College Social Networking Website with Machine Learning

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Abstract—The goal of a campus social network system is to enhance knowledge generation and sharing among campus users through improved online communication and collaboration in educational, research and teaching activities. These activities are interrelated and constantly shape each other. due to the fact that college social network systems directly and indirectly facilitate knowledge generation and sharing The most frequent consumers of Internet services, particularly newer ones like social networking services, are campus members like students and professors. The chance of faculty members using this social networking site will increase because it is limited to activities on college campuses. Index Terms—Introduction, Literature Survey, Proposed System, System Architecture, Data Flow Diagram, Results, Conclusion, Acknowledgement.

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I. INTRODUCTION

The rapid advancement of technology has resulted in a continuing evolution of teaching methods. There is no disputing the reality that educational institutions are rapidly turning their attention away from physical spaces and toward virtual ones. Nowadays, self-learning activities receive greater focus than lecturing. As a result, learning outcomes rather than course content are given priority in the creation of curricula (Tam, 2014). Some claim that student participation has the biggest impact on learning outcomes, such as critical thinking and problem-solving abilities (Junco Clem, 2015). Teachers must pay close attention to the seven guidelines offered by Chickering and Gamson as they work to increase student involvement (1987).[4] the growth of computer networks and the advancements in network communication technologies have led to the development of various network communication platforms across different fields of life. A strong network infrastructure is necessary for the successful functioning of these platforms. The advent of the new media era has presented both challenges and opportunities for college students' ideological education. In this study, the functional requirements of teachers, administrators, and students are analyzed in relation to the current state of network teaching platforms, and a new B/S mode network platform for college students' ideological education is designed and implemented based on these requirements.[5]

A. Machine Learning

Artificial intelligence (AI) has gained popularity over the past ten years, both inside and outside of the scientific community.However, there is still some ambiguity surrounding DL, ML, and AI. Despite their close ties, the names cannot be used interchangeably. In order to properly explain these topics to a clinical audience, we (try to) avoid technical jargon in our review.[1] Yes, Machine Learning (ML) is a broad term that covers a range of algorithms and modeling tools used for various data processing tasks. This article reviews the recent developments in the intersection of ML and physical sciences. It covers the application of ML techniques to various domains of physics, cross-disciplinary collaboration, and advancements in ML inspired by physical insights. After introducing the basics of ML methods, the article discusses how statistical physics can help understand ML. The article then covers the use of ML techniques in various subfields of physics such as chemical and material physics, particle physics and cosmology, quantum many-body physics, quantum computing, and quantum computing.[2] Machine Learning is a crucial aspect of the rapidly growing field of data science. It uses statistical methods to train algorithms for making classifications or predictions, and uncovering key insights from data mining

projects, which drive decision making and positively impact business growth metrics. With the growth of big data, the demand for data scientists who can identify the most relevant business questions and the data to answer them will also grow. This study provides an overview of common machine learning approaches for data processing, including supervised, unsupervised, semi-supervised, active, transfer, and reinforcement learning. ML techniques are more efficient at analyzing vast amounts of unstructured data than traditional statistical and econometric models used in marketing and offer flexible frameworks that can approximate complex functions, leading to highly predictive results. However, ML techniques often lack intuitive interpretation, particularly at the causal level, and it is still unknown if they can capture the heterogeneity and dynamics of individual consumers. .[3]

B. Full-Stack development

the physical module of the system will have several control and management elements to meet the stated goals. These include an e-learning platform with SIDE interconnection, a website with educational/training content and e-learning events, a media repository, a file storage and sharing service, a collaborative platform, a scientific repository, a forum, a ticket service/helpdesk, and a customer relationship management (CRM) system. Additionally, the physical module will have a physical examination area (such as a lab), a content creation studio, and a training studio.[6] The goal of the curriculum reform is to prepare students for a career in web front-end development by providing them with the necessary technical skills. The curriculum focuses on the latest web technologies, such as HTML, CSS, DIV, JavaScript, DOM, and AJAX, and aims to equip students with a basic understanding of these technologies, as well as proficiency in using various development and testing tools. The curriculum is structured into five modules that cover all the essential aspects of front-end web development.[7] The use of computational storage drives in cloud-native relational databases can help address the challenge of handling analytical workloads by improving the efficiency of table scans. The idea is to leverage the in-storage computing capability of computational storage drives to perform data-intensive operations directly on the storage nodes, thus reducing the burden on front-end database nodes. However, to realize the benefits of this concept, both hardware (computational storage drive) and software (database, filesystem, and I/O) must be improved and optimized to work together effectively.[8]

II. LITERATURE SURVEY

The weak ties theory is a social network theory that emphasizes the importance of weak ties, or loose connections, in a person's social network. According to this theory, weak ties provide access to novel information, resources, and opportunities that are not available in one's close network of strong ties. Weak ties are considered to be bridges between social groups, and can provide exposure to diverse perspectives, information, and resources. On the other hand, strong ties, while offering

a sense of security and support, can limit a person's access to new information and opportunities. Therefore, having a balance of strong and weak ties in a social network is important for personal and professional growth.[9] In Manca's review, the use of social media platforms in higher education was found to be primarily limited to traditional teaching methods and not fully taking advantage of the unique features that each platform offers for teaching and learning. This leads to a lack of consideration for the unique affordances of each platform and a limited understanding of how students perceive them. The studies showed that there is a need to explore and harness the pedagogical potential of these platforms in a more effective way to enhance the learning experience.[10] False information can have negative effects on individuals and society, leading to misinformation and affecting public opinion. To combat the spread of fake news, it is important for individuals to fact-check information before sharing it and to be cautious of sources that have a history of spreading false information. Additionally, social media platforms can use algorithms to identify and flag false information, and promote credible news sources. The responsibility of addressing fake news should not solely be placed on individuals, but also on media organizations and technology companies.[11] The proposed method aims to improve sentiment analysis by considering both the topics and the words in a phrase. By combining topic and word embeddings, the method captures the relationship between the topic and the sentiment expressed in the phrase. The topic-level attention mechanism is applied at the sentence level to weigh the contribution of each topic to the overall sentiment score, producing a more nuanced and accurate sentiment analysis.[12]

III. PROPOSED SYSTEM

In summary, social network services are a popular Internet application with both benefits and drawbacks. They offer effective communication among users, but are limited in their ability to support learning, research, and cultural activities on campus. Additionally, public social network sites may compromise information and privacy protection due to their commercial interest. On the positive side, social networks can facilitate student collaboration and improve the quality of information created through social engagement.

