Problem Statement Title: **RAG based AI Training Automation for Educational Institutes - ERP Plugin (Student Innovation)**

Team Name: **Sorted**

Team Leader Name: Vishal Kotnod

Team Member 1: Yash Shelke

Team Member 2: Ruchita Gurudwad

Team Member 3: Priyanshu Raut

Team Member 4: Gaurav Bhajipale

Mentor Name: **Dr. Kishor Bhoyar**

Idea/Approach Details

- Our solution is an **AI-powered educational platform supporting RAG** as ERP Plugin
- Designed to **personalize learning experiences**, support students in **rural and remote areas.**
- AI will evaluate their strong and weak areas over regular assessements and system will design adaptive learning paths based on recent assessments and student's competency level.
- AI and ML models to determine the **actual competency level of students**.
- A **Retrieval-Augmented Generation (RAG)** will assist students with queries that **Aligns learning materials with the institute's syllabus** and guidelines.
- Enables faculty to provide personalized feedback and intervene when necessary.
- **Assessments will be fine tuned** as per competency and areas of improvement.

TECHNICAL APPROACH

- We will develop **microservices using FastAPI** and **Node.js**, ensuring a scalable and modular system.

- **LangChain** will be used for **RAG**-based assistance and to integrate large language models (LLMs).

- **ChatGroq** will be utilized as the **LLM cloud provider**

- The **frontend** will be developed using **React.js** and **MongoDB** for database

- A **clustering ML model** will be implemented for **competency evaluation**

FEASIBILITY AND VIABILITY

- Integrating system into legacy ERP systems could be technically challenging, but it's feasible with proper planning and support.

- Educational institutions may be resistant to adopting AI, requiring thorough **training and awareness programs.**

- Addressing potential bias in AI assessments is crucial.

- Generating **embeddings for large datasets** can be computationally expensive specifically for **RAG**.

- **Large Language Models (LLMs)** are resource-intensive

IMPACT AND BENEFITS

- Reduced reliance on dedicated instructors by offering **AI-powered support** for backlog students.
- Enabled **remote access to quality education**, addressing the instructor shortage in rural and remote areas.
- Scaled **individual evaluations** efficiently through automation, reducing the manual workload.
- Simplified **tracking of student progress** in large batches, making it easier to identify strengths and weaknesses.
- Provided **competency-based assessments**, ensuring students are placed at the appropriate learning level.
- **Enhanced student confidence and performance** by tailoring learning paths to individual needs.