SCHOOL OF COMPUTER SCIENCE

Academic Monitoring & Specialization Selection System

UPES UNIVERSITY OF TOMORROW

Abstract

This project introduces an innovative dual-purpose academic support system designed to enhance both student guidance and educational management. The system employs advanced algorithms to address two critical aspects of academic progression: specialization selection for students and performance-based grouping for educators.

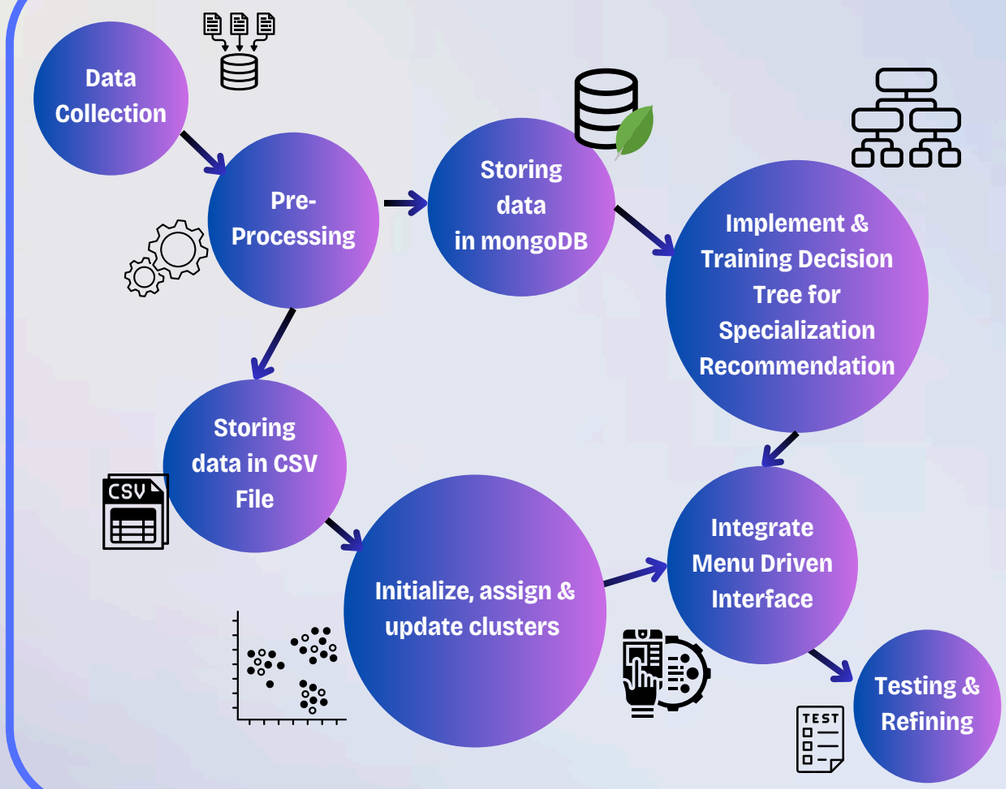
Introduction

- Students in their first year often struggle to select specializations that align with their interests and academic strengths
- This often leads to poor academic choices, affecting career trajectories and overall performance
- We have designed a system to help students make informed specialization decisions based on their preferences and academic performance
- Additionally, our system groups students by performance to provide targeted support and optimize resource allocation.

Problem Statement

- Students often struggle to select appropriate academic specializations that align with their abilities and interests, leading to suboptimal career choices and potential academic underperformance.
- Educators lack efficient tools to identify and address varying levels of student achievement across large and diverse student populations, hindering their ability to provide timely and targeted academic support.

