NLP BASED QUESTION ANSWERING CHATGPT

Gut Microbiome GPT

INTRODUCTION

- Natural language processing (NLP) based chatGPT models became popular in the recent times. NLP models extract valuable information from online databases and has gained popularity among IT professionals including academic researchers working in biomedical field, and deep learning has boosted the development of effective text mining models. However, current NLP models to biomedical text mining yield unsatisfactory results due to word distribution shift from general domain corpora to biomedical corpora.
- There are mainly two types of pre-trained language models in the general language domain, i.e., Bidirectional Encoders Representation from Transformers (BERT and its variants), generative pre-trained transformers (GPT and its variants). The former models being uses a neural-network-based technique for language processing pre-training. It can be used to help discern the context of words in search queries. These models have achieved great success on a variety of discriminative downstream biomedical tasks, the lack of generation ability constrains their scope whereas the later, ChatGPT models like large language model (LLM), and pathway language model (PaLM) uses only encoder while training and decoder for generating output, and able to generate long answers for user queries.

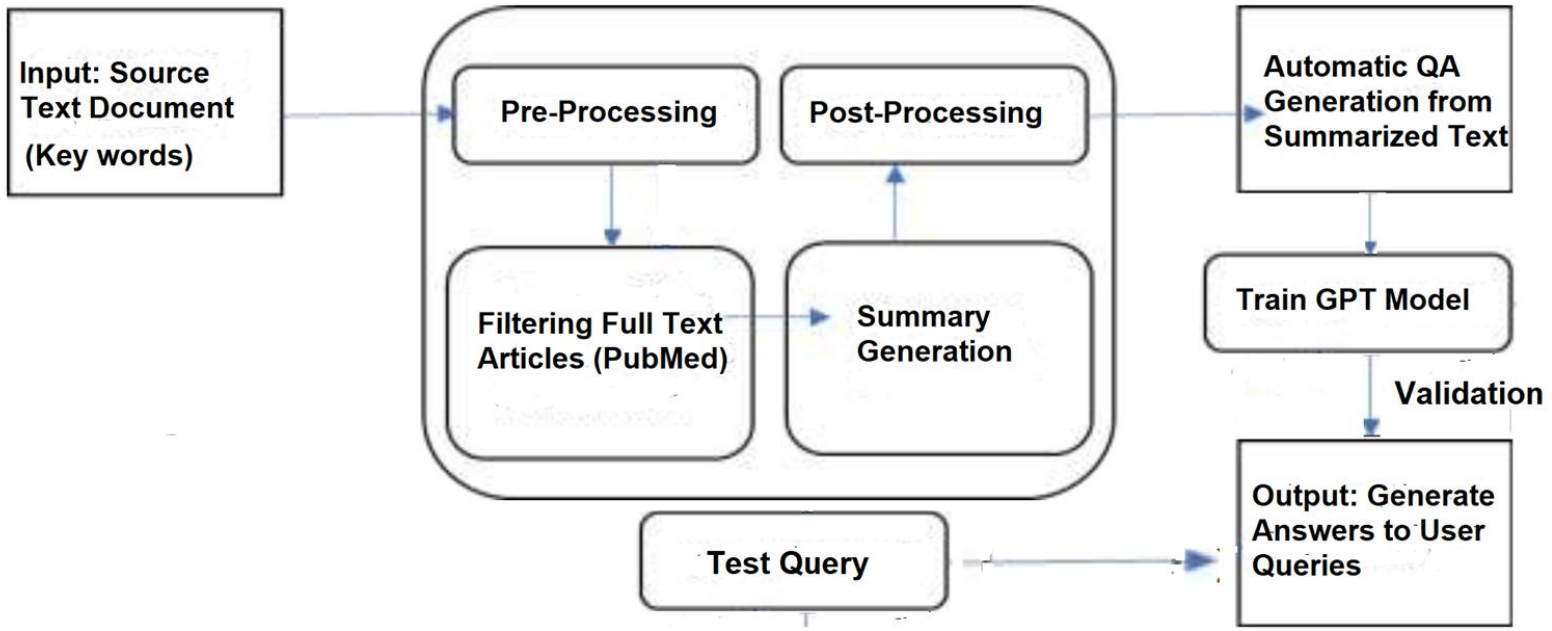
PROBLEM STATEMENT

Current NLP-based chatGPT deep learning models have been developed and validated these models on multiple-choice questions related to general topics and to some extent standard scientific benchmark datasets such as pubmed Question-Answering (pubmedQA), arxiv, and Stanford question-answering dataset (SquAD). However, QA task particularly for full text article reading is a quite challenging task and prolific in the scientific context in the current chatGPTs. Our pipeline focuses on the development of a generative pre-trained transformers (GPT) model for QA task on biochemical, bioinformatics, biomedical, including clinical literature like biomarkers, drugs, dosage, etc. related to the given keywords or context-specific literature in the field till date ("human gut microbiome as a case study").

