misinformation. Self diagnosis.

- Inefficient Triaging, no timely response and inaccurate medical attentions.

- Overwhelmed Healthcare professionals and no access to medical consultations

- Lack of continuous monitoring. Monitoring only inside clinical settings



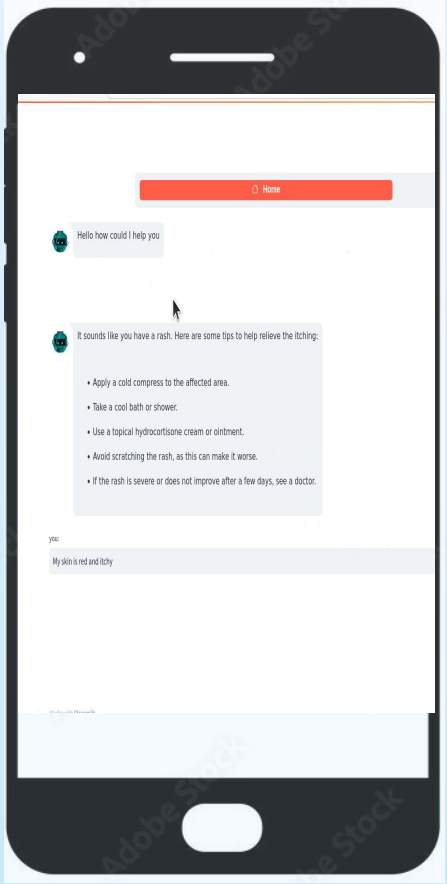
Our idea...

- To create an **app** for patients to receive **fast, accurate, and personalized medical skin care**!

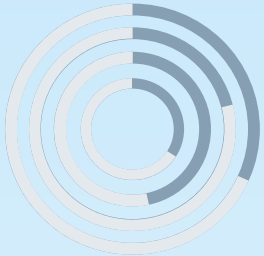
- An app that incorporates both a **chatbot** and **image classification model** for users to interact with any for any of their **skin medical inquiries**.

Diagnose and Recommend Treatment Options for:

1. Actinic keratoses and intraepithelial carcinoma
2. Basal cell carcinoma
3. Benign keratosis-like lesions
4. Dermatofibroma
5. Melanoma
6. Melanocytic nevi
7. Vascular lesions



03



Market Opportunity→

Research of the Current Market

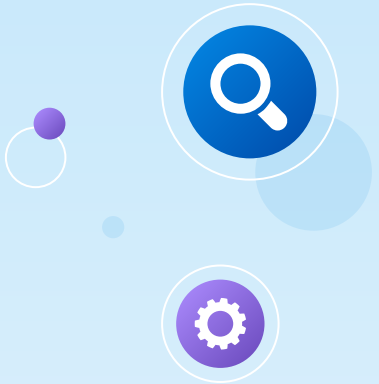
- Healthcare chatbot apps aim to tackle the patient to medical practitioner ratio imbalance
- The market is expected to reach **431.47** million USD by 2028
- **73%** of healthcare related tasks could be automated by AI
- An industry standard tool, **Google's Med-PaLM**, had a **92.6%** success rate in a test of 48 questions
- No current tool specifically for dermatology concerns

How We Differ...

- We plan to tackle a **niche dermatology market**
- An app interface that evaluates **both text and image** input for a **more precise diagnosis**
- A **premium personalized care plan** that would provide the patient with treatment based on previous medical history
- Access to **live medical professionals** on call to answer questions and provide consultation

04

Revenue Stream→



Payment Process...

- Similar to tested Healthcare apps in the market, we plan to implement a monthly subscription for the premium features
- Free trial to use premium features to entice users to subscribe to the monthly subscription

