PROJECT REPORT

HealthAI: Intelligent Healthcare Assistant Using IBM Granite Companion (React)

YEAR : 2025 – 2026

COLLEGE NAME : K.C.S KASI NADAR COLLEGE OF ARTS & SCIENCE

CODE : UNM203

DEPARTMENT : COMPUTER SCIENCE

PROGRAM : B.C.A

SEMESTER: V

PROJECT SUBMITTED TO: UNIVERSITY OF MADRAS / NAAN MUDALVAN

Course Name : GEN AI WITH IBM

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Introduction

Health is a dynamic state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity, as defined by the World Health Organization. It is a multidimensional concept influenced by biological, psychological, environmental, and sociocultural factors, encompassing one's ability to live a fulfilling and productive life by realizing their potential and coping with life's challenges.

The WHO Definition of Health

A Holistic State: Health is viewed as a positive concept involving the integration of three key dimensions.

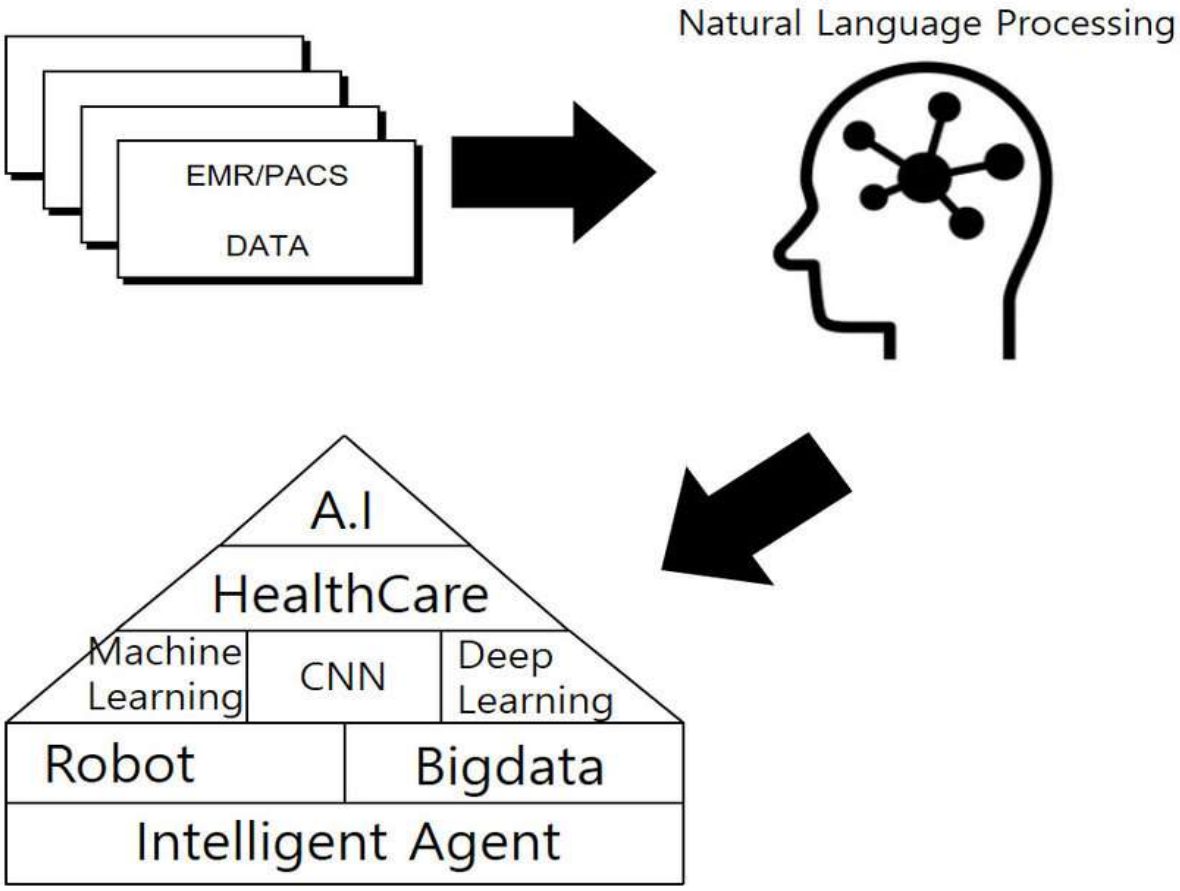
More Than Absence of Disease: It's not just about not being sick, but about thriving in all aspects of life.