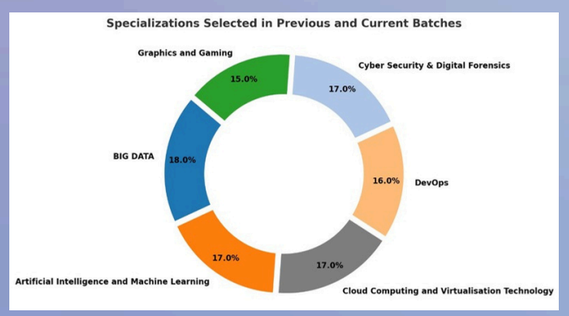
Methodology

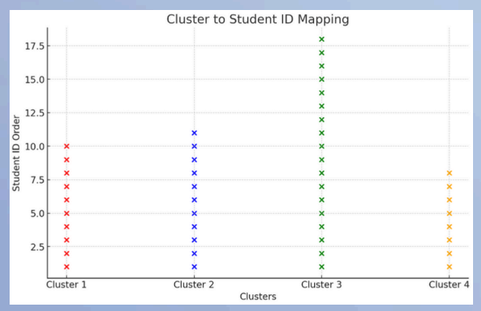


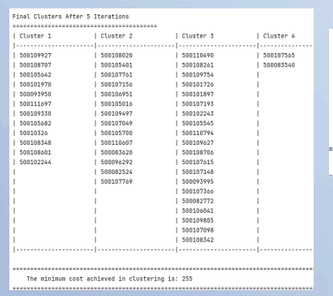
Github Repository

Collected and Preprocessed data

Data Visualization



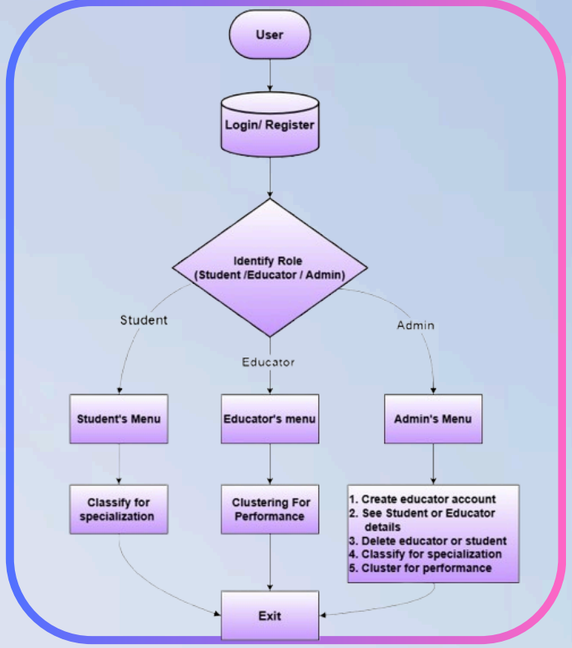




Run-Time Results

```
Enter SAP ID: 500108542

Enter your overall 1st year CGPA: 8.6

Enter Grade for C Programming Language (CPL) (O, A+, A, B+, B, C+, C, D, F): o

Enter Grade for Data Structures and Algorithms (DSA) (O, A+, A, B+, B, C+, C, D, F): o

Enter Grade for Python Programming (O, A+, A, B+, B, C+, C, D, F): a

Enter Grade for Computer Organization and Architecture (COA) (O, A+, A, B+, B, C+, C, D, F): b

Enter Grade for Advanced Engineering Mathematics (AEM) (O, A+, A, B+, B, C+, C, D, F): c

Enter Grade for Physics (O, A+, A, B+, B, C+, C, D, F): f

Do you like exploring cloud platforms and understanding how they store and process data? (1-5) : 3

Are you interested in learning how distributed systems process big data across multiple machines? (1-5) : 2

Are you interested in creating visual designs, animations, AR, VR or working with game mechanics? (1-5) : 3

Have you ever been interested in how game engines, like Unity or Unreal, work behind the scenes? (1-5) : 2

Suggested Specialization: Cloud Computing and Virtualisation Technology
```

Working Architecture



Conclusion

- Offers personalized academic guidance for students, aligning specializations with their performance and preferences while supporting educators in targeted teaching and resource allocation.
- Enhances academic planning, progress tracking, and alignment of aspirations with strengths, fostering a student-centered learning environment.

References

[1] Singh, Samrat, and Vikesh Kumar. "Performance analysis of engineering students for recruitment using classification data mining techniques." International Journal of Science, Engineering and Computer Technology 3, no. 2 (2013): 31.

[2] Le Quy, Tai, Gunnar Friege, and Eirini Ntoutsi. "A review of clustering models in educational data science toward fairness-aware learning." Educational data science: Essentials, approaches, and tendencies: Proactive education based on empirical big data evidence (2023): 43-94.

[3] Bobâlcă, Claudia, Oana Ţugulea, and Cosmina Bradu. "How are the students selecting their bachelor specialization? A qualitative approach." Procedia economics and Finance 15 (2014): 894-902.

Presented by: Shruti Srivastava, Khushi Chauhan, Dhuruv Kumar

Guide: Dr. Deepak Kumar Sharma