

# MedEd On-Demand

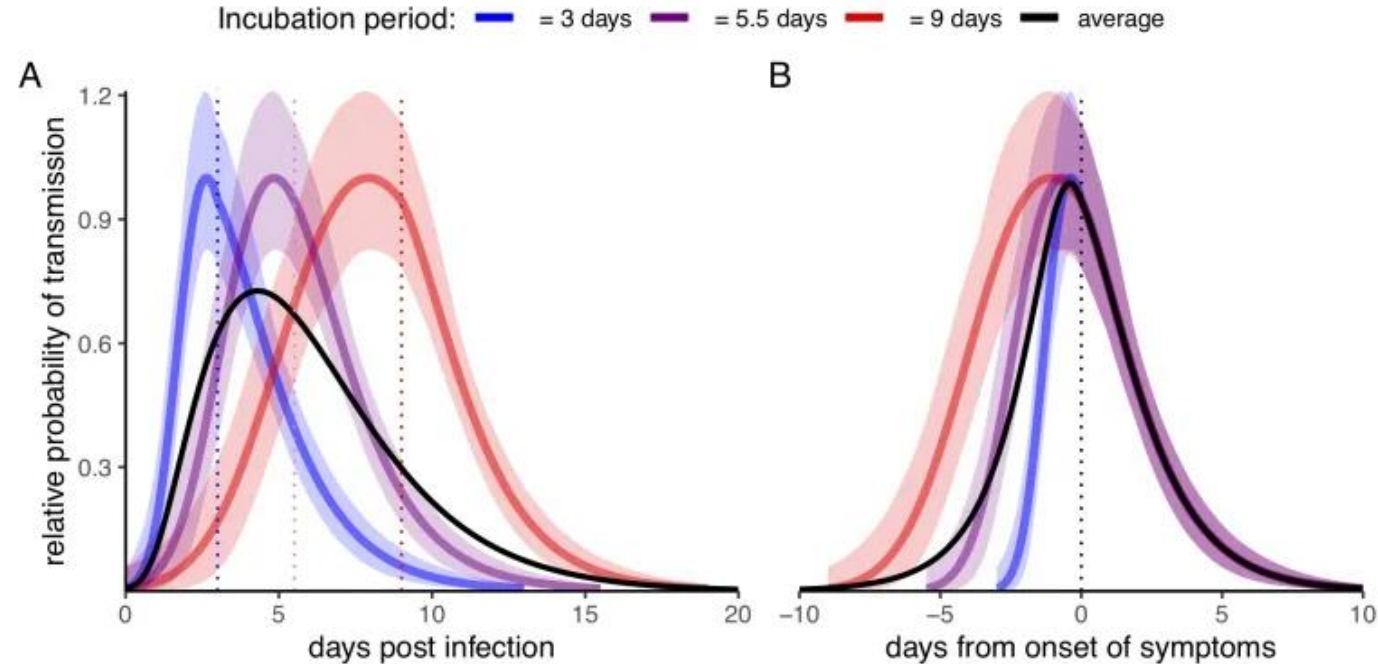
AI-Driven Healthcare Education  
System  
RAG LLM B2C Non-profit



- Hackathon AI FOR GOOD
- Team: GenAIMedTech
  - Konstantin Koshechkin  
<https://www.linkedin.com/in/kosh-k/>
  - Ruslan Sabitov  
<https://www.linkedin.com/in/russellcyber/>