CHALLENGES

- Tendency to produce inaccurate or incomprehensible texts amid generating plausible and compelling responses.
- Handling limitation on number of tokens.
- Handling huge data and key words normalization.
- Higher computational time and cost.
- Understanding the context-specific user queries and generate long answers.

OUR APPROACH

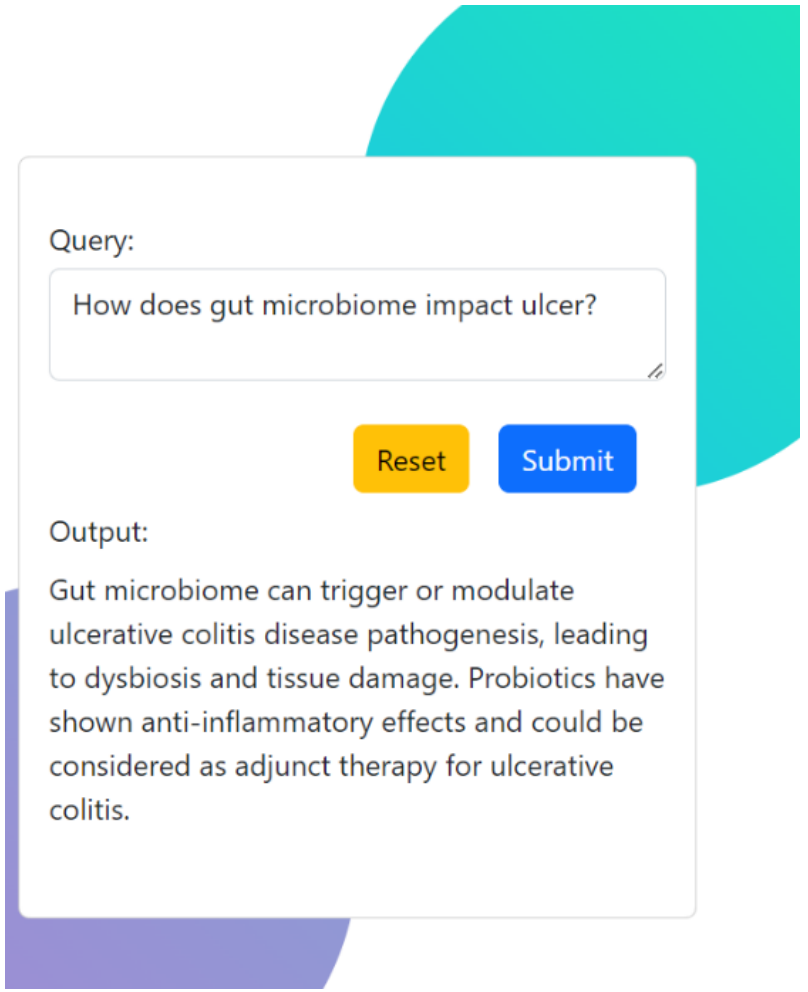


HIGHLIGHTS

- The developed model is specific for human gut microbiome and the GPT can answer biomedical questions related to the human gut microbiome
- This model has been trained on 10k + Question Answer Context generated from the articles and abstracts obtained from PubMed and PMC.
- The developed model has given an accuracy and precision of 85%

WEB API


SignUp
Username
Email
password
SignUp
Already have an account? LogIn


Query:
How does gut microbiome impact ulcer?
Reset
Submit
Output:
Gut microbiome can trigger or modulate ulcerative colitis disease pathogenesis, leading to dysbiosis and tissue damage. Probiotics have shown anti-inflammatory effects and could be considered as adjunct therapy for ulcerative colitis.

WHY 3BIGS?

- 3BIGS chatGPT tool is enabling our customers to answer context-specific user queries like disease biomarker genes, drugs (including dosage) for disease specific and identify potential biomarker genes using machine learning. Also, the traditional approaches require manual human intervention involving huge cost and time including human errors. By persevering reduction of the inherent noise in the scientific research articles, 3BIGS chatGPT pipeline has alleviated the challenges of natural language processing-based question-answering task related to scientific data and improve the accuracy in these projects. We also have high-end servers at our end which can additionally reduce the time required for these analyses.

- 3BIGS solution offers an affluent scheme of natural language processing (NLP) and deep learning models, chatGPT tool to enable the researchers, scientists, bioinformaticians, clinicians, to infer better and faster insights from PubMed literature research data. Leverage 3BIGS expertness in NLP and ML data analysis techniques to infer knowledge for a context specific disease of interest. Regenerate your R&D efforts today and use our tested and validated models or build models of your own with great ease using NLP model data.