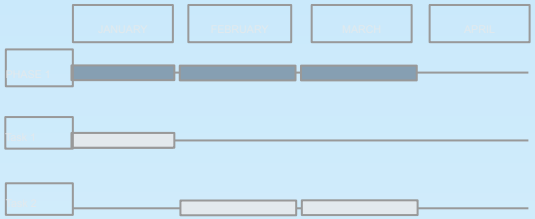
Premium Features

- Personalized Care
- Live Calls with Professionals
- Local Medical Bookings

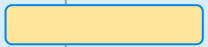
Free Features

- Text consultations
- General Care Chatbot
- 24/7 Availability to use the app

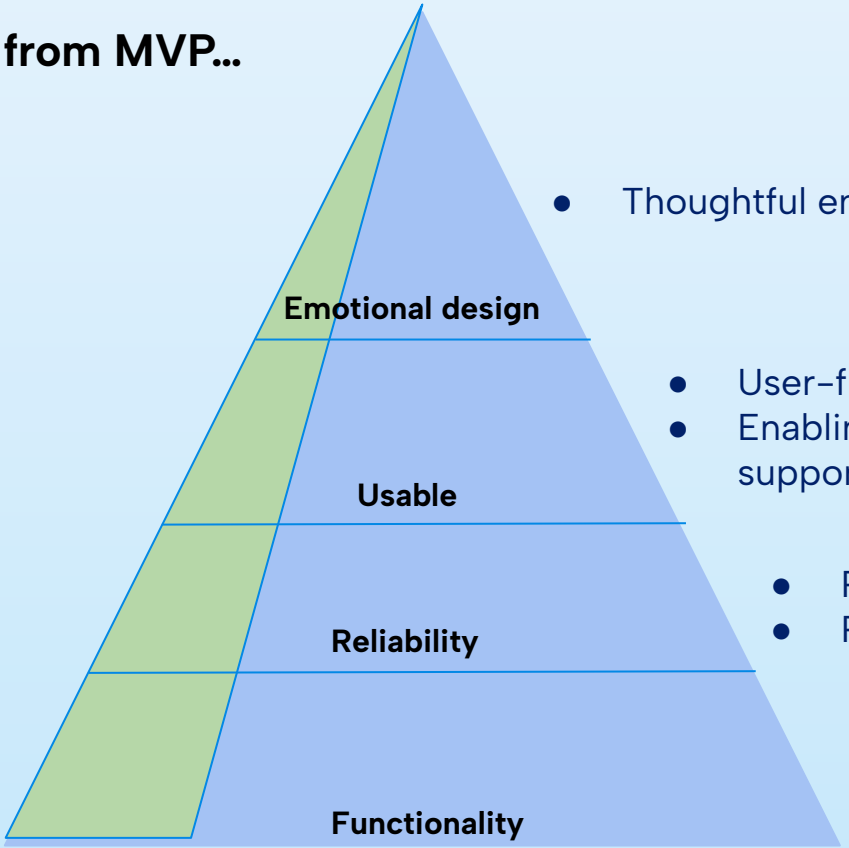
05



Next Steps/Backlogs→

	Short term	Mid term	Long term
Upload the chatbot to the 150 most common skin diseases			
Final product. First chatbot used for skin diseases.			
Expand to other diseases.			
Implement a prediction model based on users' images			

from MVP...

