COURSE RECOMMENDATION SYSTEM WITH ENHANCED SECURITY

PROJECT SYNOPSIS

OF MINI PROJECT

BACHELOR OF TECHNOLOGY
Computer Science and Engineering

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Introduction

Background

In recent years, e-learning has become an increasingly popular method for acquiring knowledge and skills. With the advent of online courses and programs, students can now access high-quality education from anywhere in the world. However, with the growth of e-learning comes the need for effective course recommendation systems. The aim of a course recommendation system is to provide students with a personalized learning experience by recommending courses that match their interests and abilities.

Unfortunately, many existing course recommendation systems suffer from security vulnerabilities that put students' personal information at risk. In this project, we aim to develop a course recommendation system that addresses this issue by integrating enhanced security features. Our system will not only provide accurate and personalized course recommendations, but it will also prioritize the security of students' personal details and data.

Future Scope/Applicability of Results

By developing a course recommendation system with enhanced security, we aim to help students overcome the limitations of traditional course selection methods and create a more secure and personalized e-learning experience. This project will employ machine learning and data mining techniques to generate course recommendations based on student preferences and will also incorporate advanced security measures to ensure the confidentiality and integrity of students' personal information. Through this project, we aim to contribute to the body of knowledge on course recommendation systems and enhance the overall quality of e-learning. By improving the security of course recommendation systems, we hope to encourage more students to take advantage of the benefits of e-learning and contribute to the growth of online education.

Purpose of Study

The study of research in this field is critical in advancing the development of secure and accurate course recommendation systems. By understanding the underlying algorithms and techniques used in course recommendation systems, researchers can improve the accuracy and effectiveness of these systems. In addition, research can help identify and address security vulnerabilities in existing systems, which can protect students' personal information and foster greater trust in e-learning.

Feasibility Study:

The goal of the project is to develop a system that provides students with personalized course recommendations while ensuring the confidentiality and integrity of their personal information.

Technical Feasibility

The development of a course recommendation system with enhanced security features requires technical expertise in machine learning, Web Development , and cybersecurity. However, the availability of open-source tools and libraries makes the technical implementation feasible, and the development team has experience in these areas. Additionally, there is an abundance of relevant research and literature available, which can be used to inform and guide the technical implementation.

Economic Feasibility

The development of this project does not require any extra investment in hardware or software. However, it needs a quality in human resources, who have some knowledge about the project and its features, so that efficiency can be more.

Timeline Feasibility

The development of this project is complex and time consuming, that will require an appropriate timeline. Our development team has created a detailed project plan and timeline that accounts for the necessary technical implementation, data collection and analysis, and testing and refinement of the system, which estimates around 4 months for the completion of the project.

Based on the technical, economic, operational, and timeline feasibility, the development of a course recommendation system with enhanced security features is a viable and potentially successful project.

Methodology/ Planning of work

We will be following the SDLC(Software Development Life Cycle) Model to build our project.

Data Collection- The first step in developing a course recommendation system with enhanced security is to collect data on student preferences and performance. We will be using publicly available datasets.

Machine Learning Algo Selection- The next step is to select appropriate machine learning algor for generating course recommendations. This can include decision trees, collaborative filtering, and content-based filtering algorithms, among others.

Recommendation Generation- The selected machine learning algorithms will then be used to generate personalized course recommendations for students based on their preferences and performance.

Security Implementation- The course recommendation system will be enhanced with advanced security features to protect student data from cyber threats. This can include encryption, access control, and intrusion detection mechanisms.

Website Development- The registration/login form, menu, recommendation system and security features all need to be incorporated and integrated as a course website.

Testing and Evaluation- The project will be tested and evaluated using metrics such as accuracy, recall, and precision.

Refinement and Optimization- Based on the results of the testing and evaluation, the system will optimized to improve its accuracy, security, and overall performance.

Deployment- Once the system is fully developed and tested, it can be deployed at the customer's side.

Tools required for proposed work

Software Tools/Requirements
1. Operating System- The system should support popular operating systems such as Windows, MacOS, and Linux.
2. Python- The latest version of Python or any other programming languages that are preferred by the development team.
3. Machine Learning Libraries/Algorithms- Machine learning libraries such as Scikit-learn, TensorFlow, and PyTorch may be required for implementing the machine learning algorithms for generating course recommendations.
4. Database Management Systems- Database management systems such as MySQL, PostgreSQL, and MongoDB may be required for storing and retrieving data.
5. Cybersecurity Tools- Cybersecurity tools such as cybersecurity Algorithms, firewalls, antivirus software, and intrusion detection systems may be required to implement enhanced security features to protect student data.
6. Web Development Tools- Web development tools such as HTML, CSS, JavaScript, React, Flask etc may be required for developing a web-based interface for students to access the course recommendation system.
7. Version Control- Version control systems such as Git may be required to manage the codebase and collaborate with other team members.

Hardware Requirements:

1. Processor- An Intel i5 or i7 processor or an equivalent AMD processor.
2. Memory- At least 8GB of RAM.
3. Storage- At least 256GB of storage capacity.
4. Internet Connection- A high-speed internet connection is required for data collection, preprocessing, and model training.
5. Security Devices- Security devices such as firewalls and antivirus software may be required to protect the system from cyber threats.

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