lab lab ai

JANUARY 12 -22 2024

RESEARCHWRITERGPT: NEXTGENGPT 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

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Solution Applied

AI Technologies used through ClarifAI API

GPT-4 Vision

Image, Charts, Pdf analysis

GPT-4 text

Prompt Engineering

OpenAI Whisper

Text <-> Audio

RAG

ClarifAI RAG

Back to Agenda

Academic databases accessed like:

Google Scholar

Semantic Scholar

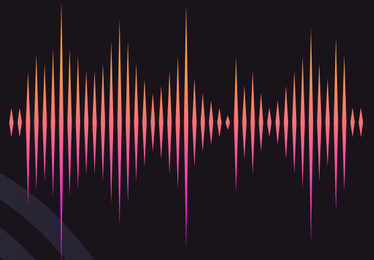
PubMed

Arxiv

for up-to-date and relevant literature.

Interactive User Experience

Text Chat



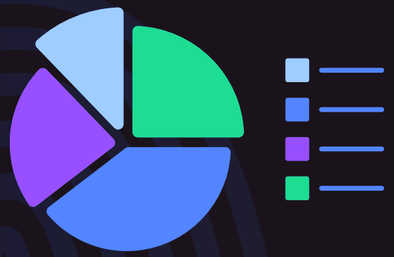
Audio Interaction

Local File upload - PDFs, images.

Url inputs

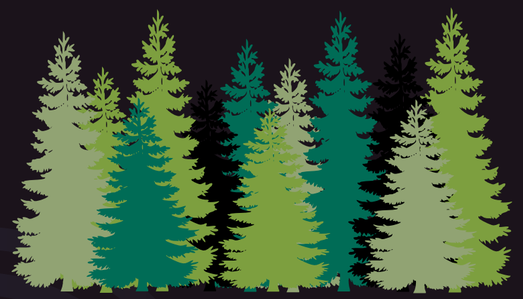
GPT-4 Vision

Advanced Image Analysis



Figures

Tables, charts, and infographics

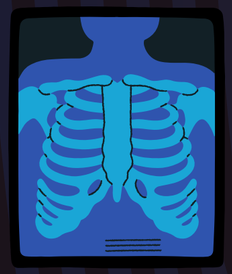


Objects

plants, artifacts, or wildlife

Remote Patient research

Chronic diseases, mental illness, disabilities.



Medical Images

X-rays, ophthalmology

Maps

Locations and directions

Integrating RAG

(Retrieval Augmented Generation)

with Clarifai

Utilized ClarifAI accessed RAG system.

Accurate, quick context-based LLM response.

Created a vector database of over 1.7 million STEM articles from ArXiv.

Future Development and Expansion

Advanced Clarifai Models

Face sentiment analysis, Object detection via live camera

Niche Research

More relevant and targeted research assistance.

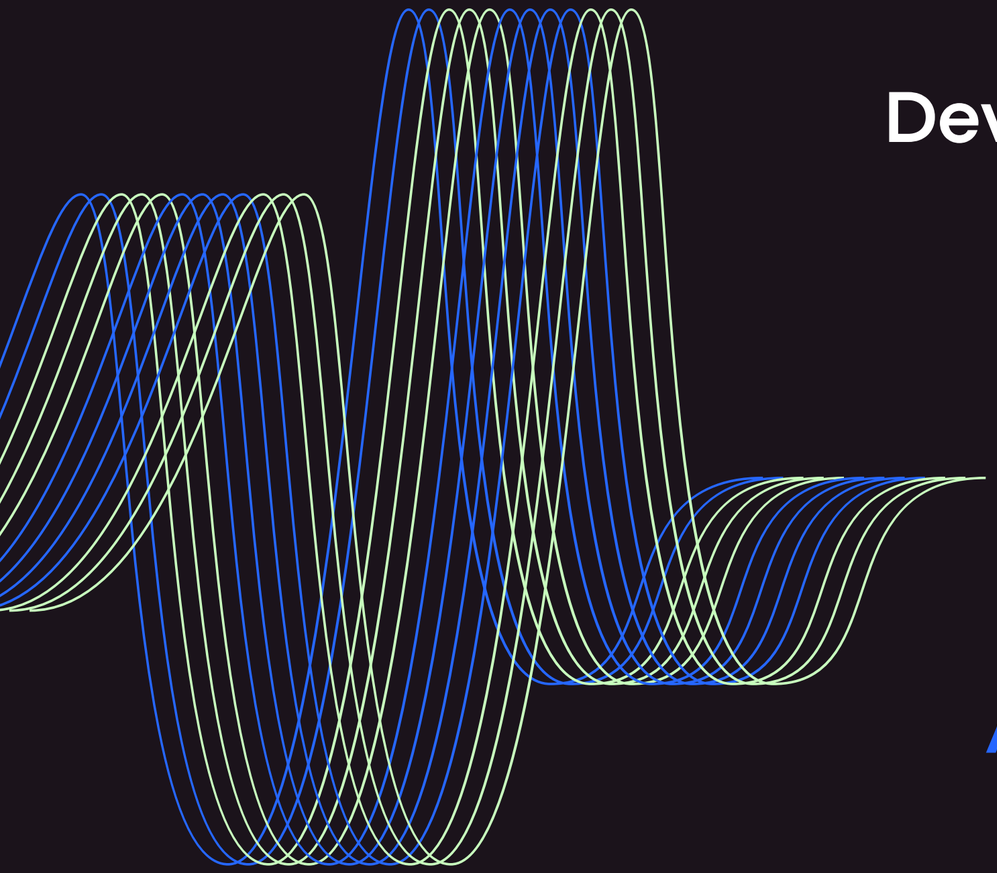
Predictive Bibliography

Auto-generating bibliographies.

Comprehensive Writing

Write all sections of a Research paper.

TEAM



Sreekanth Gopi
Team leader

Osama Mosaad
Solutions Architect

Devananda Sreekanth
Design Engineer

Muhammad Kashif
Python Developer

Nirasha Jayalath
AI / ML Enthusiast

Faraz Shoaib
Technical Associate