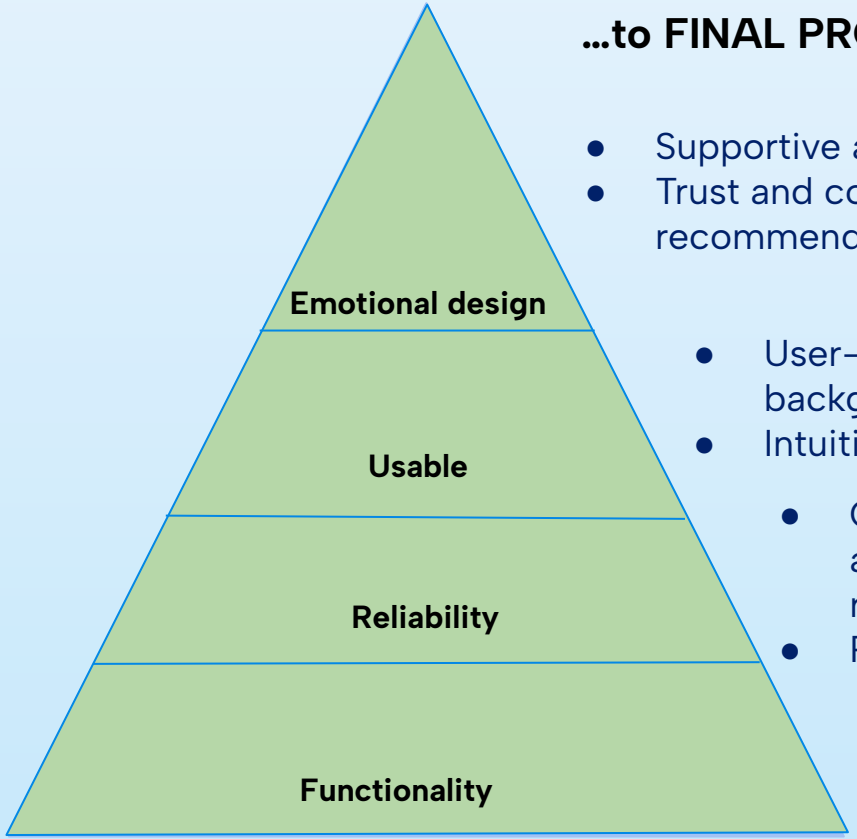


- Thoughtful emotional design

- User-friendly and accessible usability.
- Enabling seamless access to medical consultations and support.

- Reliable skin disease recognition.
- Providing accurate and trustworthy assistance.

- Skin diseases recognition from images.
- Personalized medical guidance and support.



...to FINAL PRODUCT.

- Supportive and comforting experience for users
- Trust and confidence in the chatbot's guidance and recommendations.

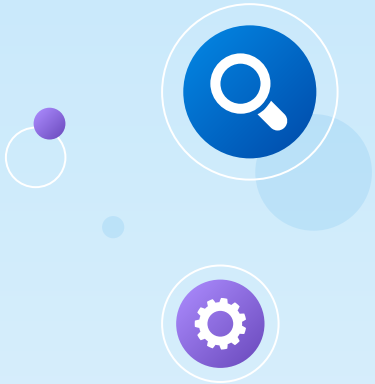
- User-centric suitable for users with different backgrounds and technical proficiency.
- Intuitive and clear navigation.

- Cutting-edge technology and advanced algorithm for precise and reliable disease recognition
- Provide convenient and intuitive interactions

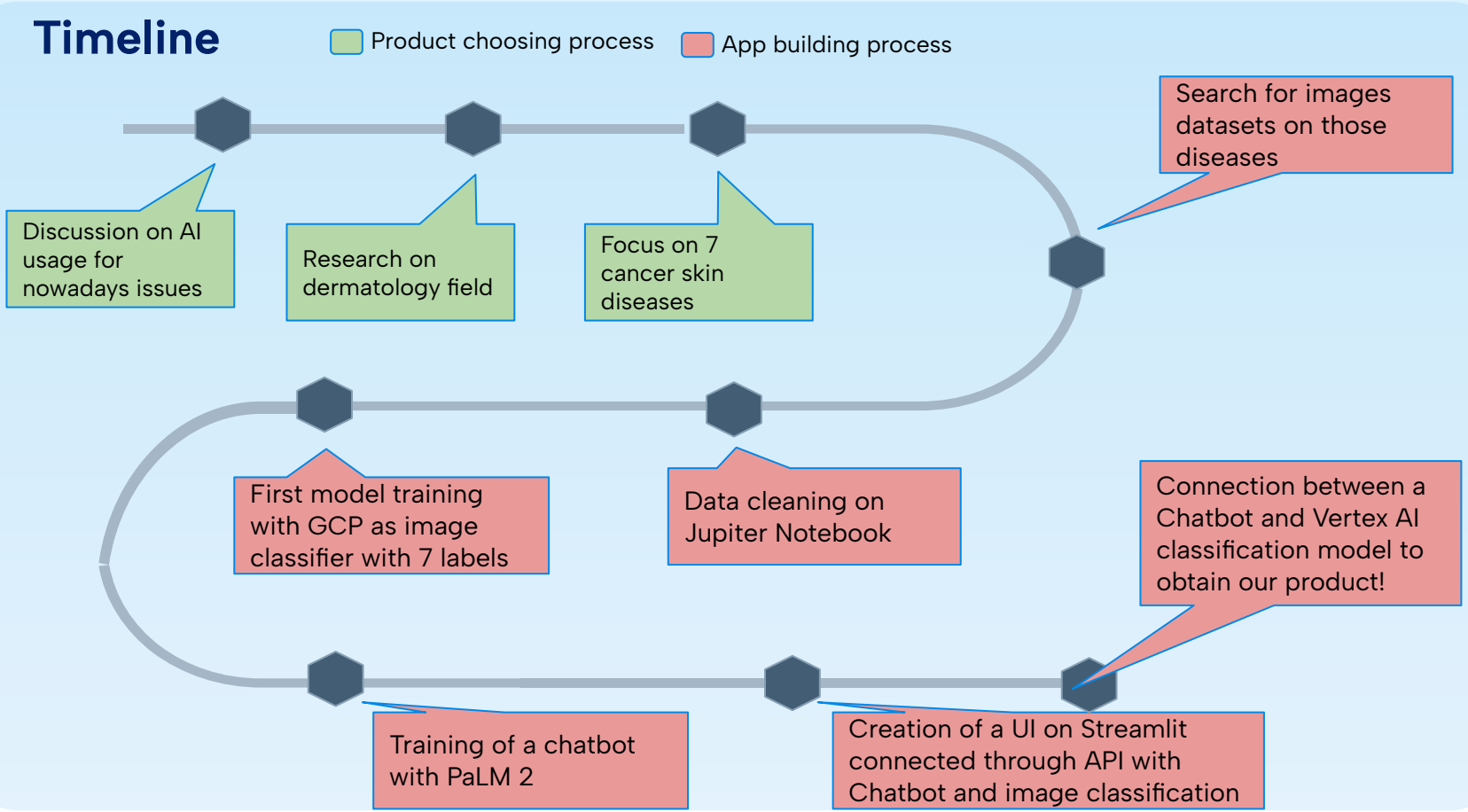
- Advanced medical chatbot for cancer skin diseases

