**A**

**Project Synopsis**

**On**

**AI-Powered Healthcare Diagnosis Software**

Submitted to

### Savitribai Phule Pune University

**In Partial Fulfillment of the requirement of the award of the degree of**

**Bachelor of Computer Application**

**TYBCA - SCIENCE, Sem VI**

**Academic Year 2024-25**

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**1. Title:**

* AI-Powered Healthcare Diagnosis Software

**2. Introduction:**

* The **AI-Driven Healthcare Diagnosis System** is an innovative project aimed at leveraging AI technology to assist users in diagnosing diseases more accurately and efficiently.
* The AI-Driven Healthcare Diagnosis System incorporates a **Large Language Model (LLM)** as a core component to enhance user interaction and deliver precise, context-aware results.
* This capability is harnessed in the system to process user queries, whether they come from patients and provide relevant responses tailored to the context of each query.

**3. Objectives:**

* To be able to chat with user.
* To be able to provide basic diagnosis for the query.
* To be able to assist in patient care by generating summaries or translations

**4. Scope:**

* **What Is Included :-**
* User Interaction through Natural Language Processing is Included.
* The system will analyze user queries related to symptoms, diseases, and medical conditions, and provide basic diagnostic suggestions or advice.
* **What is Excluded :-**
* While the system will provide basic diagnosis and suggestions based on symptoms, it will not offer detailed, complex, or definitive diagnoses. Users will be adviced to consult healthcare for in-depth assesments.
* The Software will not be able provide medications. It will only provide General Health Information but will not replace professional medical judgement.

**5. Methodology:**

* **Technologies-:**
* Large Language Modal (LLMs)
* React/Angular
* Flask/NodeJs
* MongoDb
* Streamlit
* Cuda
* Pytorch
* Python

6. Literature Review:

* An “ LLM automated systematic review” explore how LLMs can be integrated into the systematic review process, from screening and extraction to manuscript generation. These models help in automating various stages of literature reviews, making the process more efficient.
* **Therories-:**
* **Consciousness and Intelligence.**
* **Desirable Difficulties.**
* **Cognitive Load Theory**

**7. Implementation Plan:**

* **Phase 1-:**
* Creating relevant dataset by gathering data from sources.
* Pre-processing the dataset
* Creating the llms Transformer architecture
* Pre-Training the llm model
* Finetuning the model to achieve the desired output
* **Phase 2-:**
* Building the backend and frontend
* Testing and Validating the software

**8. Expected Outcomes:**

* **Enhanced Patient Engagement**.
* **Personalized Treatment Plans**
* **Support for Mental Health**
* **Reduced Costs**

**9. Conclusion:**

* Summarize the key points discussed in the synopsis.
* Conclude with a statement about the expected contribution of the project.

**10. References:**

* 1 Jan, Astraios: Parameter-Efficient Instruction Tuning Code Large Language Models, <https://arxiv.org/abs/2401.00788>
* 3 Jun, Skywork-MoE: A Deep Dive into Training Techniques for Mixture-of-Experts Language Models, <https://arxiv.org/abs/2406.06563>
* 11 Jul, FlashAttention-3: Fast and Accurate Attention with Asynchrony and Low-precision, <https://arxiv.org/abs/2407.08608>
* "Attention is All you Need". *Advances in Neural Information Processing Systems*. 30. Curran Associates, Inc. [arXiv](https://en.wikipedia.org/wiki/ArXiv_(identifier)):[1706.03762](https://arxiv.org/abs/1706.03762).