

HEALTH ENGINE

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Abstract: The increasing demand for accessible and personalized healthcare solutions has driven innovation in leveraging artificial intelligence (AI) for improved health management. HealthEngine is an AI-based system designed to provide personalized health guidance tailored to individual needs. This platform analyzes user medical reports, identifies pre-existing conditions, monitors ongoing health concerns, and detects gaps in general health knowledge to deliver informed, actionable advice. By offering tailored recommendations for lifestyle adjustments, medication adherence, vaccination schedules, and regular doctor visits, HealthEngine empowers users to take proactive control of their well-being. Additionally, it ensures real-time guidance on specific conditions, enhancing preventive care and promoting better health outcomes. Through advanced data analytics, machine learning, and seamless integration with electronic health records (EHR), HealthEngine is a transformative step towards a smarter, more personalized healthcare ecosystem..

I. INTRODUCTION

Healthcare is increasingly moving towards personalization, focusing on tailored solutions to meet the unique needs of individuals. HealthEngine: AI-Based Personalized Health Guidance is a cutting-edge system designed to revolutionize this space by leveraging artificial intelligence to provide customized health support. This platform integrates user medical history, ongoing health concerns, and lifestyle data to offer precise recommendations for maintaining and improving health. From monitoring chronic conditions to suggesting preventive measures such as vaccinations and lifestyle changes, HealthEngine ensures comprehensive guidance. By combining advanced data analytics with AI-driven insights, it empowers users to make informed decisions, bridging the gap between traditional healthcare and innovative, technology-driven solutions.

II. LITERATURE SURVEY:

Research Topics:

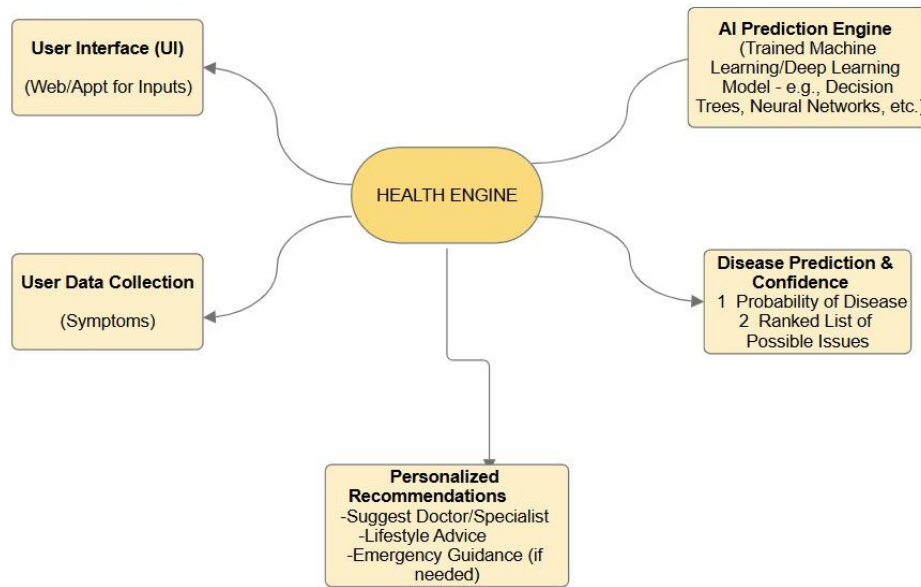
1. Exploration of existing health guidance platforms and their limitations.
2. Analysis of symptom-based diagnosis techniques and AI applications in healthcare.
3. Key studies on user behavior and requirements for personalized health tools.

Insights:

- Current health apps lack personalization and are limited to general advice.
- AI models like Decision Trees, CNNs, and NLP have shown promise in extracting insights from medical data.
- Incorporating user-specific factors such as age, gender, and health history improves recommendation accuracy.

III. PROPOSED SYSTEM

- I. System Overview: The **HEALTH ENGINE** is an AI-based personalized health guidance system. It collects user symptoms through a web/app interface, processes them via a trained machine learning model (e.g., decision trees, neural networks), and predicts possible diseases with confidence levels. Based on this, it provides personalized recommendations such as doctor/specialist suggestions, lifestyle advice, and emergency guidance if required. The system integrates data collection, prediction, and personalized outputs to assist users in managing their health effectively.



IV. Process Analysis

Phase 1: Requirement Gathering & Analysis: Stakeholder interviews and surveys, Analyze competitor platforms, Finalize scope.

Phase 2: System Design and Architecture: Create data flow diagrams, entity-relationship diagrams, and architecture blueprints.