IV. SYSTEM ARCHITECTURE

Backend Server is a Python Django server that offers all of the APIs required for the operation of the social network. React is used to build the front-end client. A reverse proxy and load balancer named Nginx webserver is situated between the backend and the fronted. Requests are sent to the nginx webserver via the frontend. This request is forwarded by Nginx to the accessible backend server. The backend server processes the request and replies with the necessary information to the webserver, which then transmits the response to the client. The primary benefit of utilising a webserver as a middleman is that the client is never aware of the IP address of the backend server. By doing this, the backend can avoid DoS assaults. On

Published by :

http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 12 Issue 03, March-2023

an AWS EC2 instance, back-end servers and a web server are housed. All required security features are offered by AWS. All data, photos, videos, and other binaries are kept in AWS S3. Python's boto3 package facilitates communication with AWS services. AWS is also used for frontend deployment.
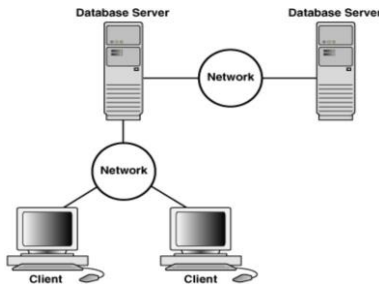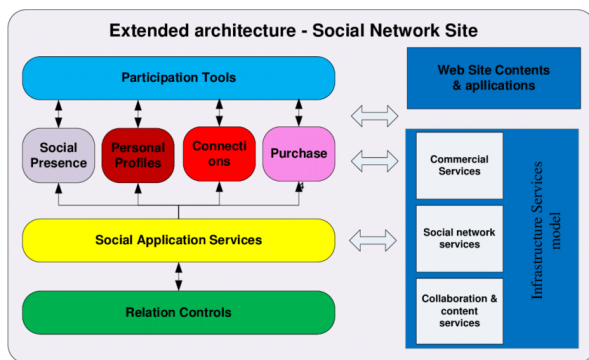

Fig. 1. System Architecture

Fig. 2. Extended Architecture

Software Description

1) Python: A high-level, all-purpose programming language known for its code readability and dynamic typing. It supports multiple programming paradigms and has garbage collection.

2) Django: A high-level Python web framework that promotes fast development and practical design. Open-source and free.

3) Django Rest Framework: A toolbox for creating Web APIs using Django

4) Node-Js: An open-source server environment that can run on different platforms and is a back-end JavaScript runtime environment using the V8 JavaScript Engine.

5) React-Js: A front-end JavaScript toolkit for creating user interfaces based on UI components, free and open-source

6) PostgreSQL: A free and open-source relational database management system that emphasizes SQL compliance and extensibility.

7) AWS: Amazon Web Services, a subsidiary of Amazon, offering metered cloud computing platforms and APIs.

8) AWS S3: Amazon Simple Storage Service, a web-based object storage service offered by AWS.

9) AWS EC2: Amazon Elastic Compute Cloud, a component of AWS that enables customers to rent virtual processors

10) AWS RD2: Amazon Relational Database Service, a cloud-based relational database service offered by AWS
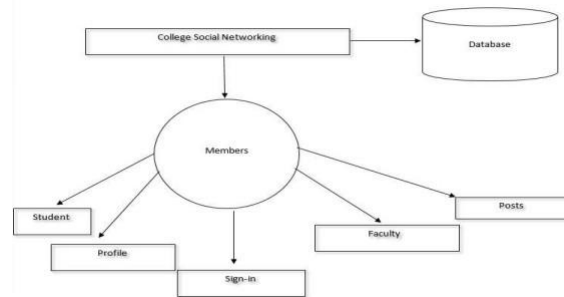
V. DATA FLOW DIAGRAM

Fig. 3. DFD-0

A data flow diagram is a visual aid for describing and analysing how data moves through a system. These serve as the main tool and serve as the foundation for the development of the other components. The logical transition of data from input to output through processing can be explained without reference to the system's physical components. The logical data flow diagrams are what these are called.
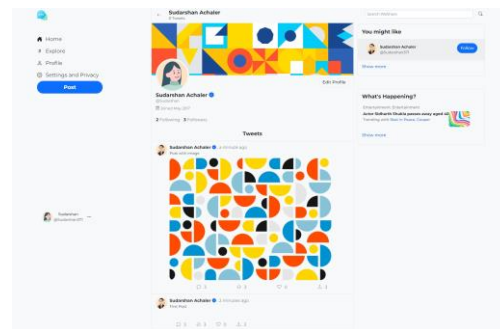
VI. RESULTS

Fig. 4. Profile Page

Fig. 5. Sign-in Page

VII. CONCLUSION

This college networking website application allows you to connect with friends, find friends, share photos and messages. A new student at your university has registered on the site you have never met. With the help of this site you can start your new friend and her communication with group chat feature

ACKNOWLEDGMENT

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