**Apu Datta**

Data Mining and Visualization

**Project: 2, Question 2: Virtual Book Club (AI Powered Book Discovery & Analysis)**

In this project, I built an AI powered web application that helps readers to discover books by genre and generate intelligent summaries, discussion questions, reading guides and recommendations. The app uses the **Open Library API** to fetch real time book data and the **Ollama generative AI** model to produce high quality, context aware literary analysis for book lovers, educators, and reading groups.

**Methodology:**

This project implements an **AI powered** web application that integrates real time external data collection and generative AI analysis for enhanced book discovery and discussion. The system is built using **Gradio** for the front end, **Open Library API** for book data retrieval, and **Ollama (phi3:mini model)** for natural language generation.

**Workflow:**

**User Input:** Select genre, choose a book, choose analysis type.

**External Data Collection:** Open Library API fetches book titles, metadata, and descriptions.

**Generative AI Analysis:** Ollama produces summaries, discussion questions, reading guides, or recommendations.

**Output Display:** Results are rendered in a clean, responsive UI with shareable links.

**Core Modules:** virtual\_book\_club.py:

* Fetch & process Open Library data
* Connecting & interacting with Ollama model
* Building Gradio interface and event handlers
* Entry point to launch the application

**Model Evaluation:**

Because this project uses a generative AI model, the evaluation focuses on quality and user experience rather than pure statistical metrics.

**API Accuracy:** The Open Library API was tested with 21 different genres, returning relevant book results in 100% of searches.

**Response Quality:** AI generated summaries, guides, and questions were reviewed for clarity, relevance, and usefulness to readers.

**Performance:** On average, API lookups and complete the search within 5 seconds and AI responses were delivered in on average 80 seconds, with almost no downtime during testing.

**Deployment:**

**Running Locally:** The app can be started with python virtual\_book\_club.py and the share=True option to create a temporary public link.

**Tech Environment:** Requires Python 3.8+, Gradio, Requests, dotenv, and Ollama with the phi3:mini model installed.

**Version Control:** All source code, documentation, and dependencies are maintained in a complete GitHub repository.

**Real world Application:**

This app is designed to be useful for a wide range of readers and organizations:

* Book Clubs can instantly create engaging discussion questions and summaries for their next meeting.
* Educators can generate tailored reading guides that align with specific course topics or themes.
* Libraries can suggest similar titles to patrons based on the genres they enjoy.
* Everyday Readers can explore personalized recommendations and concise summaries to help choose their next book.

**Dataset Reference:**

**Open Library API:** Public, free to use API providing book metadata, author information, and descriptions. No proprietary datasets were used; all book data is fetched dynamically from the API at runtime.