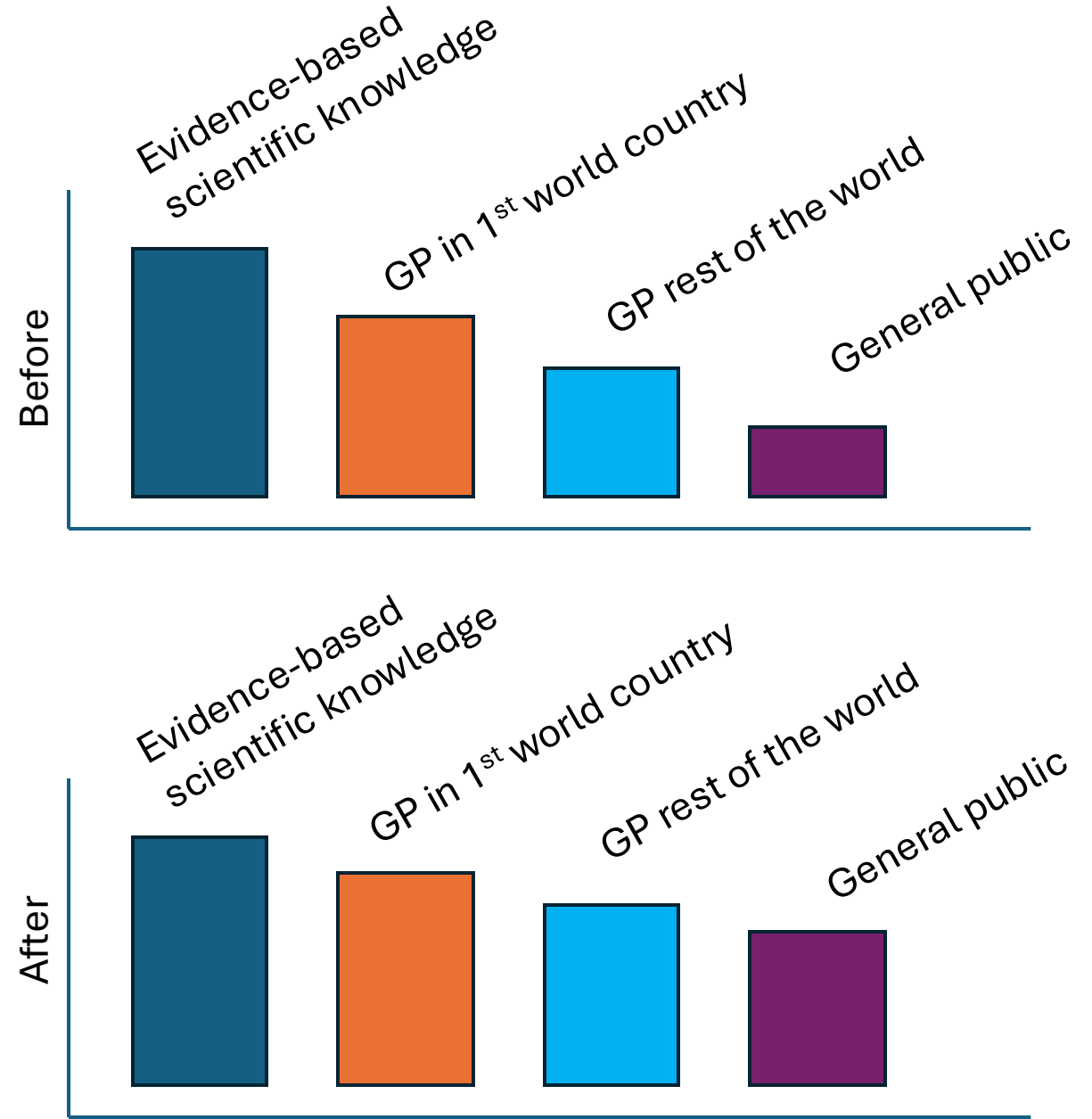
# Problem Statement

- Medical knowledge is evolving rapidly, especially with the emergence of new diseases.
- Traditional methods such as textbooks and continuous medical education fail to keep up with the speed at which new information needs to be disseminated, creating gaps in knowledge for healthcare professionals and patients.
- Knowledge is unequally distributed across different languages



