The logo for 'lab lab ai' is located in the top left corner. It consists of the words 'lab', 'lab', and 'ai' stacked vertically in a white, sans-serif font, all contained within a blue square with a thin white border.

FEBRUARY 16 -22 2024

RESEARCHWRITERGPT: GPT-4 POWERED APP CREATION AND EVALS HACKATHON

AN ADVANCED MULTIMODAL RESEARCH PAPER WRITING  AI ASSISTANT

ResearchWriter GPT Project Overview

OBJECTIVE

Draft research papers using both text and visual analysis

INTEGRATION

Merging GPT-4's vision capabilities with Clarifai's AI tools.

APPLICATION

Writes research papers in APA format with references.



Problem Addressed

Current AI tools Lacks in:

**Multimodality
Integration Gap**

Lacks visual data
analysis

**APA Format
Writing**

Difficulty in
adhering to APA
format.

**Generic Content
Style**

Produce's non-
academic style.

**Synthesis from
large datasets**

No easy and fast
access to large
body of articles

Solution Applied

AI Technologies used through ClarifAI API

GPT-4 Vision

GPT-4 text

OpenAI Whisper

RAG

Image, Charts, Pdf
analysis

Prompt
Engineering

Text <-> Audio

Pinecone RAG

Academic databases accessed like:



Google Scholar



Semantic Scholar



PubMed



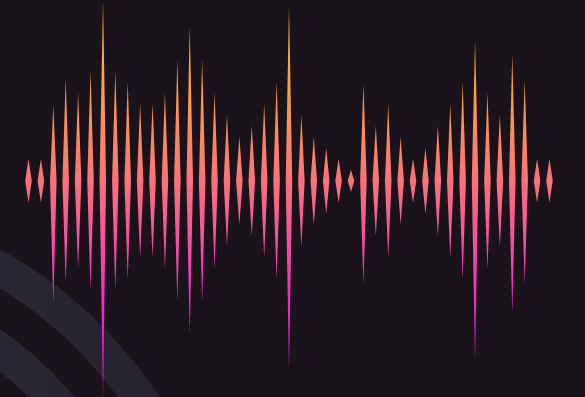
Arxiv

for up-to-date and relevant literature.

Interactive User Experience



Text Chat



Audio Interaction



Local File upload -
PDFs, images.



Url inputs

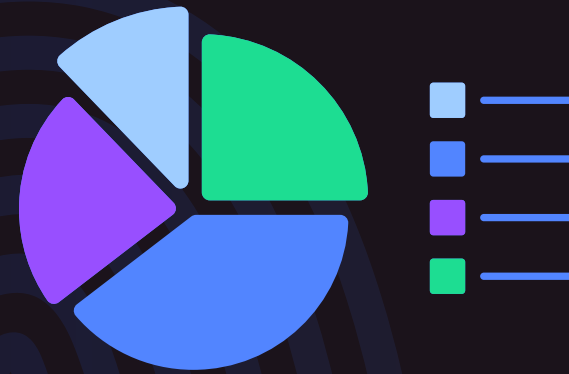
GPT-4 Vision

Advanced Image Analysis



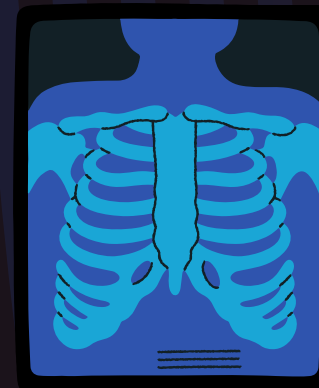
**Remote Patient
research**

Chronic diseases, mental
illness, disabilities.



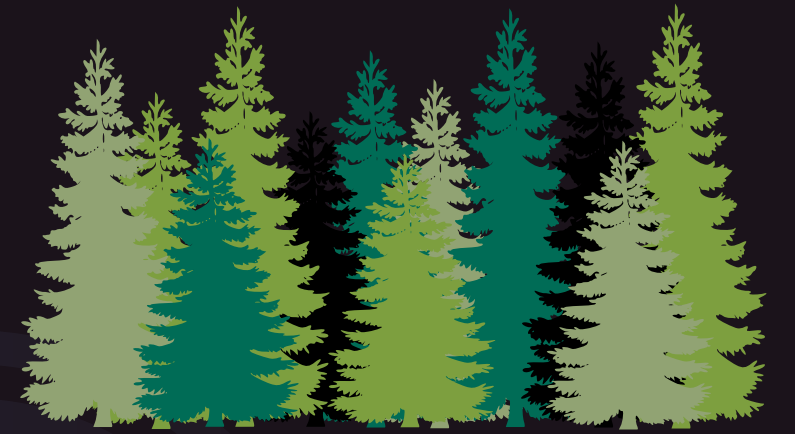
Figures

Tables, charts, and
infographics



Medical Images

X-rays, ophthalmology



Objects

plants, artifacts, or
wildlife



Maps

Locations and
directions



Utilized Pinecone RAG system.

Integrating RAG

Accurate, quick context-based LLM response.

(Retrieval Augmented Generation)

with Pinecone

Option to create and append a vector database for contextual response.



trulens

Offers built-in feedback mechanisms including groundedness, relevance, and toxicity

Integrating Trulens

LLM Evaluation

Improves Accuracy

Reduces hallucinations in LLM response.

Three key dimensions:

Context relevance, Groundedness, and Answer Relevance

Future Development and Expansion

Advanced Vision Models

Face sentiment analysis,
Object detection via live camera

Predictive Bibliography

Auto-generating bibliographies.

Niche Research

More relevant and targeted research assistance.

Comprehensive Writing

Write all sections of a Research paper.



TEAM

Devananda Sreekanth

Design Engineer

Sreekanth Gopi

Team leader

Osama Mosaad

Solutions Architect