06

Product Details→



Timeline


Product choosing process
App building process
Discussion on AI usage for nowadays issues
Research on dermatology field
Focus on 7 cancer skin diseases
Search for images datasets on those diseases
First model training with GCP as image classifier with 7 labels
Data cleaning on Jupiter Notebook
Connection between a Chatbot and Vertex AI classification model to obtain our product!
Training of a chatbot with PaLM 2
Creation of a UI on Streamlit connected through API with Chatbot and image classification

Product Statistics

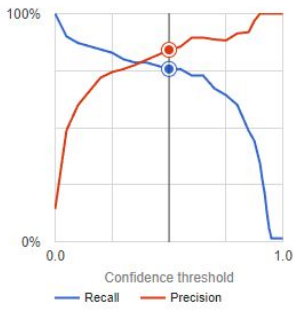
- 86.2% Accuracy
- 84.1% Precision
- 75.7% Recall
- Trained, Validated, and Tested on 700 Images

Average precision	0.862
Precision	84.1%
Recall	75.7%
Created	Jul 9, 2023, 1:09:16 AM
Total images	700
Training images	560
Validation images	70
Test images	70

To evaluate your model, set the **confidence threshold** to see how precision and recall are affected. The best confidence threshold depends on your use case. Read some example scenarios to learn how evaluation metrics can be used.

Precision-recall curve

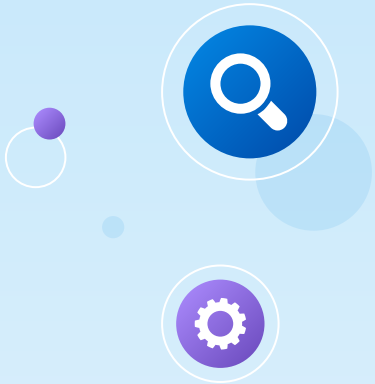
Precision-recall by threshold



True label \ Predicted label	actinic	melanoma	dermatofibroma	benign	vascular	melanocytic	basal
actinic	50%	0%	0%	10%	0%	10%	30%
melanoma	0%	90%	0%	0%	0%	10%	0%
dermatofibroma	0%	0%	100%	0%	0%	0%	0%
benign	10%	10%	0%	50%	10%	10%	10%
vascular	0%	0%	0%	0%	100%	0%	0%
melanocytic	10%	20%	0%	0%	0%	70%	0%
basal	0%	0%	0%	0%	0%	10%	90%

07

Working Demo →



Thank you!

Vitality Squad
https://lablab.ai/event/google-vertex-ai-hackathon/vitality-squad
https://github.com/z0CoolCS/vitality_squad

Tools Used:
Generative AI Studio Language Model
Vertex AI Custom Model
PaLM 2
Streamlit
Kaggle