1. Problem Statement

Challenge: Students, alumni, and professionals often lack a centralized, intelligent platform where they can connect, collaborate, and access personalized content based on their interests and backgrounds. Traditional platforms are static and lack AI-driven personalization and intelligent matchmaking.

Our AI agent solves:

- Connecting users intelligently based on shared interests and backgrounds.
- Personalized recommendations for posts, connections, and events.
- Community engagement using Generative AI and Machine Learning algorithms.

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2. Core Features

- **Smart User Matching:** Recommend relevant users based on shared interests.
- **Content Recommendation:** Suggest posts and events tailored to user profiles.
- **Spam Detection:** Filter spam content automatically.
- **Sentiment Analysis:** Promote positive community interaction.
- **Resume Analysis (Optional):** Match final-year students to suitable jobs/internships.
- **AI Assistant:** Answer community FAQs intelligently.
- **Secure Authentication:** JWT-based login and profile protection.

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3. Implementation Ideas

Backend (Built):

- Flask REST APIs
- MongoDB Database
- JWT Authentication for secure user management

Machine Learning Algorithms (Implemented):

- K-Nearest Neighbors (KNN) for user recommendations
- TF-IDF + Cosine Similarity for post recommendations
- Naive Bayes for spam detection
- Logistic Regression for sentiment analysis

Generative AI / Agentic AI Plans (Future Integration):

- Using Generative AI (like Open-source models or custom trained models) to:
    - Generate post summaries.

    - Suggest community activities.
    - Help draft professional event invitations.
- Using Agentic AI tools (LangChain or similar) to:
    - Build AI Agents that recommend mentorships, events, and community activities based on user interactions.

Frontend (Next Phase):

- React.js based frontend
- Interactive dashboards and smart AI chatbot integration for dynamic user experience.

Project Agent Name: *CommuneX* – AI Smart Community Platform