1. Project Title

Meditrina : An AI powered Medical Assistant Using a Pre-trained Model

2. Introduction

This project aims to develop a model that revolutionizes personalized medicine by utilizing patient data to create tailored treatment plans. By analyzing vast amounts of patient information, including electronic health records, genetic profiles, and clinical outcomes, this model can generate personalized treatment recommendations. This model can identify patterns, predict disease progression, and estimate patient responses to interventions, enabling healthcare providers to make informed decisions.

3. Objectives

- *Enhance Diagnostic Accuracy* : Develop AI algorithms that assist healthcare professionals in accurate and timely diagnosis through analysis of medical data and patient symptoms.
- *Promote Patient Engagement* : Develop AI-driven tools to educate and engage patients in managing their health, promoting adherence to treatment plans and healthy behaviors.
- *Provide Tailored Treatment Plan / Suggest Way to proceed*

4. Background

The healthcare industry is continuously evolving, with increasing demands for more efficient and accurate medical diagnosis and treatment. Advances in artificial intelligence have shown great promise in transforming healthcare delivery by leveraging data-driven insights and predictive analytics. AI technologies, such as machine learning and natural language processing, have the potential to revolutionize the way healthcare professionals diagnose and treat medical conditions, leading to improved patient outcomes and streamlined healthcare processes.

Some of the pre-built AI Medical Assistants include TRIA : Orthopedic guide, Leny.ai, etc. These are a few existing solutions to the problem we wish to address. Our problem statement is lack of availability of One stop solutions to medical emergencies in off hours.

Target Audience : Patients looking for all possible disease outcomes (Diagnosis) based on symptoms and in need of customized treatment plans to proceed with, without visiting the doctor.

5. Methodology / Life Cycle

- **Data Collection :** Gather medical data from various sources, including medical databases, research papers, and public health datasets.
- **Data Preprocessing and Analysis :** Clean and preprocess the data to ensure quality and consistency for training the AI models. This also involves gathering insights about the data.
- **Model Development :** Develop machine learning models for symptom analysis and personalized recommendation systems**.**
- **Training and Testing :** Train the models on the preprocessed data and evaluate their performance using validation datasets.
- **System Integration :** Integrate the trained models into a cohesive AI-powered medical assistance system with a user-friendly interface.
- **Testing and Validation (Prediction) :** Conduct thorough testing to ensure the system's accuracy, reliability, and user-friendliness. Once done, add additional functionalities and features.

6. Tools and Technologies

- **Technology Stack:** Python, TensorFlow, OpenCV, Natural Language Toolkit (NLTK)
- **Data Sources:** Medical databases, research papers, public health datasets

7. Expected Outcomes

The AI-powered medical assistance system, that aims to guide unfit individuals in making informed decisions, improve efficiency in healthcare delivery and enhance patient outcomes. The project will demonstrate a Conversational AI model that will make disease detection and a treatment plan accessible to the user.

8. Timeline

- **Day 1-2**: Literature review and dataset preparation.
- **Day 3-5**: Model architecture design and initial implementation.

- **Day 6-9**: Model training and fine-tuning.
- **Day 10-12**: Evaluation and testing.
- **Day 13-14**: Documentation and final presentation preparation.

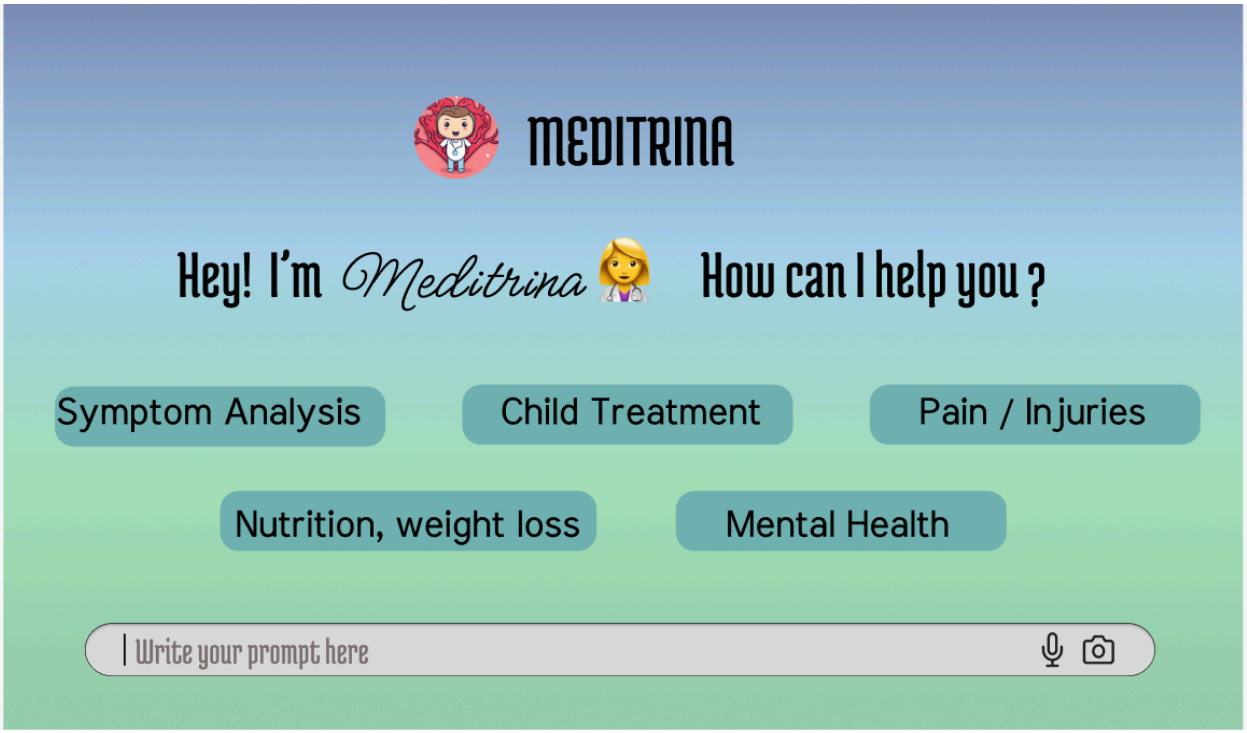
9. References

- https://www.alpha-sense.com/blog/trends/generative-ai-healthcare
- https://hbr.org/2023/11/genai-could-transform-how-health-care-works
- https://www.analyticsvidhya.com/blog/2023/08/generative-ai-in-healthcare/
- https://www.codametrix.com/medical-coding-ai/#:~:text=Medical%20coding%20AI%20relies%20on,and%20generate%20accurate%20medical%20codes

10. Team Members

- Saumya Gupta [05601192023] : Research, Frontend, Model Implement, Training
- Vijeta Vaidehi Bandha [07701192023] : Research, Documentation, Presentation
- Nimisha [04401032023] : Research, Data Preparation, Evaluation

Prototype Draft :


MEDITRINA
Hey! I'm Meditrina
How can I help you ?
Symptom Analysis
Child Treatment
Pain / Injuries
Nutrition, weight loss
Mental Health
Write your prompt here

Main Draft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Hey! I'm Meditrina
How can I help you ?
Write your prompt here