Phase 3: Data Collection and Integration: Secure partnerships with healthcare providers or access to sample datasets; Integrate APIs for wearables, EHRs, and other health data sources.

Phase 4: AI Model Development: Train and fine-tune machine learning models using historical health data. Implement supervised and unsupervised learning techniques for predictive analysis.

Phase 5: User Interface Development: Design wireframes and prototypes for the user interface, Develop responsive front-end using web and mobile technologies (React, Flutter, etc.).

Phase 6: Testing and Validation Functional and integration testing of all components, Validate AI model accuracy with real-world data.

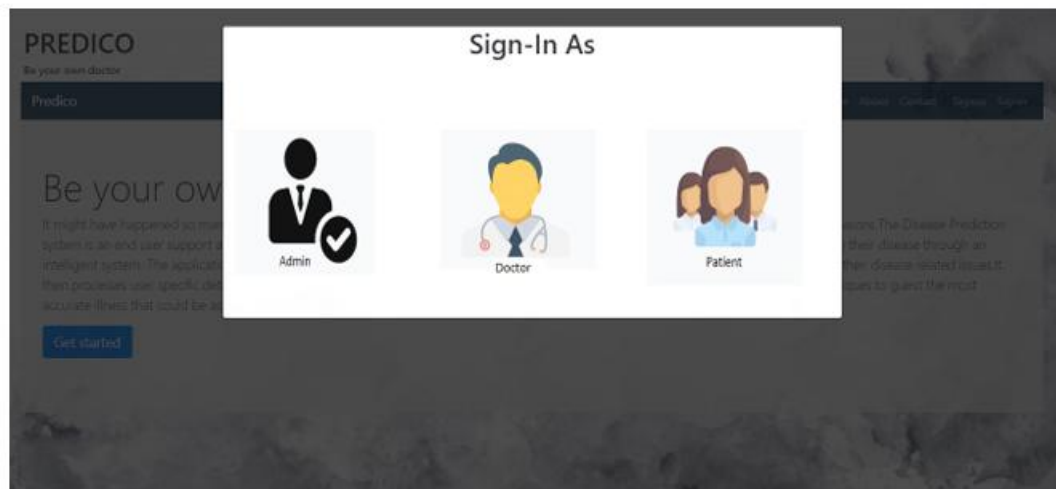
Phase 7: Deployment and Launch: Finalize system deployment and cloud hosting (AWS, Google Cloud, etc.), Perform load testing to handle expected traffic.

V. Technological Frameworks

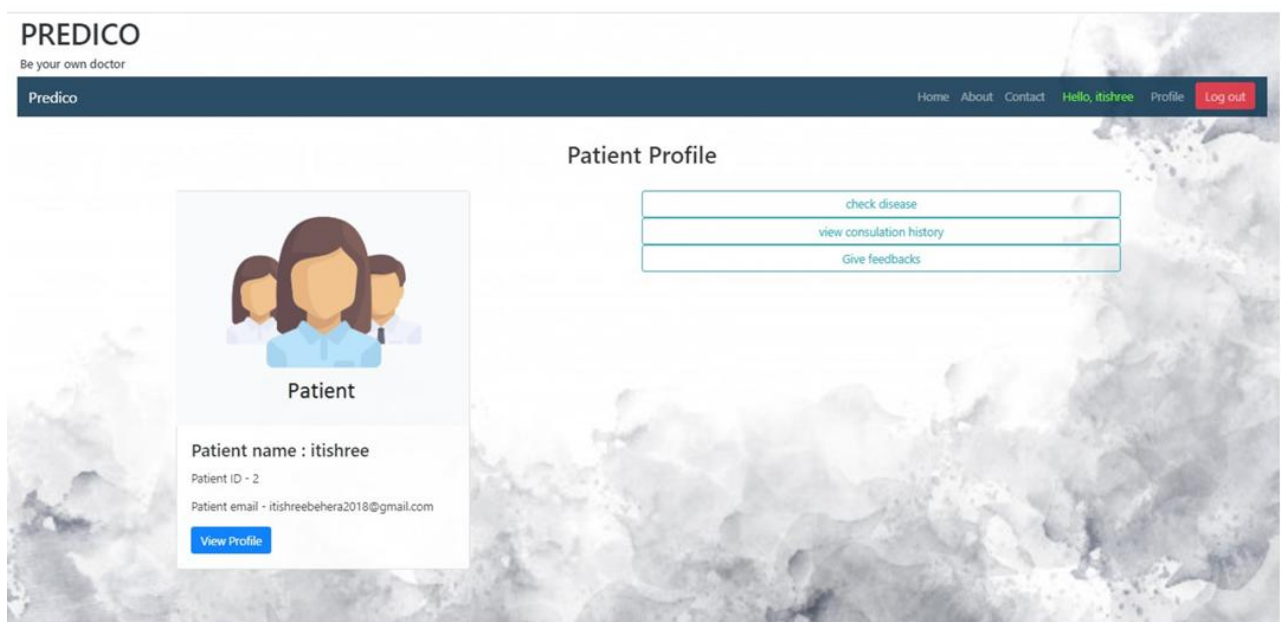
The development of HEALTH ENGINE involves a combination of front-end and back-end technologies:

1. Front end: HTML, CSS, Bootstrap, Javascript, JQuery
2. Back end: Django (python based web framework)
3. Database: PostgreSQL
4. Tools: PgMyadmin, Orange

Login Modal-



Patient UI-



Check Disease- Entering symptoms

PREDICO
Be your own doctor

Predico [Home](#) [About](#) [Contact](#) [Hello, itishree](#) [Profile](#) [Log out](#)

Identify possible conditions and treatment related to your symptoms.

[Add symptoms](#)

pa

abdominal_pain back_pain belly_pain chest_pain constipation dischromic_patches hip_joint_pain joint_pain
knee_pain muscle_pain neck_pain pain_behind_the_eyes pain_during_bowel_movements pain_in_anal_region painful_walking
palpitations passage_of_gases patches_in_throat stomach_pain

Symptoms list -

belly_pain
headache

Predictions-

chills
vomiting
headache
nausea
muscle_weakness

[Predict](#)

Patient name : itishree Age : 22
predicted disease is : **Malaria**
confidence score of : **71%**

[Click here to know more about Malaria](#)

This tool does not provide medical advice. It is intended for informational purposes only.
It is not a substitute for professional medical advice, diagnosis or treatment.

[Consult a Allergist/Immunologist doctor](#)

Consult a Doctor-

Predico
Home About Contact Hello, itishree Profile Log out

Consult a Doctor

Doctor name	Specialization	Email	Ratings	View profile	Consult
Bikash Kar	Dermatologist	bikashkar1@gmail.com	2/5	view profile	Consult
anuj	Cardiologist	anujpradhan4444@gmail.com	3/5	view profile	Consult

Consultation history- (Doctor)

Predico
Home About Contact Hello, Dr. Bikash Kar Profile Log out

Consulation History

Patient name	Patient Email	View Patient's profile	Predicted Disease Name	Consultation Date	Consultation Status	Resume Consultation
itishree	itishreebehera2018@gmail.com	view profile	(vertigo) Paroxysmal Positional Vertigo	Dec. 27, 2019	active	Consult
itishree	itishreebehera2018@gmail.com	view profile	Malaria	Dec. 28, 2019	active	Consult
itishree	itishreebehera2018@gmail.com	view profile	Arthritis	Jan. 12, 2020	closed	Consult
itishree	itishreebehera2018@gmail.com	view profile	Heart attack	Jan. 19, 2020	active	Consult

Consultation table (Admin login) –

Data Output Explain Messages Notifications

	id [PK] integer	consultation_date date	status character	diseaseinfo_id integer	doctor_id integer	patient_id integer
8	34	2019-12-13	active	65	3	2
9	35	2019-12-27	active	67	3	2
10	36	2019-12-27	active	74	5	2
11	37	2019-12-28	active	84	5	2
12	38	2020-01-12	closed	88	5	2
13	2	2019-11-26	active	8	3	2
14	39	2020-01-19	active	93	5	2

IV. CONCLUSION

HealthEngine represents a significant step forward in the integration of AI and healthcare. By leveraging artificial intelligence to provide personalized health guidance, it empowers users to take charge of their health in a proactive way, offering tailored advice, monitoring, and recommendations. The system's ability to integrate data from various sources like wearable devices and medical records enhances its effectiveness in providing timely and accurate insights. However, challenges such as ensuring data accuracy, maintaining robust security and privacy, and managing system performance at scale must be carefully addressed. Rigorous testing in areas like AI logic, interoperability, and error handling will be crucial to delivering a seamless, secure, and reliable experience for users. With continuous advancements in AI and healthcare technology, HealthEngine has the potential to revolutionize how individuals manage their health, making personalized care more accessible and effective.

V. REFERENCES

1. [Medical AI: Advances and Limitations in Healthcare Systems.](#)
2. [Symptom-Based Diagnosis with Machine Learning.](#)
3. [Privacy Standards in AI Healthcare Systems: GDPR and Beyond.](#)