The Three Dimensions of Health

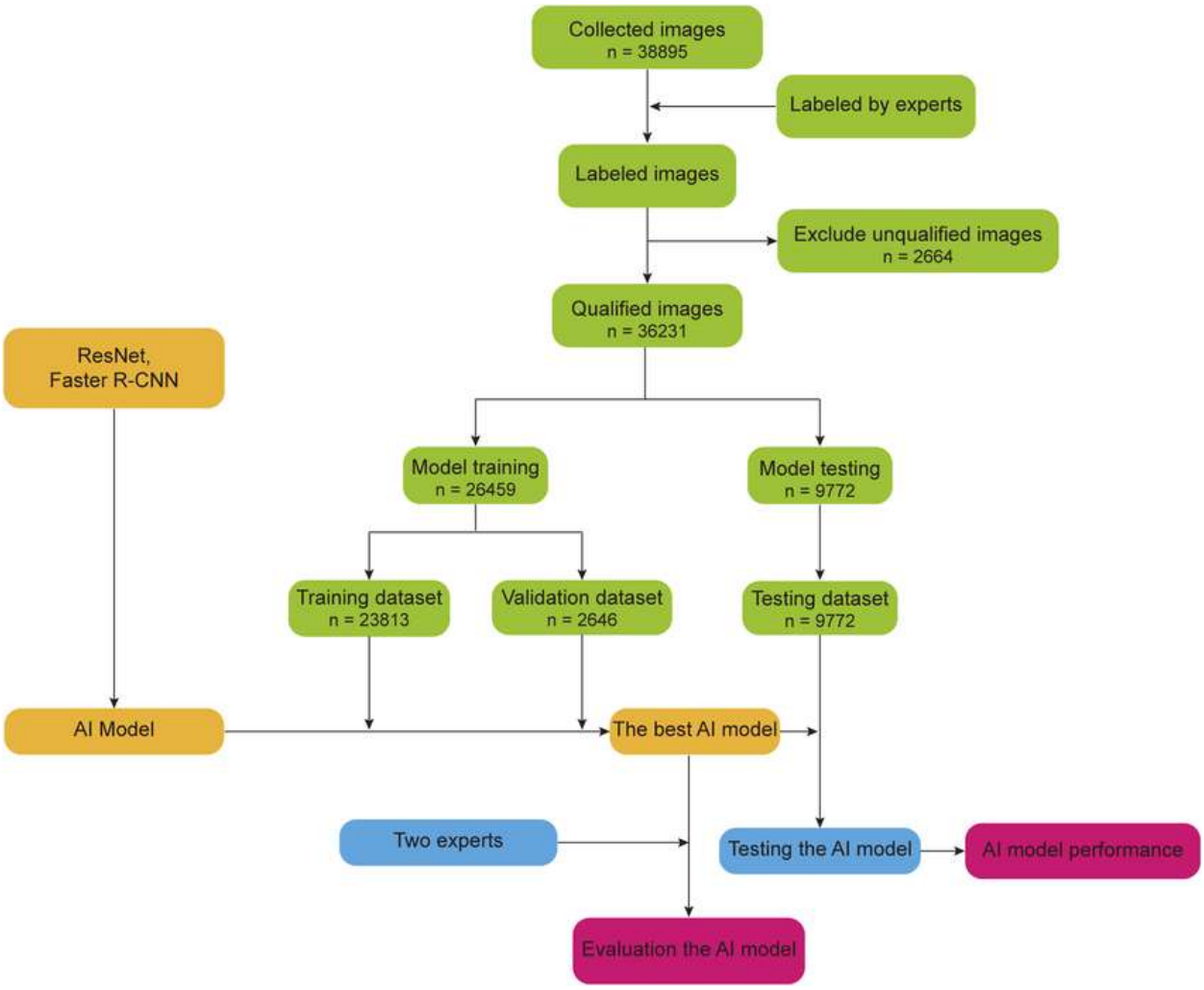
Physical Health: Involves the proper functioning of the body's anatomical structure and physiological systems, allowing all parts to work harmoniously.

Mental Health: Encompasses the ability to learn, think clearly, handle daily life events, work productively, and manage stress.

Social Health: Relates to one's ability to interact positively with others, form relationships, and function effectively within their community and society.


