

Title:EduTutor AI – Project Documentation Team Members:

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1. Introduction

EduTutor AI is a personalized learning assistant developed as part of the Naan Mudhalvan initiative. The main idea of this project is to demonstrate how Generative AI can be used to make education more interactive and effective. Traditional learning methods often lack personalization and adaptability.



By using EduTutor AI, students can get explanations for concepts, generate quizzes, and interact with an AI-based assistant that adapts to their needs. The project is powered by IBM Granite models hosted on Hugging Face and is executed in Google Colab.

This makes the setup process easy for students and eliminates the need for expensive hardware. Since Google Colab offers GPU support, we were able to run the AI models smoothly and test them in real time.

The key motivation behind EduTutor AI is to show how AI can transform the education sector. Our team was inspired to choose this project because we wanted to work on something that not only improved our technical skills but also had a meaningful real-world application. By the end of this project, we understood how to integrate AI models, run them in cloud platforms, and deploy them with simple interfaces like Gradio.

2. Project Overview

The purpose of EduTutor AI is to build an AI-powered assistant that can guide students by simplifying complex concepts and creating interactive quizzes. With the help of IBM Granite models, the system is capable of generating natural language responses that are easy for students to understand.

This project was designed to be lightweight and Userfriendly, ensuring that any student with Internet access could use it without requiring a powerful computer. By executing it in Google Colab, we took advantage of cloud computing, Which made the project more efficient and widely Accessible. Features of EduTutor AI:

Conversational Chatbot – Provides explanations and answers in natural language.

Quiz Generator - Automatically creates quizzes to help students test their knowledge.

Lightweight Granite Model - Uses IBM's granite-3.2-2binstruct model for fast and reliable responses.

Cloud-Based Deployment - Runs smoothly on Google Colab with GPU support.

Simple User Interface - Uses Gradio for easy student interaction.

By integrating these features, EduTutor AI proves how Generative AI can bring personalization and efficiency into education.

3. Activity-1: Exploring Naan Mudhalvan Portal

The first activity involved exploring the Naan Madhalvan Smartinternz portal. We searched for the portal in a browser and logged in using our Registered details. Once logged in, we went to the Projects section and found our project titled EduTutor AI.

The portal provided all the required resources, including step-by-step guides, instructions for integrating IBM Granite models, and links to Hugging Face and Google Colab. We also had Access to a guided project workspace, where we could check our project progress and upload our demo link once completed.

This activity was essential because it gave us Clarity on the project workflow. By following the Portal, we knew exactly what tasks had to be Completed, starting from model selection to Running the application. It acted as the starting Point and roadmap for our entire project journey.

4. Activity-2: Choosing IBM Granite Model

The second activity was about selecting the right model from

Hugging Face. We created our own accounts on Hugging Face and explored the IBM Granite family of models. Among the available Options, we selected granite-3.2-2b-instruct.

This model was chosen because it is:

- Lightweight and fast, making it suitable for Cloud execution.
- Reliable for generating educational Responses.
- Compatible with Google Colab and Hugging Face integration.

5. Activity-3: Running in Google Colab

The third activity was the most important stage of our project. We opened Google Colab, created a new notebook, and renamed it for our project. The next step was to change the runtime type to use T4 GPU, which allowed faster execution of AI models.

We then installed the required libraries by running the following command:

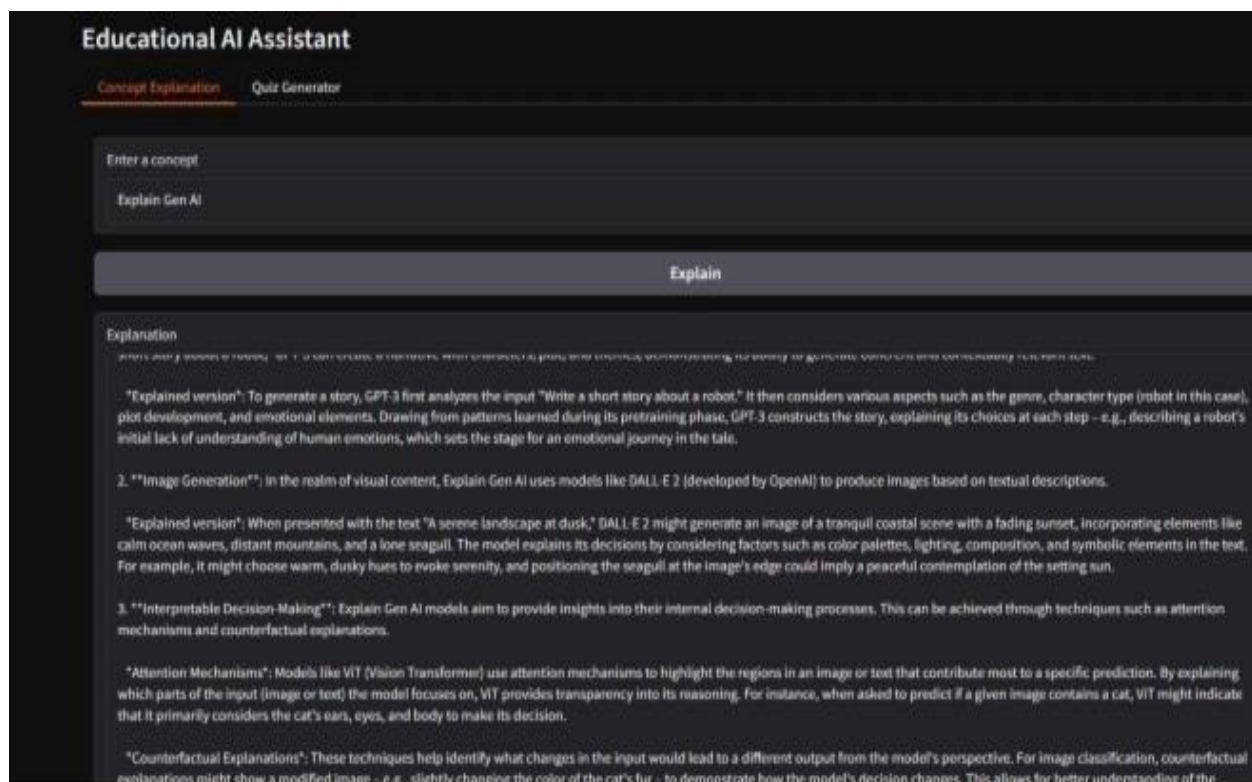
```
!pip install transformers torch gradio -q
```

