Draft one:

Features of Our system so far:

This project focuses on the diagnosis of psoriasis; an autoimmune disease that is often hereditary and affects more people than expected. After the diagnosis, we plan on working on the journey after this step which will be divided as follows:

Prediction-----> Detection------>Providing a healing journey

* The main part of our system consists of:

Detection of Psoriasis from pictures uploaded by the user

* A picture of the skin is uploaded to see if the patient has a skin issue.
* The skin issue can be misunderstood/misdiagnosed with other skin issues like (eczema/AD/rashes/etc.)
* There’s a difference between skin types depending on the patient's age and how long they have struggled with the skin issue.
* Can affect multiple areas of the body, for example (the hair{alopecia is a disorder that causes hair loss and could sometimes be misdiagnosed with less severe psoriasis cases since it also involves hair loss}, the muscles{can cause trouble to the joints if it reaches a severe case or is classified as one of the types of psoriasis}, the skin, etc.)
* Dandruff can be misunderstood as psoriasis, and vice versa.
* Each type of psoriasis requires a different type of overall treatment based on severity, targeted place of the skin issue, how long has the issue lasted so far, if the person struggles with other health issues along side psoriasis, etc.
* Genetic map of the patient to see if they might struggle with this skin diseases in the future(prediction for quicker treatment).
* Drug interaction??--> still need to look up how we tackle this point since we might enter into a rabbit hole of issues regarding patient’s safety and might dig too deep into a field away from ours.
* Chatbot that is within the domain of this skin issue, having the user interact with it and ask questions only related to psoriasis.
* A blog section for patients to share about their personal experiences in this journey.
* Providing tips related to treating the disease not only physically treating the patient, but also mentally preparing or helping them out in their day to day lives.
* Scrapping the web for best dermatologists in every governate to satisfy all patients in Egypt as well as providing places in Egypt known for their therapeutic healing hot-spots.

First abstract:

This project introduces an exciting, multi-faceted platform designed to revamp the diagnosis, prediction, and management of psoriasis, a complex autoimmune skin condition often misdiagnosed due to its similarity to other dermatological disorders. Our system employs cutting-edge machine learning algorithms to accurately detect psoriasis from user-uploaded images, differentiating it from similar conditions such as eczema, atopic dermatitis, and other rashes caused by seasonal change. By merging artificial intelligence and personalized medicine to address the complex issues of managing psoriasis, this project marks a significant improvement in dermatological care regarding a skin condition that is not recognized enough.

UPDATED FEATURES:

1. Detection System

2. Patient Management System

3. Treatment Recommendation System

Detailed breakdown:

***1. Detection System:***

- Use ML models (CNN, randomforest, Vgg16, ResNet, etc) for image classification

- Technologies: TensorFlow/PyTorch, OpenCV

- Features:

* Multi-class classification (psoriasis, eczema, rashes, etc.)
* Severity assessment
* Affected area detection

***2. Patient Management:***

- Database to store in patient’s data

- Technologies: SQLite/PostgreSQL, Django/Flask

- Features:

* Patient profiles
* Medical history tracking
* Treatment progress monitoring
* Image history storage

***3. Treatment Recommendation:***

- Technologies: scikit-learn, rules-based system(if-then rules to make the computer understand steps needed to proceed with the next step example:

self.severity\_rules = {

'mild': {

'body\_coverage': range(0, 3), # 0-3% body coverage

'plaque\_thickness': range(0, 2), # 0-2mm thickness

'redness\_score': range(0, 3), # Scale of 0-10

'scaling\_score': range(0, 3) # Scale of 0-10

},

'moderate': {

'body\_coverage': range(3, 10), # 3-10% body coverage

'plaque\_thickness': range(2, 4), # 2-4mm thickness

'redness\_score': range(3, 7),

'scaling\_score': range(3, 7)

},

'severe': {

'body\_coverage': range(10, 101), # >10% body coverage

'plaque\_thickness': range(4, 11), # >4mm thickness

'redness\_score': range(7, 11),

'scaling\_score': range(7, 11)

}

} )

* Features:
* Personalized treatment plans
* Lifestyle recommendations
* Progress tracking

***4. Genetic Prediction:***

- Machine learning model for risk assessment/ possibility of patient to get the diseases in the future

- Technologies: scikit-learn, TensorFlow

- Features:

* Family history analysis
* Genetic marker identification
* Risk factor assessment
* Early warning system/signs

***6. Chatbot:***

- Natural Language Processing based to answer questions related only to the disease

- Technologies: RASA, DialogFlow, or custom BERT model\* not sure of this point

- Features:

* Domain-specific responses
* Symptom assessment
* Treatment guidance

***7. Blog Section:***

- Content Management

- Technologies: WordPress API, custom CMS\* not sure of this point

- Features:

- User stories

- Search functionality

***8. Mental Health Support:***

- Integrated wellness tracking

- Technologies: \* not sure of this point

- Features:

* Mood tracking
* Stress management tips
* Support group connections
* Professional resources

***9. Location Services:***

- Healthcare provider directory of all good dermatologists in each governate

- Technologies: Google Maps API, custom scraping \*not sure of this point

- Features:

* Dermatologist listings
* Treatment centers
* Therapeutic locations/ touristic places in Egypt that provide this treatment experience for patients

***5. Drug Interaction Checker:***

- Integration with drug databases\* not sure of this point

- Technologies: RxNorm API, DrugBank API\* not sure of this point

- Features:

* Medication compatibility checking
* Side effect warnings
* Alternative medication suggestions
* Dosage recommendations