Natural Language Processing
EMR/PACS
DATA
A.I
HealthCare
Machine Learning
CNN
Deep Learning
Robot
Bigdata
Intelligent Agent

Flowchart:


Collected images
n = 38895
Labeled by experts
Labeled images
Exclude unqualified images
n = 2664
Qualified images
n = 36231
ResNet,
Faster R-CNN
Model training
n = 26459
Model testing
n = 9772
Training dataset
n = 23813
Validation dataset
n = 2646
Testing dataset
n = 9772
AI Model
The best AI model
Two experts
Testing the AI model
AI model performance
Evaluation the AI model

Sample Coding for Health AI:

```
Import gradio as gr
Import torch
From transformers import AutoTokenizer, AutoModelForCausalLM

# Load model and tokenizer
Model_name = “ibm-granite/granite-3.2-2b-instruct”
Tokenizer = AutoTokenizer.from_pretrained(model_name)
Model = AutoModelForCausalLM.from_pretrained(
    Model_name,
    Torch_dtype=torch.float16 if torch.cuda.is_available() else torch.float32,
    Device_map=”auto” if torch.cuda.is_available() else None
)

If tokenizer.pad_token is None:
    Tokenizer.pad_token = tokenizer.eos_token

Def generate_response(prompt, max_length=1024):
    Inputs = tokenizer(prompt, return_tensors=”pt”, truncation=True, max_length=512)

    If torch.cuda.is_available():
        Inputs = {k: v.to(model.device) for k, v in inputs.items()}

    With torch.no_grad():
        Outputs = model.generate(
            **inputs,
            Max_length=max_length,
```

```
        Temperature=0.7,
        Do_sample=True,
        Pad_token_id=tokenizer.eos_token_id
    )

    Response = tokenizer.decode(outputs[0], skip_special_tokens=True)
    Response = response.replace(prompt, “”).strip()
    Return response

Def disease_prediction(symptoms):
    Prompt = f”Based on the following symptoms, provide possible medical conditions and general medication suggestions. Always emphasize the importance of consulting a doctor for proper diagnosis.\n\nSymptoms: {symptoms}\n\nPossible conditions and recommendations:\n\n**IMPORTANT: This is for informational purposes only. Please consult a healthcare professional for proper diagnosis and treatment.**\n\nAnalysis:”
    Return generate_response(prompt, max_length=1200)

Def treatment_plan(condition, age, gender, medical_history):
    Prompt = f”Generate personalized treatment suggestions for the following patient information. Include home remedies and general medication guidelines.\n\nMedical Condition: {condition}\nAge: {age}\nGender: {gender}\nMedical History: {medical_history}\n\nPersonalized treatment plan including home remedies and medication guidelines:\n\n**IMPORTANT: This is for informational purposes only. Please consult a healthcare professional for proper treatment.**\n\nTreatment Plan:”
    Return generate_response(prompt, max_length=1200)

# Create Gradio interface
With gr.Blocks() as app:
    Gr.Markdown(“# Medical AI Assistant”)
```

```
    Gr.Markdown("**Disclaimer: This is for informational purposes only. Always consult healthcare professionals for medical advice.**")

    With gr.Tabs():
        With gr.TabItem("Disease Prediction"):
            With gr.Row():
                With gr.Column():
                    Symptoms_input = gr.Textbox(
                        Label="Enter Symptoms",
                        Placeholder="e.g., fever, headache, cough, fatigue…",
                        Lines=4
                    )
                    Predict_btn = gr.Button("Analyze Symptoms")

                With gr.Column():
                    Prediction_output = gr.Textbox(label="Possible Conditions & Recommendations", lines=20)

            Predict_btn.click(disease_prediction, inputs=symptoms_input, outputs=prediction_output)

        With gr.TabItem("Treatment Plans"):
            With gr.Row():
                With gr.Column():
                    Condition_input = gr.Textbox(
                        Label="Medical Condition",
                        Placeholder="e.g., diabetes, hypertension, migraine…",
                        Lines=2
```