After installing the dependencies, we uploaded our Code into the Colab notebook. Step by step, we Executed the cells, and the model started Downloading. Once the setup was complete, we Launched the application with Gradio. Colab provided us with a public URL link, which Opened the chatbot interface in a new tab. We Could type our queries, and the chatbot responded instantly with clear explanations or quiz questions. This confirmed that EduTutor AI was successfully running in the cloud environment.

Output Explanation – Educational AI Assistant

1. Concept Explanation Tab

- When the user enters a topic (e.g., *Machine Learning*) and clicks **Explain**,
 - The model generates a **detailed explanation** with real-world examples.
 - Output appears in the textbox with around 5–10 sentences.



2. Quiz Generator Tab

- When the user enters a topic (e.g., *Physics*) and clicks **Generate Quiz**,
 - The model produces **5 quiz questions** in different formats: multiple choice, true/false, and short answer.
 - At the end, it shows an **ANSWERS** section separately.
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The screenshot shows a web interface titled "Educational AI Assistant". It has two tabs: "Concept Explanation" and "Quiz Generator", with the latter being active. Below the tabs is a text input field labeled "Enter a topic" containing the text "Gen AI". To the right of the input field is a button labeled "Generate Quiz". Below the button is a section titled "Quiz Questions" containing five numbered questions. The first question is a multiple-choice question about the primary function of Generative Artificial Intelligence (Gen AI). The second is a true/false question about unsupervised learning. The third is a short-answer question about real-world applications of Gen AI. The fourth is a multiple-choice question about types of Generative Adversarial Networks (GANs). The fifth is a true/false question about concerns regarding Gen AI misuse. At the bottom of the "Quiz Questions" section is a label "ANSWERS:".

Educational AI Assistant

Concept Explanation **Quiz Generator**

Enter a topic

Gen AI

Generate Quiz

Quiz Questions

1. ****Multiple Choice:**** What is the primary function of Generative Artificial Intelligence (Gen AI)?
A) Data analysis
B) Content creation
C) Decision-making
D) Coding
2. ****True or False:**** Gen AI models can learn and improve without human intervention, a concept known as "unsupervised learning."
3. ****Short Answer:**** Describe a real-world application of Gen AI in generating text, such as a news article or a poem.
4. ****Multiple Choice:**** Which of the following is NOT a type of Generative Adversarial Network (GAN)?
A) DCGAN (Deep Convolutional GAN)
B) WGAN (Wasserstein GAN)
C) Flow-based GAN
D) Radial basis function GAN
5. ****True or False:**** As Gen AI continues to evolve, there are growing concerns about its potential misuse for creating deepfakes and other malicious content.

ANSWERS:

6. Activity-4: Uploading to GitHub

The final activity was about uploading our project To GitHub. This step was important for version Control and professional presentation. We first created a new GitHub repository and Enabled the option to add a README file. From Google Colab, we downloaded our project code as a .py file. After this, we uploaded the file into our repository.

We then committed the changes, and the project Was stored safely in GitHub. By doing this, welearned how to manage our project using a Collaborative tool. GitHub made it easy to

share Our work with mentors, peers, and future Developers who may want to build upon EduTutorAI.

7. Conclusion & Future Scope

EduTutor AI has successfully demonstrated how Generative

AI can transform the education sector.By integrating IBM Granite models with Hugging Face and executing the project in Google Colab,

We created an AI-powered chatbot that can explaining Concepts and generate quizz.

Through this project, we learned:

- How to explore project portals and follow structured workflows.
- How to choose and integrate AI models.
- How to run applications in Google Colab with GPU support.
- How to upload and maintain code in GitHub for version control.

Future Scope:

- Adding voice-based interaction to make the chatbot more engaging.
- Integrating with Google Classroom or other learning platforms.
- Supporting multiple languages to reach more students.
- Creating a mobile app version of EduTutor AI.