

GEN AI PROJECT PHASE 3 SUBMISSION DOCUMENT

Phase 3: Final Report and Submission

1. Project Title:

Startup Pitch Generator using Generative AI (LoRA Fine-Tuned GPT-2)

2. Summary of Work Done

Phase 1 – Proposal and Idea Submission (10 Marks):

In this phase, we identified the problem statement and proposed the idea of building a **Startup Pitch Generator** using **Generative AI**. The objective was to fine-tune a lightweight version of **GPT-2** using **LoRA (Low-Rank Adaptation)** and build a web interface that accepts a user input (theme/idea/problem) and generates a coherent startup pitch.

Key objectives included:

- Understand generative transformer models (GPT).
- Fine-tune a pre-trained model using parameter-efficient techniques (LoRA).
- Build a user-friendly interface to generate startup-style text.

We submitted a detailed proposal including the project's motivation, expected outcomes, tools, and plan.

Phase 2 – Execution and Demonstration (15 Marks):

During this phase, we implemented our plan using tools such as **Python**, **HuggingFace Transformers**, **PEFT**, and **Streamlit**.

Key accomplishments:

- Prepared a dataset of startup prompts and generated pitches in instruction-response format.
- Fine-tuned the GPT-2 model using **LoRA** to enable it to learn domain-specific pitch structures.

- Built a **Streamlit**-based interface where users can enter a startup theme and get a generated pitch.
- Deployed and tested the app to ensure consistent, readable, and relevant outputs.

Example Output:

Input: "A fintech solution for freelancers"

Output: "Introducing FreelancePay – a smart and intuitive financial assistant built exclusively for freelancers, helping them manage invoices, taxes, and savings in one place."

3. GitHub Repository Link

You can access the complete codebase, README instructions, and any related resources at the following GitHub link:

 [GitHub Repository – Startup Pitch Generator using Gen AI](#)

4. Testing Phase

4.1 Testing Strategy

To ensure the reliability and quality of the Startup Pitch Generator, we designed a comprehensive testing strategy focusing on both functionality and user experience. The strategy aimed to evaluate the model's ability to produce meaningful, relevant, and context-aware outputs under a variety of input conditions.

- **Context Awareness:** Verify that the generated startup pitches align with the meaning and theme of the user-provided input prompt.
- **Relevance to Startup Domain:** Ensure that the model produces outputs that follow a professional tone and structure suitable for startup pitch generation.
- **Handling of Edge Cases:** Test how the system performs when given vague, ambiguous, or nonsensical prompts, and whether it still returns grammatically sound and plausible results.

Approach:

- Prompts were categorized into various types: clear (e.g., "AI for agriculture"), abstract (e.g., "helping lonely people"), and unclear (e.g., "tree sky rocket").
- The model's output was evaluated based on fluency, logical structure, startup relevance, and novelty.
- We used both **manual evaluation** and **peer reviews** from team members and users to judge output quality.

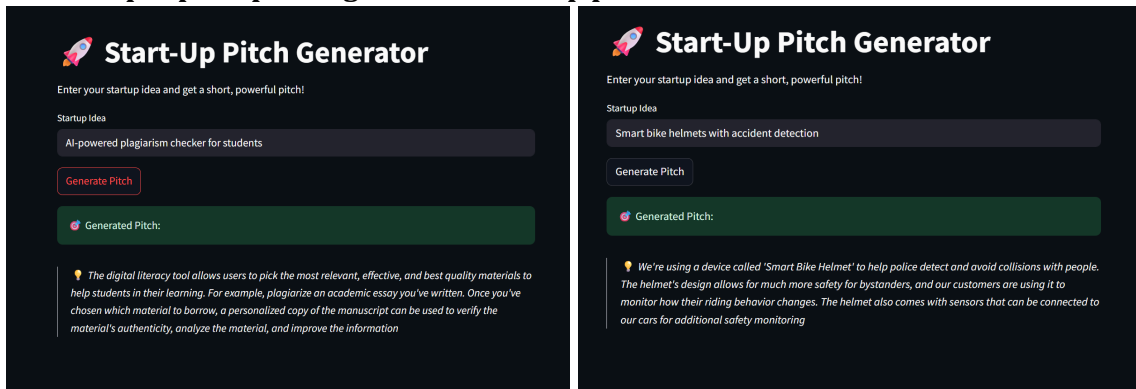
This systematic approach allowed us to validate the robustness and consistency of the model under realistic use conditions and to make refinements based on actual user behavior and expectations.


4.2 Types of Testing Conducted

1. **Unit Testing**
 - Each component (input handler, generator function, tokenizer) was tested independently.
2. **Integration Testing**
 - We tested end-to-end flow from the input in Streamlit to the model output and UI display.
3. **User Testing**
 - A set of users interacted with the web app and provided feedback on ease of use and quality of pitches.
4. **Performance Testing**
 - Tested with short and long prompts to evaluate output delay and fluency.

4.3 Results

- **Accuracy:** The fine-tuned GPT-2 model consistently generated coherent and realistic startup pitches that aligned well with the given input prompts. For example, prompts like *“AI for rural healthcare”* resulted in relevant, domain-specific ideas involving mobile diagnosis and community health monitoring.
- **Response Time:** The system achieved quick inference, with response times typically between 1–2 seconds on Google Colab and standard CPU environments, making the tool usable in real-time interactions.
- **Edge Cases:** For vague prompts such as *“something to help people,”* the model still produced grammatically correct and contextually plausible outputs. While the responses were more generic, they retained logical structure and startup-appropriate tone, demonstrating robustness even under weak or abstract inputs.
- **Input prompt and generated startup pitch**




 **Start-Up Pitch Generator**


Enter your startup idea and get a short, powerful pitch!


