



Unified CLI-Based Codebase for Running Multiple Generative AI Models

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Project Overview

Generative AI refers to models that can create new content like text or speech. In this project, we aim to build a unified, command-line-based codebase that allows users to easily run and test multiple generative models using one simple command.





Problem Statement and Motivation



- Problem:
 - Most generative AI models have different environments and APIs.
 - Running them requires technical knowledge, a time-consuming setup, and is not beginner-friendly.
- Motivation:
 - Students and researchers often want to compare different models.
 - Our goal is to provide a single command-line tool to make this easy.



Project Goal & Objectives

Project Goal

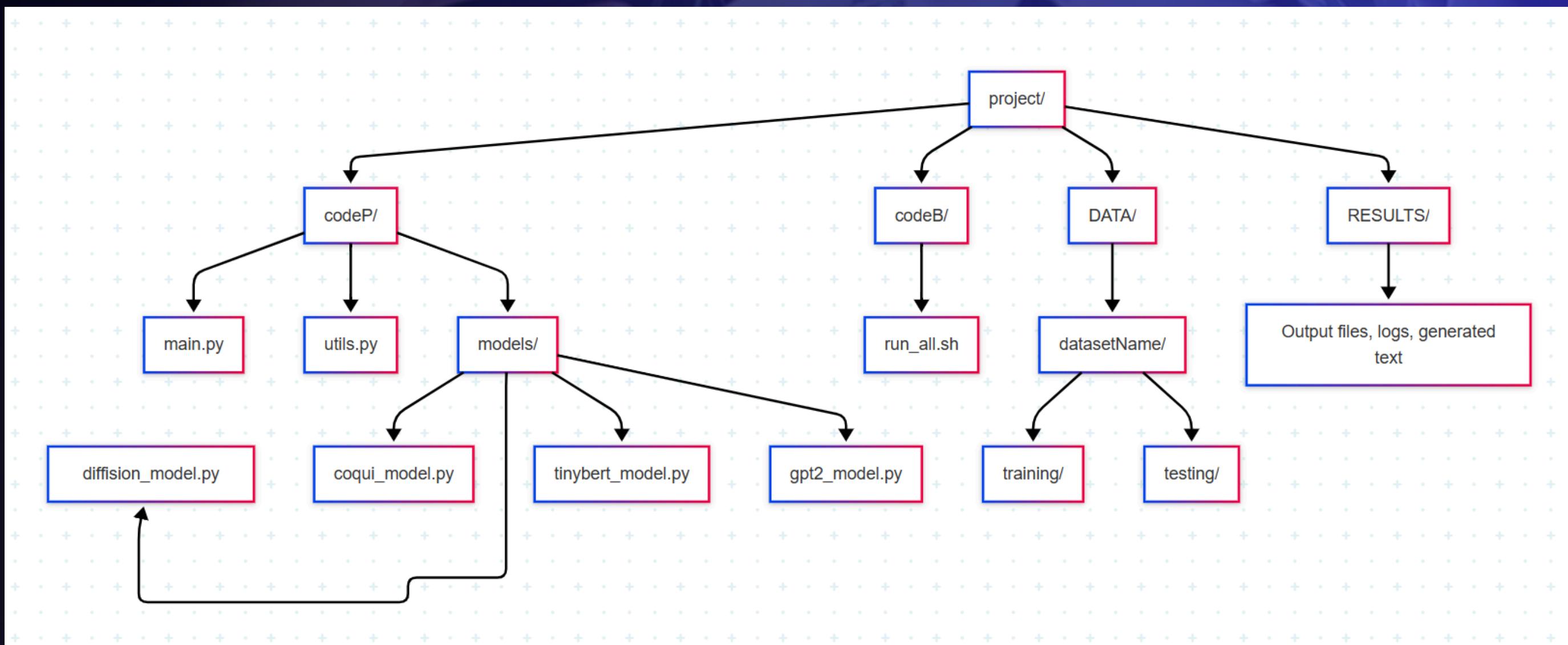
To build a unified Python-based command-line codebase that allows users to easily run, test, and compare multiple popular generative AI models through a single interface — without needing to set up separate environments for each model.

Objectives

- Accept dataset/model/task as CLI arguments.
- Automatically run the selected model on the given data.
- Store outputs in structured folders.



System Design & Folder Structure





Models Included

- Diffusion Model (generative model for images/audio, easy to understand and implement)
- Coqui TTS (text-to-speech model)
- TinyBERT (lightweight NLP model)
- GPT-2 (text generation model)





CLI Command Format

```
python .../codeP/main.py --dataset myDataset --model GPT2 --option summary
```

- dataset: Folder inside DATA/
- model: Model name (e.g., GPT2, Coqui)
- option: Task-specific modifier (e.g., summarize, synthesize)



Team Roles & Individual Contributions

Name	Field of Work
MD TANVEER HOSSAIN NIHAI	CLI Handler (main.py), Transformer model, Integration
ARAF TAHSAN PAVEL	GPT-2, TinyBERT model implementation
ISMOT ARA EMU	Coqui TTS, Bash scripts, Result handling



CSE299

Conclusion

- Simple command-line interface to run different AI models
- Useful for student projects, demos, and rapid prototyping
- Modular, extensible, and easy to use



Thank You!