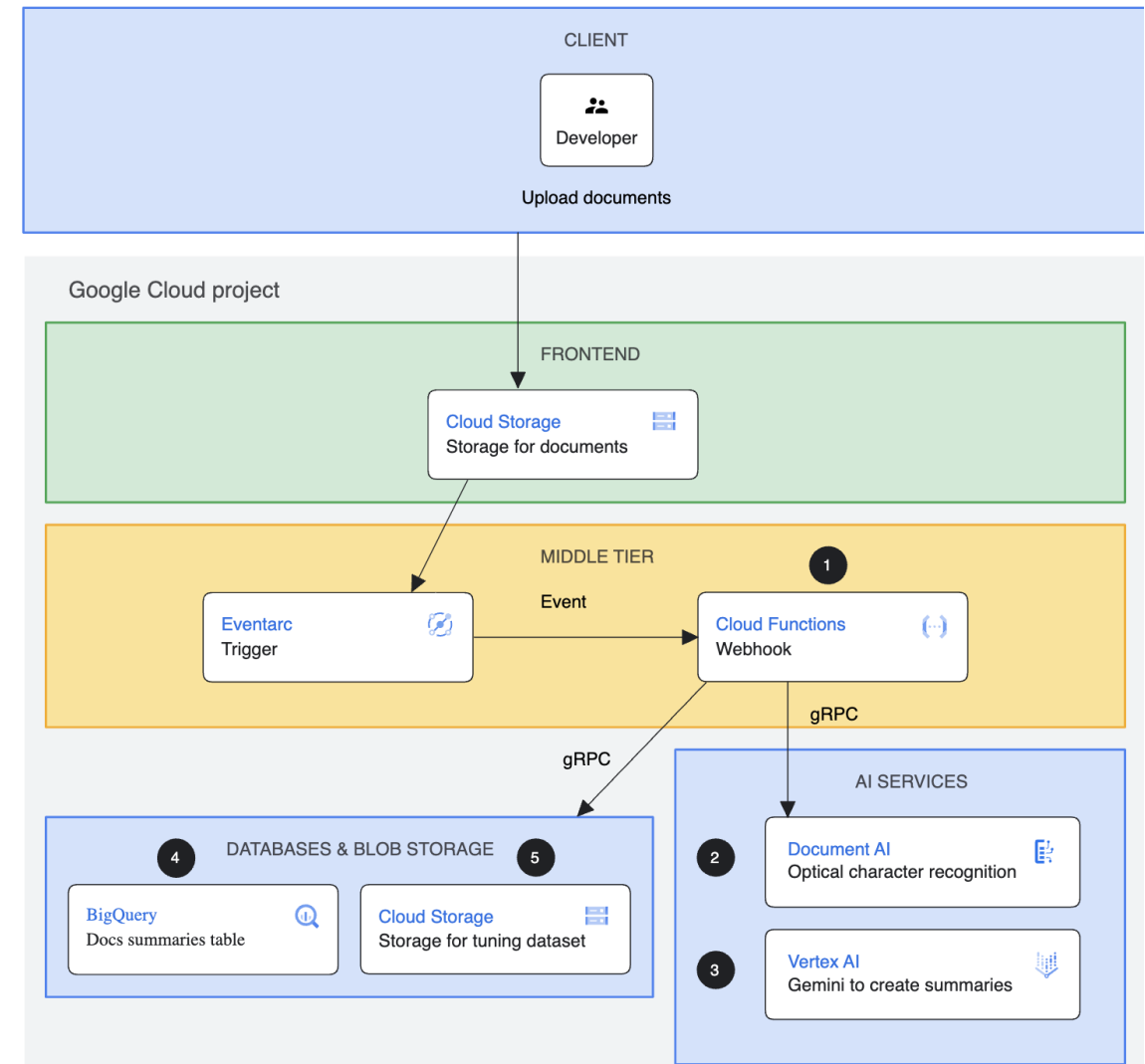
# Objective

- Develop a web application powered by Large Language Models (LLMs) to generate educational content on healthcare topics, based on scientific articles, ensuring evidence-based, up-to-date, and user-tailored content.



