VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

BCSE497J PROJECT - I

COURSE RECOMMENDATION SYSTEM USING EXPLORATORY DATA ANALYSIS

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ABSTRACT

SCOPE OF WORK

This project aims to develop a comprehensive course recommendation system tailored to students' academic and career goals. The system assists students in optimizing credit management by suggesting custom degree plans that align with their aspirations, whether job-oriented or preparing for postgraduate exams. It offers structured management of Discipline Electives, Projects and Internships, Open Electives, Non-Graded Core Requirements, and Foundation Core credits. The system ensures balanced credit distribution across semesters, preventing overload and enabling efficient pathways to graduation by providing real-time completion tracking.

Additionally, the system focuses on Course Compatibility and Synergy by recommending courses that complement each other, visualising course dependencies, and suggesting progressive learning paths that build foundational knowledge before advancing to more complex topics. It also guides students towards research opportunities and projects aligned with ongoing faculty-led research. Furthermore, the system integrates alternative learning paths by recommending NPTEL and MOOC platforms, offering flexibility and expanding educational opportunities.

TECH STACK USED

The system architecture is built using a robust technology stack. The backend is developed with Python and Django, providing a scalable and secure framework with PostgreSQL as the database for handling complex data structures. The frontend is built with React and styled using CSS frameworks like Bootstrap to ensure an interactive and user-friendly interface. Machine learning models, implemented using scikit-learn, Pandas, and NumPy, drive the recommendation engine, while TensorFlow is available for more advanced deep learning needs. Data visualisations are created using Matplotlib and Seaborn for basic insights and progress tracking. This comprehensive system will provide students with a personalized, efficient, and flexible academic journey.