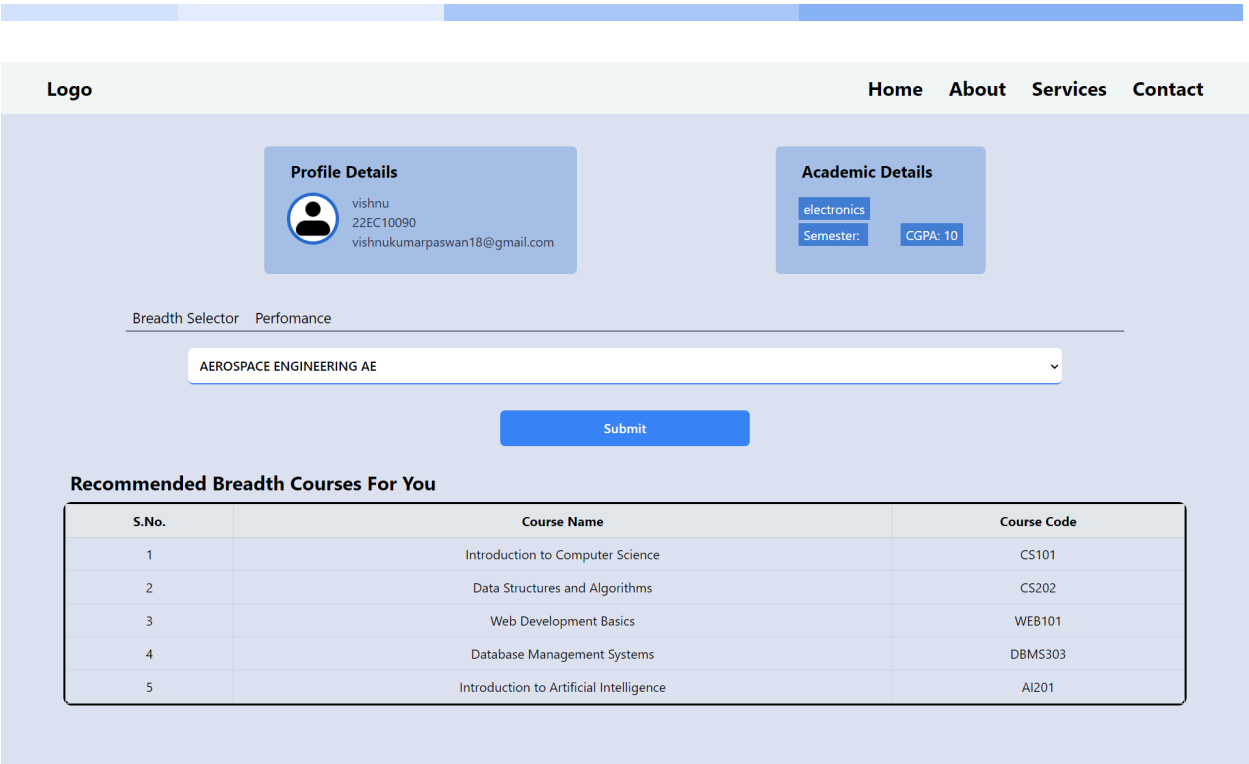

Project Report: Breadth Recommender

02.03.2024

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Team HackTech

I. Introduction

- Problem Statement

The project aims to address the challenges associated with breadth selection at IIT Kharagpur. The existing system lacks personalized recommendations based on individual academic performance, career goals, and personal interests. Our objective is to develop a user-friendly web application named "Breadth Recommender" that leverages machine learning algorithms and student data to provide relevant and personalized breadth course recommendations.

- Proposed Solution

Our solution involves the development of a web application using the MERN stack. The system allows students to register and create profiles by providing essential information such as email ID, department, roll number, and academic records. Authentication is achieved through an OTP sent to the provided email ID. Once logged in, students are directed to their dashboard, where they can view their profile information.

To enhance breadth selection, the system incorporates user preferences, including academic success, career goals, and personal interests. The application analyzes student data, including academic performance, interests, and preferences, to recommend relevant and personalized breadth courses. The recommendation process considers the student's desired priorities, contributing to a strong GPA, aligning with career aspirations, and exploring personal interests beyond the core curriculum.

II. Methodology and Algorithms Used

- Machine Learning Algorithms

The recommendation system utilizes advanced machine learning algorithms to analyze student data and generate personalized breadth course suggestions. The algorithms consider factors such as academic performance, career goals, and personal interests. The system employs machine learning models that learn and adapt based on user feedback, ensuring the continuous improvement of recommendation accuracy.

III. System Design and Implementation Details

- Technology Stack

The project employs the MERN stack (MongoDB, Express.js, React, Node.js) for efficient development and deployment.

- User Registration and Authentication

- Landing Page: The application features a landing page with login and registration options.

- Registration: Users provide essential details, and an OTP is sent to the provided email for secure authentication.

- Dashboard: After login, users are directed to their dashboard, displaying their profile information.

- Breadth Selection Process

- User Preferences: Users specify their priorities for breadth selection, including academic success, career goals, and personal interests.

- Recommendation Generation: The system generates breadth course recommendations based on the user's preferences and historical dataset records.

IV. Evaluation and Results

The success of the project is evaluated based on the effectiveness of the recommendation system, user engagement, and overall system usability. Key performance indicators include the relevance of recommended courses and user satisfaction.

V. Conclusion and Future Work

- **Conclusion**

The Breadth Recommender addresses the challenges in the existing breadth selection process at IIT Kharagpur by providing a user-friendly platform with personalized recommendations. The integration of advanced machine learning algorithms and user preferences enhances the breadth selection experience.

- Future Work

- User Feedback and Iteration: Continuously gather user feedback to improve the accuracy of recommendations and enhance the user interface.

- Integration with Real-Time Data: Explore opportunities to integrate real-time academic data and course availability for more accurate and timely recommendations.

- Enhanced User Experience: Implement additional features such as interactive visualizations, course reviews, and collaborative filtering to further personalize the user experience.

In conclusion, the Breadth Recommender offers a comprehensive solution to the challenges faced in the current breadth selection process. The incorporation of advanced machine learning algorithms and a user-friendly interface contributes to a more informed and satisfying breadth selection experience for students at IIT Kharagpur.

THANK YOU