**Project Report Format**

**INTRODUCTION**

I am **VARAGANI AKASH MANIKANTA,**I completed my b tech 3rd year EEE in SRK INSTITUTE OF TECHNOLOGY . now I am doing internship of IBM COURSE:GENERATIVE AI ….

**Project Overview**

Im doing project about the :EDUTUTOR AI :Personalized Learning with Generative AI and LMS Integration ……

In this project I downloaded model using ibm model which is :ibm/granite-3.3-2b, and used an applications then I gave prompt with that help of generated the code and it is run in the google colab…After that the code run successfully..and the model is downloaded.

The input and output are:

INPUT: prompt ,adding streamlit ,also added some functionalities to it.

OUTPUT: the code is run and model is generated ….out is recorded..

**Purpose:**

It will satisfy the user’s need and give the lot of information to the user and it will helps in understanding and learning.

2. IDEATION PHASE

2.1 Problem Statement

2.2 Empathy Map Canvas

2.3 Brainstorming

3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

3.2 Solution Requirement

3.3 Data Flow Diagram

3.4 Technology Stack

4. PROJECT DESIGN

4.1 Problem Solution Fit

4.2 Proposed Solution

4.3 Solution Architecture

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

7. RESULTS

7.1 Output Screenshots

8. ADVANTAGES & DISADVANTAGES:

**Advantages of Edututor AI using IBM Granite Model**

**1. Personalized Learning**

* Adapts responses based on student input and understanding level.
* Can generate age-appropriate, grade-level specific, or domain-specific explanations.

**2. High-Quality Language Model**

* IBM’s **Granite-3.3-2B-Instruct** is fine-tuned for instruction-following tasks, producing **accurate and context-aware explanations**.
* Better alignment with educational content compared to general-purpose models.

**3. Open Source & Cost-Effective**

* IBM's model on Hugging Face is **freely accessible**, reducing licensing costs.
* Ideal for research, academic institutions, and startups with budget constraints.

**4. Multi-Functionality Integration**

* **Concept explanation**, **quiz generation**, **interactive Q&A**, and **study support** can all be integrated using one model.
* Supports **natural language conversations**, mimicking a tutor.

**5. Easy Deployment with Gradio/Colab**

* User-friendly UI creation with **Gradio** makes it accessible to non-programmers.
* **Google Colab** deployment allows instant prototyping without local setup.

**6. Scalable Backend**

* Can be scaled using GPUs on cloud platforms (Colab Pro, AWS, etc.).
* Integrates with other tools like **Streamlit**, **LMS platforms**, or **PDF readers**.

**❌ Disadvantages of Edututor AI using IBM Granite Model**

**1. Limited Model Size (2B Parameters)**

* May lack the depth and reasoning capabilities of larger models (like GPT-4, Claude 3, etc.).
* Might occasionally generate shallow or vague responses for complex topics.

**2. Dependency on Internet and GPU Resources**

* Requires a powerful backend or cloud infrastructure for real-time interaction.
* Colab’s free tier may have **runtime limits**, **no persistent storage**, and **limited GPU time**.

**3. Lack of Human Empathy**

* Cannot replace the emotional and motivational support provided by human teachers.
* Might not detect learning frustration or confusion effectively.

**4. Data Privacy & Security Concerns**

* Handling sensitive student data needs proper **encryption**, **consent**, and **compliance** with education regulations (FERPA, GDPR).
* Hugging Face and Google Colab may not be compliant for institutional deployment without additional layers.

**5. No Real-Time Learning Feedback Loop**

* The model cannot continuously improve or adapt unless retrained with new data.
* Feedback mechanism is one-way unless integrated with analytics and teacher intervention.

**6. Potential Bias or Inaccuracy**

* Pre-trained models can sometimes generate **biased**, **incomplete**, or **factually incorrect** content.
* Requires **human oversight**, especially for assessments or academic advice.

**9. Conclusion**

**Edututor AI** using IBM's Granite model offers a **powerful, cost-effective, and accessible** way to deliver **personalized learning** experiences. However, it comes with **limitations in scale, reliability, and pedagogical depth** that must be carefully managed.

10. FUTURE SCOPE

11. APPENDIX

Source Code(if any)

Dataset Link

**GitHub & Project Demo Link:** I completed this project and it’s uploaded link is;

**GITHUB LINK:** [**https://github.com/nandiniummadi/Generative-AI-with-IBM-cloud**](https://github.com/nandiniummadi/Generative-AI-with-IBM-cloud)