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Idea Generator for YouTubers using GPT-2

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1. Introduction

This project implements an **AI-based Idea Generator for YouTubers** that generates catchy video titles based on a given content niche such as Technology, Fitness, or Education.
The system uses a **pre-trained GPT-2 language model** to generate creative text using **prompt-based generation**.

The objective of this project is to demonstrate the application of **Generative AI models** for creative text generation as part of **Unit-1 concepts**.

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2. Problem Statement

Content creators often struggle to come up with engaging video titles for their YouTube channels. Manually brainstorming ideas can be time-consuming and inconsistent.

This project aims to automate the idea-generation process by using a Generative AI model that can suggest multiple video titles instantly based on a selected niche.

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3. Objectives

The main objectives of this project are:

- To generate YouTube video titles using a Generative AI model
- To understand prompt-based text generation
- To explore the capabilities and limitations of GPT-2
- To demonstrate practical usage of Hugging Face pipelines

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4. System Architecture

The system follows a **simple text-generation pipeline**:

1. User provides a niche as input
2. A textual prompt is constructed using the niche
3. GPT-2 generates video titles based on the prompt
4. The generated output is displayed to the user

Model Used: GPT-2
Type: Decoder-only Transformer
Task: Text Generation

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5. Technology Stack

- **Programming Language:** Python
- **Library:** Hugging Face Transformers
- **Model:** GPT-2
- **Platform:** Jupyter Notebook / Google Colab

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6. Methodology

1. Import the Hugging Face pipeline API
2. Load the pre-trained GPT-2 model
3. Design a structured text prompt
4. Pass the prompt to the text-generation pipeline
5. Generate and display YouTube video titles
6. Test the system with multiple niches

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7. Prompt Design

Prompt design plays a crucial role in controlling the output quality.

Example Prompt:

List of viral video titles for Tech Review:

This structured prompt encourages the model to continue the list format and generate relevant titles.

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8. Experimental Results

The system was tested using multiple niches such as:

- Technology
- Fitness
- Education

For each niche, the model generated multiple creative and relevant YouTube-style video titles.
The results show that GPT-2 can produce meaningful and creative outputs even without fine-tuning.

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9. Limitations

- Generated titles may be repetitive
- GPT-2 does not truly understand what makes content viral
- The model is not trained on YouTube-specific datasets
- Output quality depends heavily on prompt wording
- No real-time trend analysis is performed

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10. Conclusion

The Idea Generator for YouTubers successfully demonstrates the use of **Generative AI** for creative text generation.
While the system has limitations, it effectively showcases the power of **prompt-based generation** using GPT-2 and aligns well with the learning objectives of Unit-1.

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11. Future Enhancements

- Fine-tune the model using YouTube title datasets
- Add user interface for easier interaction
- Integrate trend analysis for better suggestions
- Compare outputs with larger language models

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12. References

- Hugging Face Transformers Documentation
- GPT-2 Research Paper
- Course Notes on Generative AI (Unit-1)