**Project Proposal:** **AI-Powered Learning Recommender for Refugee Education**

Alignment with SDG 4 (Quality Education)

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**1. Project Idea**

**Problem:** Refugees often lack access to **personalized** education due to language barriers, limited infrastructure, and mismatched resources.

**Goal:** Build an **AI tool** that recommends free online courses (Coursera, Khan Academy) based on refugees’ profiles (language, education level, career goals).

**2. Relevance to SDGs**

- **Primary SDG 4**: Promotes inclusive and equitable education.

Secondary SDGs:

- **SDG 10 (Reduced Inequalities):** Bridges gaps for displaced populations.

- **SDG 8 (Decent Work):** Aligns courses with employable skills (e.g., healthcare, coding).

**3. Literature Examples**

1. **"MOOC Recommendations for Refugees"** (UNHCR, 2021)

- Used collaborative filtering to suggest courses but lacked NLP for nuanced needs.

2. **"BERT for Educational Resource Matching"** (IEEE, 2022)

- Applied NLP to align course descriptions with learner goals—inspired our semantic matching approach.

**4. Data Description**

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| **Data Type** | **Source** | **Format** | **Preprocessing** |
| Refugee Profiles | UNHCR Microdata Library | CSV | Clean missing values, anonymize PII |
| Course metadata | Kaggle (Coursera/edX datasets) | CSV/JSON | Extract skills, languages, durations |
| User feedback | Synthetic surveys (mock data) | Text | Sentiment analysis for improvements |

**5. Approach**

**Hybrid Model:**

**- Machine Learning (Collaborative Filtering):**

- Match refugees with similar peers’ course completions (`surprise` library).

- **Deep Learning (NLP):**

- Use **Sentence-BERT** to semantically align refugee needs (e.g., "I need healthcare jobs") with course descriptions.

**Justification:**

- ML handles structured data (enrollment history).

- NLP interprets unstructured needs (text inputs).