Project Proposal: Intelligent Medical Question Answering using Retrieval-Augmented Generation (RAG) and Meditron

- ## Title

MedIQ: A Retrieval-Augmented QA System for Evidence-Based Clinical Reasoning

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- ## Objective

To build a domain-specific, retrieval-augmented question-answering system capable of answering complex medical questions using evidence from PubMed abstracts, leveraging the Meditron-7B large language model for generation and a FAISS-backed retriever for context grounding.

- ## Motivation & Use Cases

1. Clinical Decision Support

Assist medical professionals in quickly retrieving evidence-based responses to nuanced clinical questions (e.g., treatment strategies, prognosis, drug interactions).

2. Medical Education & Exam Prep

Enable students to ask questions across difficulty levels (from physiology to clinical cases) and receive grounded, explainable answers with citations.

3. Biomedical Research Navigation

Help researchers summarize relevant findings across thousands of PubMed abstracts related to their hypothesis or research focus.

4. Patient Awareness & Triage

Support accurate, grounded medical information delivery for patient-facing interfaces while preventing hallucinated content.