Task 1:- Internship Report

# Project Title

Article Generator Chatbot using Three Open-Source LLMs

# Intern Name

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# 1. Introduction

The purpose of this project was to explore and compare the performance of three open-source large language models (LLMs) in generating high-quality articles on given topics. As part of the NullClass internship, this task aligns with advanced natural language processing applications and practical chatbot development using recent breakthroughs in generative AI.

# 2. Background

With the rise of large language models, AI-generated content has become increasingly common across domains. Tools like GPT, LLaMA, Mistral, and Falcon are capable of producing coherent and contextually relevant content. This project aims to evaluate and compare three such open-source models based on their ability to generate articles and to integrate the best-performing one into a chatbot.

# 3. Learning Objectives

- Learn to integrate and use open-source LLMs for text generation.  
- Evaluate performance using both qualitative and quantitative measures.  
- Understand the strengths and limitations of different models.  
- Develop a functional article generator chatbot with a simple GUI.

# 4. Activities and Tasks

a. Model Selection:  
- Chosen models:  
 \* LLaMA 2 (7B/13B)  
 \* Mistral 7B  
 \* Falcon 7B

b. Setup and Integration:  
- Used Ollama, Transformers, and LangChain to interface with the models.  
- Created prompts and test topics for article generation.  
  
c. Model Evaluation:  
- Articles were evaluated on relevance, coherence, fluency, and response time.  
  
d. GUI Development:  
- Developed a Streamlit-based interface for user interaction.

# 5. Skills and Competencies Gained

- Prompt engineering  
- Using LLMs for content generation  
- GUI development with Streamlit  
- Model benchmarking and performance analysis  
- Working with open-source model APIs

# 6. Feedback and Evidence

Model Comparison Summary:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | Quality | Response Time | Context Awareness | Score (/5) |
| LLaMA 2 13B | High | Moderate | Very Good | 4.5 |
| Mistral 7B | Good | Fast | Good | 4.0 |
| Falcon 7B | Average | Fast | Average | 3.7 |

Best Model Chosen: LLaMA 2

# 7. Challenges and Solutions

|  |  |
| --- | --- |
| Challenge | Solution |
| High memory use of LLMs | Used lighter 7B versions |
| Prompt inconsistency | Used structured prompt templates |
| Latency in generation | Optimized model loading and hardware |
| File size limits on GitHub | Used Google Drive for large files |

# 8. Outcomes and Impact

- Developed a functional chatbot that can generate articles using LLMs.  
- Learned how to compare and select the best model.  
- Contributed to content generation research.  
- Built a GUI-based tool ready for end-user interaction.

# 9. Conclusion

This project demonstrated how powerful open-source LLMs can be when used for natural language generation tasks like article writing. The comparison provided valuable insight into model efficiency, accuracy, and scalability. The chatbot serves as a functional proof-of-concept for future applications.