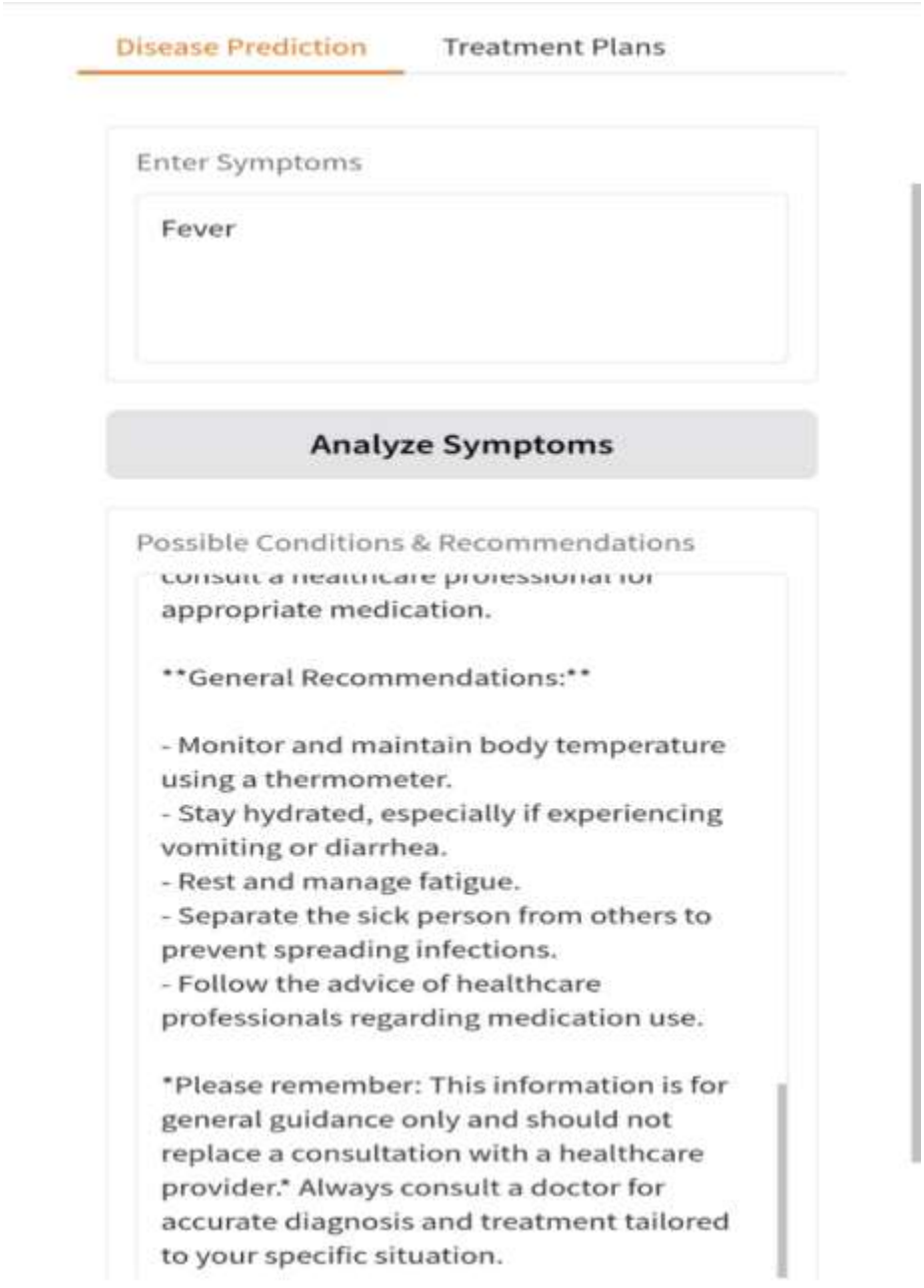
```
        )
        Age_input = gr.Number(label="Age", value=30)
        Gender_input = gr.Dropdown(
            Choices=["Male", "Female", "Other"],
            Label="Gender",
            Value="Male"
        )
        History_input = gr.Textbox(
            Label="Medical History",
            Placeholder="Previous conditions, allergies, medications or None",
            Lines=3
        )
        Plan_btn = gr.Button("Generate Treatment Plan")

    With gr.Column():
        Plan_output = gr.Textbox(label="Personalized Treatment Plan", lines=20)

Plan_btn.click(treatment_plan, inputs=[condition_input, age_input, gender_input, history_input], outputs=plan_output)

App.launch(share=True)
```

Project Execution :



Gender

Male

Medical History

Previous conditions

Generate Treatment Plan

Personalized Treatment Plan

assistance to quit smoking through behavioral therapy, nicotine replacement therapies, or prescription medications if needed.

10. Alcohol Consumption:
- Home Remedy: Limit alcohol intake to no more than one drink per day for women and two drinks per day for men.
- Recommendation: Adopt moderate alcohol consumption guidelines advised by your healthcare provider or organizations like the ADA.

By following this personalized treatment plan, you can better manage your diabetes condition while incorporating home remedies and general medication guidelines. Never hesitate to consult your healthcare professional for personalized advice tailored to your unique needs.

Project demo link:

IBM-PROJ/Demo video(HealthAI).mp4 at main · manju12092004/IBM-PROJ

project source code:

https://github.com/manju12092004/IBM-PROJ/blob/main/welcome_to_colab.py