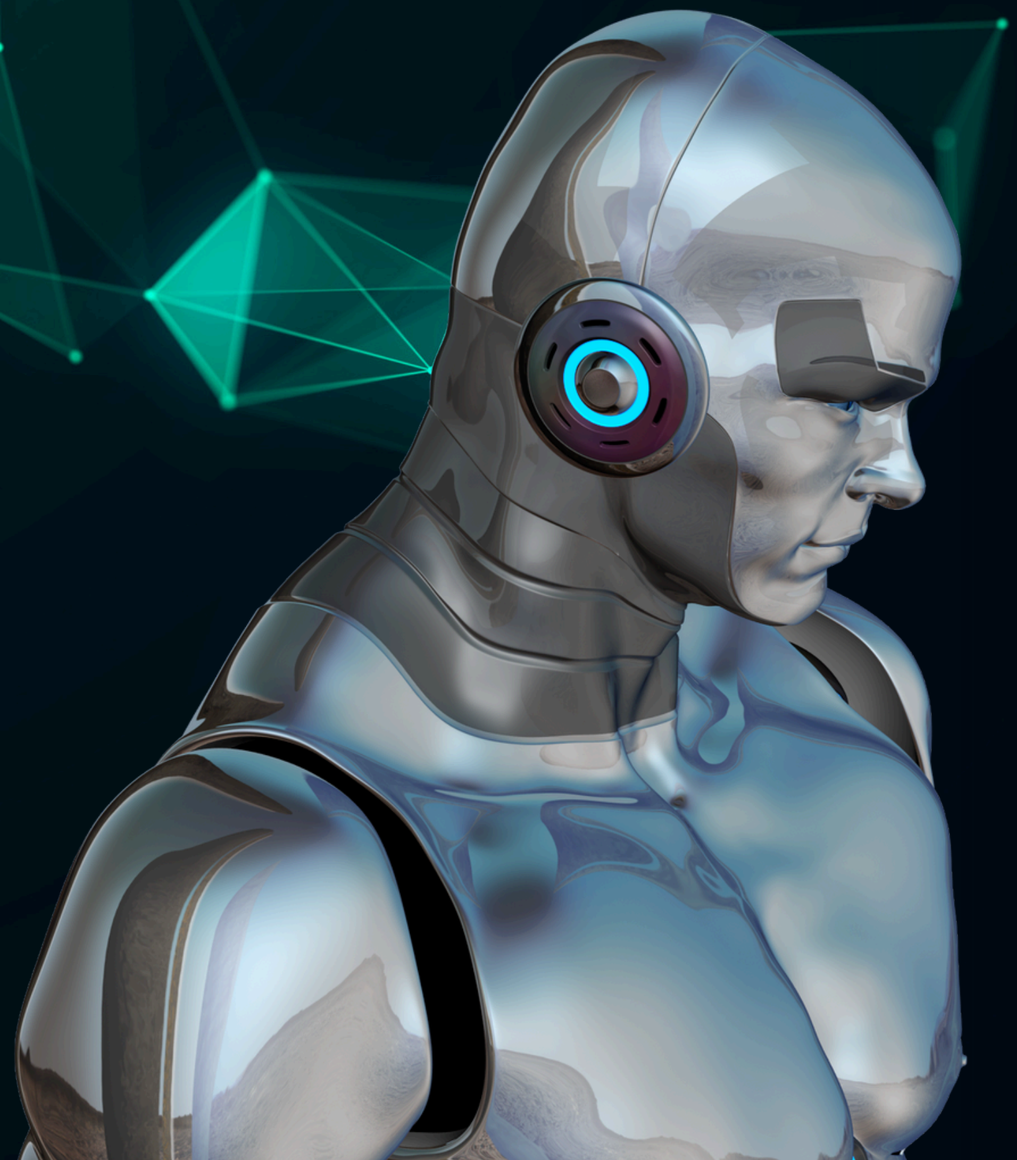
Chatbot Development with GPT-2



Leveraging GPT-2 for Q&A Generation

MUHSIN_

Introduction

Welcome to the presentation of AI-powered Q&A chatbot! This intelligent chatbot is designed to provide instant, accurate, and engaging answers to all your AI-related queries. Built using the powerful GPT-2 model, it leverages state-of-the-art natural language processing to understand and generate human-like responses. Whether you’re curious about machine learning, neural networks, or AI concepts, this chatbot is here to help you explore the fascinating world of artificial intelligence with ease.

Why create this chatbot?

- **Automate answers for frequently asked questions,**
- **Provide a scalable solution for customer suport,**
  Enable quick access to information.

Key Technologies Used:

GPT-2,Hugging Face and Python.

Approach & Methodology

Dataset:

- Description of the dataset (questions and answers format)
- Sources of data used (e.g., CSV files, publicly available data, etc.)

Data Preprocessing:

- Tokenization
- Dataset cleaning (removing duplicates, handling missing values, etc.)

Model Selection:

- GPT-2 for text generation

why GPT-2 over other models

Proven Performance,Resource Efficiency,Fine-Tuning Flexibility, Community Support and Future Scalability.

By choosing GPT-2, I balanced performance and practicality for building my chatbot.

Model Fine-Tuning

Steps Taken:

- Fine-tuning GPT-2 on the dataset
- Adjusting model parameters (e.g., learning rate, epochs)
- Training and evaluation splits

Training Process:

- Hyperparameters used
- Trainer setup
- Evaluation metrics

Deployment

Deployment Process:

- Saving the trained model and tokenizer
- Loading the model for inference
- Testing the chatbot with sample questions

Results & Evaluation

Example Questions and Responses:

Q: What is Natural Language Processing (NLP)?
A:(NLP) is a field of AI that enables machines to understand, interpret, and respond to human language.

Evaluation Metrics:

Chatbot Accuracy: 66.66%

Challenges & Solutions

Challenges Faced:

- Tokenization issues
- Handling edge cases and ambiguous questions
- Model training time and resource limitations

Solutions Implemented:

- Improved tokenization handling
- Beam search for better predictions
- Model optimization

Future Work

Future Enhancements:

- Improving model accuracy
- Adding more diverse datasets
- Incorporating NLP tasks (e.g., sentiment analysis)

Potential Applications:

- Customer support
- Educational tools
- Virtual assistants

Conclusion

AI chatbot bridges the gap between curiosity and knowledge, offering instant and reliable answers to AI-related questions. This project showcases the power of natural language processing and the endless possibilities of machine learning. As we look ahead, we envision expanding its capabilities to address even more diverse topics. Together, let’s continue exploring and innovating in the exciting world of AI.

Thankyou!