Startup Idea

AI-powered plagiarism checker for students

Generate Pitch

 **Generated Pitch:**

 The digital literacy tool allows users to pick the most relevant, effective, and best quality materials to help students in their learning. For example, plagiarize an academic essay you've written. Once you've chosen which material to borrow, a personalized copy of the manuscript can be used to verify the material's authenticity, analyze the material, and improve the information


 **Start-Up Pitch Generator**


Enter your startup idea and get a short, powerful pitch!

Startup Idea

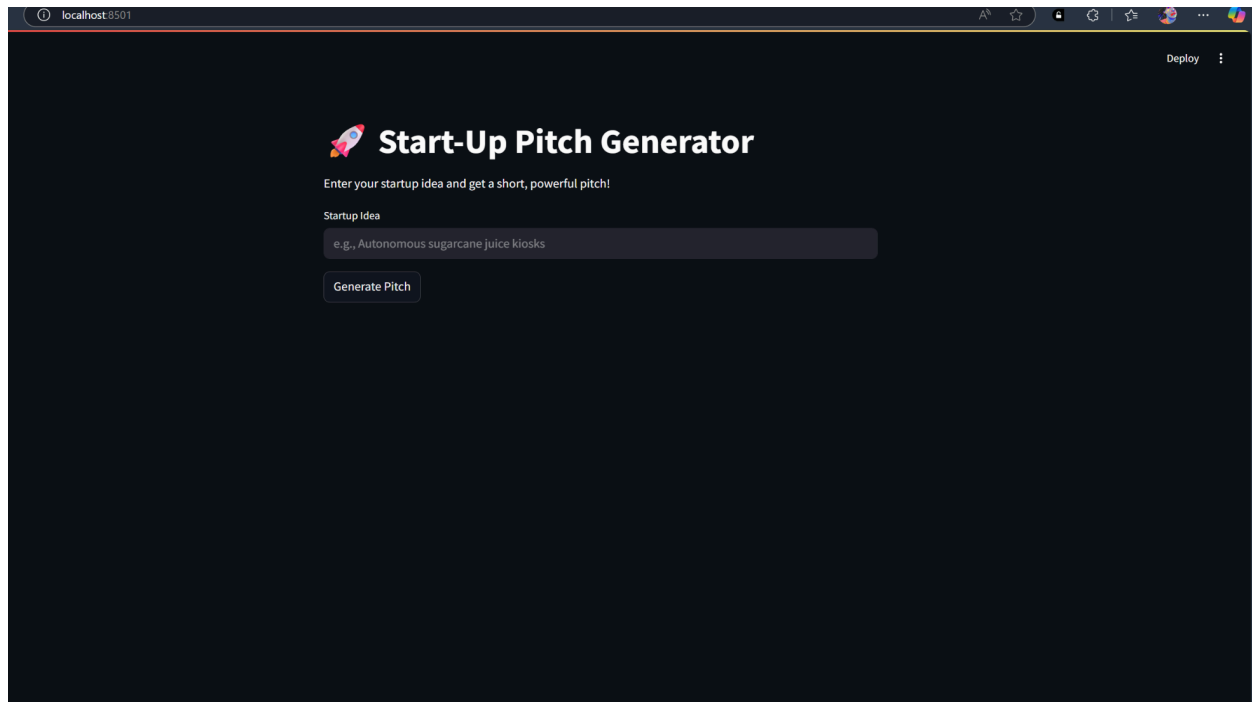
Smart bike helmets with accident detection

Generate Pitch

 **Generated Pitch:**

 We're using a device called 'Smart Bike Helmet' to help police detect and avoid collisions with people. The helmet's design allows for much more safety for bystanders, and our customers are using it to monitor how their riding behavior changes. The helmet also comes with sensors that can be connected to our cars for additional safety monitoring

- **Streamlit interface**



5. Future Work

To enhance the system's capabilities and usability, the following future enhancements are proposed:

- **Further Fine-Tuning:**
Incorporate larger, more diverse datasets across domains like edtech, agritech, healthtech, and fintech to generate richer, more specialized startup ideas.
- **Pitch Component Structuring:**
Break down generated outputs into structured segments such as:
 - Problem Statement
 - Solution Offered
 - Unique Selling Proposition (USP)
 - Target Market
 - Business Model
- **Voice-to-Text Integration:**
Add support for voice input using speech recognition APIs, enabling users to pitch their idea and receive automated written output verbally.
- **Pitch Deck Generator:**
Extend the system to generate entire pitch decks (e.g., in PPT or PDF format) containing visual slides and bullet points for presentations.

- **Multi-Language Support:**
Enable pitch generation in Indian regional languages and global languages to cater to a wider user base across different geographies.

6. Conclusion

This project successfully demonstrates the application of **Generative AI with LoRA-based fine-tuning** to solve real-world problems in content generation. The **Startup Pitch Generator** can transform simple or abstract prompts into well-formed startup pitches, aiding **entrepreneurs, students, and innovation-driven communities** in the early ideation process.

By combining **efficient fine-tuning, model deployment with Streamlit**, and **user-friendly interaction**, this system reflects the practical power of transformer-based language models in generating creative, high-impact business content. The project also lays the groundwork for more advanced tools that blend language generation with business intelligence and multimedia support.