TED UNIVERSITY

Faculty of Engineering

Department of Computer Engineering

CMPE 492 - Senior Project

Final Report

peer2share

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Contents

1) Abstract

The development of an interactive platform for peer education is proposed, with the goal of revolutionizing the sharing of knowledge and the enhancement of skills. This platform is envisioned as a hub that connects individuals and experts in various fields, facilitating both teaching and learning. Users of the platform will have the opportunity to share and exchange knowledge, notes, and other educational materials with their peers and the broader community. The project is designed to enable high-level content creation and foster interactive discussions through user-friendly interfaces. At the end, by harnessing the potential of peer education, the initiative seeks to create an inclusive environment where individuals can broaden their horizons, share their expertise, and promote collaborative learning in the modern era.

2) Introduction

Aiming to bring together individuals from different disciplines, this platform provides both teaching and learning in a dynamic and interactive environment. By aiming to capitalize on the inherent value of peer-to-peer learning, this initiative not only facilitates the exchange of knowledge, but also enables the cultivation of a community dedicated to mutual growth and understanding. Through this platform, barriers to access to education are reduced, providing an inclusive atmosphere that encourages lifelong learning and collaborative educational endeavors.

3) Problem

Today there are thousands of universities and hundreds of thousands of students. Especially the lack and insufficiency of resources in many field courses is a big problem. The solution to this problem is the lack of communication and disconnection between universities. The solution to this problem is not to establish communication between universities, but to ensure communication between university students. University students are to make both their own grades and the grades shared in the course and provided by the teachers available to other university students.

4) Aim

The aim of the project is to find the solution to the above-mentioned problems. Students will be able to upload content related to their courses, and view content from different universities. It is a platform where they can comment and like. The uploaded content is stored in the database, allowing students to register and access the content. In this way, it is to positively affects the educational life of students and people who want to access the content. In addition to these, it is to facilitate lifelong learning and to facilitate the educational life of individuals. In the digitalized world, it has made it possible for everyone to access and benefit from university content.

5) System Configuration

peer2share leverages a robust combination of technologies tailored for optimal performance and scalability. Here is a detailed breakdown of the system configuration:

Backend Framework: Django is utilized as the core backend framework due to its maturity, scalability, and extensive libraries that facilitate rapid development and secure handling of user data and interactions.

Frontend Framework: Next.js was chosen for the frontend to leverage its server-side rendering capabilities and efficient route handling, which enhances SEO and improves user experience by faster page loads.

Database Management: PostgreSQL, a powerful open-source object-relational database system, is employed due to its high reliability, strong integrity, and support for advanced data types and performance optimization.

6) Topology

Presentation Layer: Managed by Next.js, providing a dynamic and responsive user interface.

Application Layer: Handled by Django, where business logic, user authentication, and server-side operations are processed.

Data Layer: Consists of PostgreSQL, which handles all data storage, retrieval, and management tasks.

7) Test Report

Unit Testing: Individual components of the backend (Django) and frontend (Next.js) were rigorously tested in isolation to verify their correct behavior and adherence to specifications.

User Interface (UI) Testing: The user interface was tested to ensure that it is intuitive, responsive, and functions correctly across different browsers and devices.

Integration Testing: The interaction between backend, and the database, was thoroughly tested to identify and resolve any compatibility or communication issues.

Security Testing: Robust security measures we used Django’s security features. By leveraging Django's security features and adhering to industry-standard security practices, peer2share prioritizes the protection of user data and ensures a secure environment for knowledge sharing and collaboration. These features are tested to safeguard user data, prevent unauthorized access, and mitigate potential vulnerabilities.

The results of the testing phase demonstrated the platform's stability, functionality, and adherence to quality standards, providing confidence in protecting the user data.

8) Feature Works

Peer2share platform can be further extended in future to introduce videos, podcasts with their transcriptions, and interactive quizzes which can be uploaded by one or more users. Moreover, by pairing this content with peer2share capabilities based on user data, and interacting with machine learning algorithms that generate personalized content recommendations or a unique assessment, each user's experience is customized to match their distinct needs and reasons for attendance. Peer2share integrated with the existing LMS being used in educational institutions can bridge the gap between formal and informal learning and create a seamless comprehensive educational ecosystem.

9) Discussion

The peer2share platform represents a significant step forward in leveraging technology to enhance peer-to-peer education. By providing a centralized and user-friendly platform, it empowers students to take ownership of their learning, share their knowledge, and collaborate with peers from diverse backgrounds. The platform's features, such as content creation, search, and sharing thoughts, create a dynamic and engaging learning environment that complements traditional educational methods.

In the case of peer2share, the success of peer-to-peer learning shows that students can help each other learn in an environment of computing technology. Thus, by providing free and easy to use platform the opportunity to achieve ones’ goals and connect with other people the platform can be credited for making education more accessible and inclusively for learners around the world. With the further development and growth of the idea and its implementations, it should become instrumental in contribution to the advancement of education for which cooperation, sharing of the knowledge, and learning throughout the life cycle are the core values. Therefore, Peer2share has the potential of consolidating its role as a reliable platform that is focused on peer-to-peer education and enabling student to gain opportunities globally.

10) References

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