**Project Synopsis**

**AI-Chatbot for Student Queries**

# Problem Statement:

With the exponential growth of online news and information, students often face **information overload** while trying to stay updated. Reading lengthy articles consumes significant time, and manually filtering key insights is inefficient. There is a growing need for a platform that delivers **concise, accurate, and reliable news summaries**, enabling students to consume information quickly and effectively.

# Proposed Solution:

The AI-Powered News Summarizer Portal is a **web-based platform** that utilizes state-of-the-art **Natural Language Processing (NLP) models** to generate concise summaries of lengthy news articles. The backend is powered by **Django**, managing user authentication, news storage, and summarization APIs. The frontend, built with **React**, provides students with a clean, user-friendly interface to browse, read, save, and share AI-generated news summaries. The summarization is driven by advanced **transformer-based models** such as BERT or Pegasus, ensuring high-quality summaries that retain contextual meaning.

# Objectives:

* To help students **save time** by providing concise, AI-driven summaries of news articles.
* To build a platform where students can **store, organize, and share** summarized articles.
* To enhance **information accessibility** by simplifying complex or lengthy content.
* To showcase the application of **transformer-based NLP models** in real-world information management.

# Methodology:

* **Backend (Django):**
  + USER authentication system (login/signup) with role-based access.
  + REST APIs for fetching articles, generating summaries, and managing user preferences.
  + Integration with external news APIs (e.g., NewsAPI.org) to fetch live articles.
* **AI Summarization Engine:**
  + Use retrained transformer models such as **BERT (extractive summarization)** or **Pegasus (abstractive summarization)**.
  + Implement  text preprocessing, tokenization, and summary generation pipelines.
  + Optimize model inference for scalability (via Hugging Face Transformers or TensorFlow).
* **Frontend (React):**
  + Build a responsive UI for browsing articles and reading AI-generated summaries.
  + Enable features for saving, bookmarking, and sharing summaries.
* **AI-chatbot integration:**
  + Use **OpenAI API** (GPT models) for NLP-driven query resolution.
* **Database (MongoDB)**:
  + Store user data, saved summaries, and browsing history.

# Expected Outcome:

* A **fully functional AI-driven news portal that generates summaries with high accuracy and contextual relevance.**
* **Time-efficient information consumption for students and researchers.**
* Features that allow users to **save, organize, and share** news summaries seamlessly.
* A scalable solution with potential extensions like **multilingual summarization, voice-based summaries, and personalized news feeds**.