PROJECT CONTRIBUTION REPORT

GENPLAY ARCADE

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Date: 05 April 2025

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Problem Statement:

Gen AI Interactive Learning Game

PROBLEM STATEMENT

Traditional education struggles with engagement and personalized learning. This project aims to create an interactive learning game powered by Gen AI to address these issues. The goal is to develop a dynamic tool that:

- Personalizes learning through adaptive content and feedback.
- Increases engagement via gamification and interactive scenarios.
- Facilitates deeper understanding by using Gen AI to generate learning content.

The challenge is to effectively integrate Gen AI into a game, ensuring educational value and ethical considerations. Success would revolutionize learning by creating engaging, personalized educational experiences.

THE PROCESS

PROJECT DEVELOPMENT AND IMPLEMENTATION

The GenPlay Arcade platform is a comprehensive AI-powered learning tool designed to enhance user engagement through interactive features. With functionalities like ChatWithPDF for efficient knowledge extraction and Courses Access & Quizzes for structured learning, it aims to provide an effective and engaging learning experience.

1. ChatWithPDF
The ChatWithPDF feature is designed to enhance interactive learning by allowing users to upload and query PDF documents. It provides AI-powered answers based on the document content.

Key Features:
- PDF Upload: Users can upload files up to 200MB.
- Successful Upload Confirmation:A message will be displayed once the file is uploaded successfully.
- Query Prompt:Users can enter questions related to the uploaded PDF.
- AI-Powered Responses:The Gemini API extracts relevant information from the PDF and provides accurate answers based on the query.

Workflow:
1. User uploads a PDF file.
2. System confirms a successful upload.
3. User enters a query related to the document.
4. Gemini API processes the input and returns a relevant response.

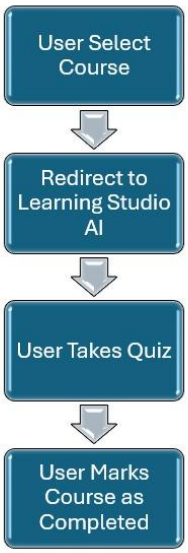
2. Courses Access & Quizzes
This feature enables users to access AI-powered courses via an external learning platform and test their understanding through quizzes.

Key Features:
- Course Integration:Users can paste a course link from Learning Studio AI.
- Direct Navigation:Clicking the link redirects users to the course content on the Learning Studio AI platform.

- Quiz Functionality:After completing sections of the course, users can check their understanding through quizzes.
- Completion Status:After finishing the course, users can mark it as “Completed.”

Workflow:
1. User pastes the Learning Studio AI course link.
2. System provides a clickable link to access the course.
3. After completing the course, users take a quiz.
4. Upon finishing, users can mark the course as completed.

The GenPlay Arcadeplatform integrates AI-powered learning tools to enhance user engagement. ChatWithPDF allows users to extract knowledge efficiently, while the Courses & Quiz feature ensures structured learning with interactive assessments. Together, these features create an effective and engaging AI-powered learning experience.



SKILL DEVELOPED

- Streamlit proved to be a powerful tool for rapid web development.
- Successfully integrated the Gemini API to create a custom chatbot capable of answering user queries based on PDF content.
- Implemented robust methods to fetch and process PDF files from the local system.
- Developed and integrated a *Course Section* on my webpage, connecting it with *Learning Studio AI* to offer a seamless learning experience.
- Diagnosed and resolved integration issues effectively.

PYTHON PACKAGES USED

- Streamlit
- PyPDF2
- Google.generativeai

CODE SNIPPETS

To configure gemini api:

```
# ------------------- CONFIGURE GEMINI API ------------------
# Replace 'YOUR_GEMINI_API_KEY' with your actual API key.
genai.configure(api_key='YOUR_GEMINI_API_KEY')

# Initialize Gemini model (text-only)
model = genai.GenerativeModel('gemini-2.0-flash')
```

To extract pdf text:

```
# ------------------- PDF TEXT EXTRACTOR ------------------- #
def extract_text_from_pdf(pdf_file):
    pdf_reader = PyPDF2.PdfReader(pdf_file)
    text = ""
    for page in pdf_reader.pages:
        text += page.extract_text() or ""
    return text
```

Gemini Response Function:

```
# ------------------- GEMINI RESPONSE FUNCTION ------------------- #
def generate_gemini_response(user_query, pdf_context):
    prompt = f"""
You are an AI PDF assistant. Answer the user's question based on this PDF content.

PDF Content:
{pdf_context}

User Question:
{user_query}

Your Answer:
"""
    response = model.generate_content(prompt)
    return response.text.strip()
```

