Software Engineering FYP-24-SE-A-04 Proposal: AI-Driven Merit Calculator and Admission Predictor for MBBS/BDS Programs

Problem Statement:

Each year, nearly 100,000 students take the MDCAT exam for admission to MBBS/BDS programs in Punjab, Pakistan. The University of Health Sciences (UHS) oversees the process, combining FSc and MDCAT marks to generate a merit list. Many students are unsure how to calculate their merit accurately or predict whether they will secure admission to a medical university. This uncertainty causes confusion and anxiety among students. The project aims to create a web-based platform where students can calculate their merit and use AI to predict admission chances based on historical data.

Key Observations and Gaps:

While UHS provides official merit lists, no existing platform offers an intuitive tool to calculate a student's merit in real-time or predicts their chances of getting into a medical university. Existing platforms offer static information but lack the dynamic, AI-driven features required to provide personalized admission chances.

Platforms Available:

EduVision (https://www.eduvision.edu.pk/):

Provides general admission guidelines and merit lists but does not offer personalized merit calculation or predictive features.

Ilmkidunya (https://www.ilmkidunya.com/):

Offers information about admission processes but lacks AI-based prediction tools for admission chances or future merit trends.

Identified Gaps:

- Lack of personalized merit calculation tools.
- No AI-driven system to predict university admission chances.
- No platform predicts next year’s merit trends based on historical data.

The Challenge We Aim to Address:

The main challenge is to assist students in calculating their merit and predicting their chances of admission to MBBS/BDS programs. Students face uncertainty after calculating their merit and do not know which public sector medical university they might secure admission to. Additionally, there is no predictive system for next year’s closing merit.

Proposed Solution:

We propose a web-based platform where students can input their FSc and MDCAT marks to calculate their merit instantly. Additionally, an AI model will be implemented, trained on historical closing merit data from all public sector medical universities in Punjab. The AI model will:

- Predict whether a student can secure admission based on their calculated merit.
- Predict the potential closing merit of public sector medical universities for the next academic year, helping students plan their admission strategy.

Key Features Include:

Merit Calculator:

Input FSc and MDCAT marks to get a calculated merit.

AI-Based Admission Predictor:

Based on the calculated merit, the system will predict admission chances at public sector medical universities in Punjab.

Closing Merit Prediction:

Predicts next year’s closing merit for each university based on historical data trends.

Public Sector Medical Universities Database:

A list of all public sector medical universities and their closing merit histories.

Technologies to Be Used:

Front-End:

Next.js, TypeScript, Tailwind CSS

Back-End:

FastAPI (Python)

Database:

PostgreSQL or MongoDB

AI Models:

1. **Logistic Regression:**

To predict admission chances based on merit scores.

2. **Time Series Forecasting (ARIMA or LSTM):**

For predicting future closing merits based on past trends.

3. **Decision Trees or Random Forest:**

For ranking the universities a student might qualify for based on their merit.

4. **TensorFlow or PyTorch:**

Frameworks for building and training the AI models.

Expected Outcome:

- A user-friendly web app that allows students to calculate their merit and predict their chances of getting into a medical university.
- An AI system capable of predicting future closing merits for public sector medical universities, giving students better insights for future planning.
- A tool that significantly reduces the uncertainty students face when applying for MBBS/BDS programs.

Conclusion:

This project aims to provide a smarter, AI-powered solution to help students calculate their merit and predict their chances of securing admission in medical universities. The AI-driven platform will enhance students' decision-making by offering real-time merit calculations and future predictions, filling the current gap in student admission tools and ultimately reducing their stress and uncertainty.