# Pipeline Overview

- 1. Data Extraction: Extract data from trusted scientific resources (PubMed, WHO, CDC)
- 2. Vector Database: Store content for RAG-based retrieval
- 3. LLM Integration: Generate medical content on-demand
- 4. Custom Prompts: Tailor content for different user levels
- 5. Multilingual Support: Translate into 50+ languages



# Sample Prompt

- You are an AI assistant specializing in healthcare education. Your task is to create a one-page educational material tailored for healthcare professionals.
- The material should be structured into the following sections:
- Overview: Provide a concise summary of the condition, including key facts and relevance to clinical practice.
- Symptoms: List the common symptoms, emphasizing those critical for diagnosis.
- Causes: Describe the primary causes or underlying mechanisms of the condition.
- Risk Factors: Highlight factors that increase the likelihood of developing the condition.
- Complications: Outline potential complications or severe outcomes if the condition is untreated.
- Treatment: Summarize current evidence-based treatment options, including first-line therapies and alternatives.
- Prevention: Include strategies to prevent the condition or reduce its impact.
- Requirements:
- Use clinical terminology appropriate for healthcare professionals.
- Ensure the information is evidence-based, concise, and easy to reference.
- Focus on the most relevant details for quick understanding and practical application.

# Result

GenAIMedTech

Generate article

Example: Systemic Lupus Erythematosus

Language

English

Skill Level

Beginner

Professional

Systemic Lupus Erythematosus

Language: en • Level: beginner • Created: 11/24/2024

Systemic Lupus Erythematosus (SLE) – A Quick Reference for Healthcare Professionals

Overview:

Systemic Lupus Erythematosus (SLE), commonly referred to as lupus, is a chronic, autoimmune, multisystem inflammatory disease characterized by the production of autoantibodies against nuclear antigens. It exhibits a highly variable clinical presentation, ranging from mild to life-threatening, and frequently necessitates multidisciplinary management. Its prevalence is estimated at 20-150 per 100,000, with a female predominance (9:1 female-to-male ratio). Early diagnosis and aggressive management are crucial to minimize organ damage and improve long-term outcomes.

Symptoms:

SLE manifests with a wide array of symptoms, making diagnosis challenging. Common presentations include:

**Constitutional:** Fatigue, fever, weight loss

**Musculoskeletal:** Arthralgia, arthritis (typically non-erosive), myalgia

**Cutaneous:** Malar rash (butterfly rash), discoid rash, photosensitivity, oral ulcers

**Renal:** Nephritis (varying severity), proteinuria, hematuria

**Hematologic:** Anemia, leukopenia, thrombocytopenia

**Neuropsychiatric:** Seizures, cognitive dysfunction, psychosis, peripheral neuropathy

Most common symptoms of Systemic lupus erythematosus

Systemic:

- Low-grade fever

- Photosensitivity

Psychological

- Fatigue

- Loss of appetite

Mouth and nose

- Ulcers

Face

- Butterfly rash

Muscles

- Aches

Pleura

- Inflammation

Pericardium

- Inflammation

Joints

- Arthritis

# Key Features

- **Trusted Content:** RAG scientific knowledge used to provide answer by LLM
- **Scalable Content Generation:** Generate content on-demand for various medical topics.
- **Customizable User Experience:** Tailor content for different user roles (Doctors, Nurses, Medical Researchers).
- **Global Reach:** Translate content into 50+ languages.
- **Free of Charge:** Medical knowledge dissemination based on donations.



World Health  
Organization



Google Cloud



# Technological Stack



- Data storage: **s3 bucket**
- Compute: **Cloud Run**
- Embedding vector: **all-MiniLM-L6-v2**
- LLMs for Content Generation: **gemini-1.5-pro-002**
- Database: **BigQuery**
- Multilingual Support : **gemini-1.5-pro-002**
- Frontend: **Next.js**

Buckets > summary-docs-genaimedtech

CREATE FOLDER    UPLOAD    TRANSFER DATA    ⋮

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# Expected Impact

- Faster dissemination of scientific knowledge during health crises.
- Improved healthcare practices through quick access to the latest information.
- Global health education for underserved regions.



# Thank you!

- Join us in revolutionizing healthcare education! Let's use AI to bridge the knowledge gap and ensure healthcare professionals and patients have access to up-to-date, scientifically accurate information.
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