To upload pdf:

```python
# ------------------ LEFT COLUMN: PDF UPLOAD ------------------ #
with left_col:
    st.header("Upload PDF")
    uploaded_pdf = st.file_uploader("Upload your PDF here", type=["pdf"])

    # PDF Status
    if uploaded_pdf:
        with st.spinner("Reading your PDF..."):
            pdf_text = extract_text_from_pdf(uploaded_pdf)

        st.success("✅ PDF uploaded and processed!")
    else:
        pdf_text = ""
        st.info("Please upload a PDF to start.")
```

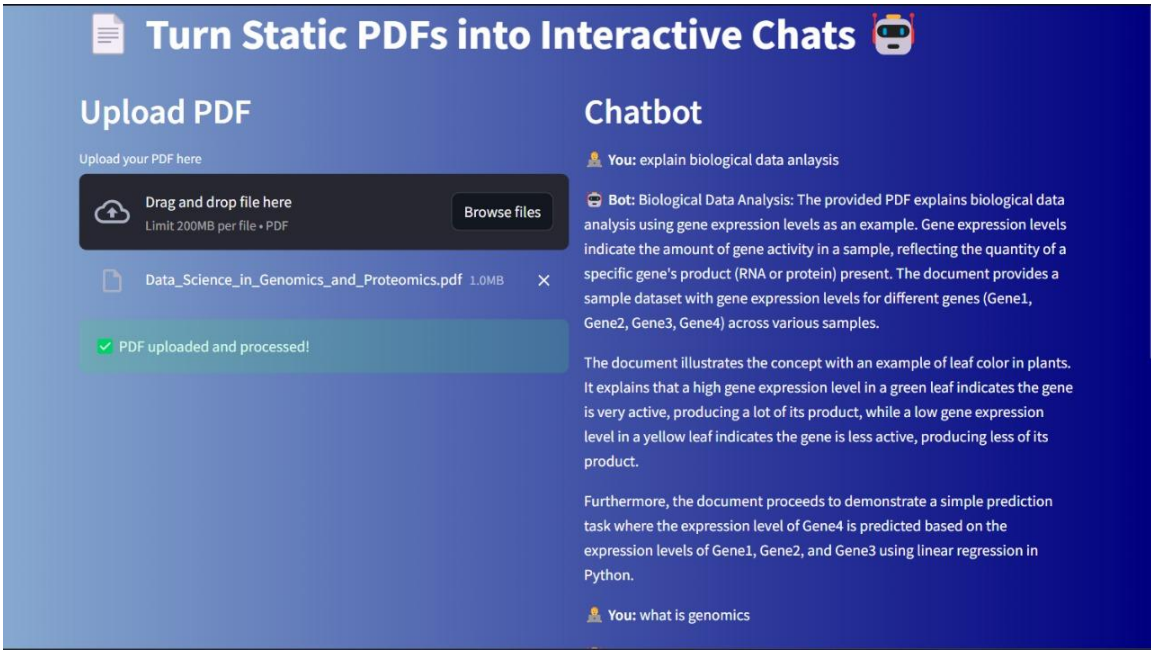
To create a course list with links:

```python
st.write("Here you'll find all your enrolled courses!")

# Courses list with links
courses = [
    {"name": "Python Basics", "link": "https://learningstudioai.com/go/Q0ODt7l5qY8KSlsniU2U", "image": "pages/Python programming.jpeg"},
    {"name": "Introduction to Machine Learning", "link": "https://learningstudioai.com/go/yKKBVYllWJX5d4jo5xpI", "image": "pages/ML.jpeg"},
    {"name": "Machine Learning with Python", "link": "https://learningstudioai.com/go/pafKtPzdtOQjDArpwOz8", "image": "pages/ML with Python.jpeg"},
    {"name": "Data Science Essentials", "link": "https://learningstudioai.com/go/PcEoyjAp46ZuOV1s6The", "image": "pages/data science.jpeg"}
]
```

```python
st.markdown(
    f"""
    <div class="course-box">
        <a href="{course["link"]}" target="_blank" onclick="sessionStorage.setItem('{course["name"]}_completed', 'true')">📖 Open {course["name"]}</a>
    </div>
    """,
    unsafe_allow_html=True
)
```

OUTPUT




Your Courses
Here you'll find all your enrolled courses!
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Open Python Basics
Mark as Completed
Completed
Introduction to Machine Learning
Open Introduction to Machine Learning
Mark as Completed
MACHINE LEARNING WITH PYTHON
Machine Learning with Python
Open Machine Learning with Python
Mark as Completed