

Review on CampusQueries – A Community-Based Question and Answer Platform Integrated with Toxic Comment Classifier

Saurav Yadav¹ Ankit Maurya² Abhishek Jha³

^{1,2,3}Department of Computer Engineering

^{1,2,3}Dr. D.Y Patil School of Engineering Academy, India

Abstract— When we want any information and answers to our questions related to our college or campus, we search it on the web but we don't always get what we were finding. And also, we discuss or share opinions on social platforms but such activities sometimes encounter threats or harassments which compel people to not express themselves properly. Many social platforms try to find out such harassments or threats in conversations so that such conversations can easily be prevented before it causes any further damage. Toxicity detection is one of such methodologies to find out the different types of conversations that can be classified as toxic in nature. To increase the efficiency in classifying such comments, we can make use of machine learning algorithms to determine the toxicity in comments. This analysis aims in developing a platform that will help us in finding the solution and we named it "CampusQueries". In this proposed system, the authentic users will be able to ask doubts as well as clear others, also we are using a machine learning model for toxic comment classification. So, anyone can fearlessly put their points.

Keywords: Bidirectional Long Short-Term Memory (LSTM), Machine Learning, OTP, Authentication, Toxic comment classifier, GloVe, Convolution neural network (CNN)

I. INTRODUCTION

The Internet completely changes our lives. When we want any information and answers to our questions related to our college or campus, what do we do? Just ask Google and hope there's an immediate answer? Filter search results to find the relevant answer? And when we find one, how we get to know that it's the correct one? This analysis aims in developing a platform that will help us in finding the solution and we named it "CampusQueries". It is an engaging site that feels like a duet of search engines and social media networks, but its purpose is to give you the answers and allow you to answer the questions asked by others of subjects in which you're knowledgeable. Introduction in simple words, CampusQueries is a question-and-answer platform for your college campus. It is a platform for students & staff where they can ask questions regarding their campus, related studies, hostel, canteen, fest, and much more. Providing a platform where we can ask easy questions without revealing our identity. Here, we can search for questions that we have and find out their respective answers. And can also post our questions if not already found on the platform, or if we want then we can provide answers to the questions of subjects that we have some knowledge about. But in Community-Based Question and Answer platforms, there is a chance that someone will use Hate Speech or Toxic comments (i.e., comments that are rude, disrespectful, or otherwise likely to make someone leave a discussion) that lead many such communities to limit or completely shut down user comments. To prevent that from happening we are making a

machine learning model for toxic comments classification considering various machine learning algorithms and applying the algorithm having the best accuracy and low loss. This model will be working in the background. Here, the post (i.e., either question or answer or comment) will be taken as an input to the model then the model will predict if it's toxic or not and will give output, then its output will be used as an input in the site so that if it is toxic the admin will get the reference to the post to check it then after it the admin will verify that post, the suitable action against the post will be taken. The project principally includes 3 sections particularly website for users, backend for admin, and ML model. The project is composed of a website in which the users will put on their queries. The ML model will be checking each post in the background for toxicity and the admin will verify the toxic posts sent by the model in the backend. The only requirement to use this project is that the user is supposed to be from the campus with a valid ID number. Because to sign up on the website, the user will require id number provided by the college. After checking the id in the database, it will give two options to the user to choose either from the Phone number or the email id to get an OTP for user authentication. After choosing from the options the user will get an OTP on the phone or mail which they chose earlier that is present in the campus database already. On successfully verifying the OTP the user will be allowed to provide the password and confirm the password for account creation. If a user forgot their password, then they can use forgot password option to get an OTP and then create a new password. For signing in the user will require its ID and Password, after successfully verifying both the user will be able to use the website for posting queries. The user will be able to post questions, answers, or comments and will be able to manage its posts. Or the user can manage their passwords also. The user's identity like its name, phone, or email will not be revealed to others, only their id will be visible, it is for the privacy of the user. The admin will have the user's information like Name, Phone, Email, Id in its database, which will be hidden from the users. The admin can manage the users i.e., the admin can take actions against the account and can also delete the posts. For using this platform, the user must have to go through the authentication process in which the user's id and password will be matched with the authenticated users. If the user is authenticated then only, he/she can log in to the system.

II. LITERATURE SURVEY

A. Paper Name: Classification of Abusive Comments in Social Media Using Deep Learning

Author Name: Mukul Anand, Dr. R. Eswari

Description: Social media has provided everyone to express views and communicate to masses, but it also becomes a place for hateful behavior, abusive language, cyber-bullying and personal attacks. However, determining comment or a

post is abusive or not is still difficult and time consuming, most of the social media platforms still searching for more efficient ways for efficient moderate solution. Automating this will help in identifying abusive comments, and save the websites and increase user safety and improve discussions online. In this paper, Kaggle's toxic comment dataset is used to train deep learning model and classifying the comments in following categories: toxic, severe toxic, obscene, threat, insult, and identity hate. The dataset is trained with various deep learning techniques and analyze which deep learning model is better in the comment classification. The deep learning techniques such as long short-term memory cell (LSTM) with and without word GloVe embeddings, a Convolution neural network (CNN) with or without GloVe are used, and GloVe pretrained model is used for classification.

B. Paper Name: Secure Login Using Encrypted Password and Email Based Login Approach

Author Name: V. Balalojanan, IIT. Jeyaperatha, IITK.Thiruthanigesan, IVN.Thiruchchelvan

Description: In the software development progress login page most important module it is a security module for the internal whole system offline based application most of them are used dynamic and static passwords. In that they follow several technologies to secure their developed systems. Such as password encryption methods, session password and bio matric technics. Our proposed system is enhancing the security level of the developed system by using the encrypted password and email-based login approach.

C. Paper Name: Application of Session Login and One Time Password in Fund Transfer System Using Rsa Algorithm

Author Name: Gotimukul Venkatesh, Sunkara Venu Gopal, Mrudula Meduri, Sindhu C

Description: Password thefts, a serious security threat to Internet users where the perpetrator steals the secure password and misuses it which makes the individual look like legitimate user, in an order to gather personal and financial information. It is important to prevent such identity theft attacks especially in fund transfer. One of the ways to prevent the password theft is to authenticate the user. Creating a high secure password can achieve high level of security in authenticating the user over the internet. Using the instant mailing service available in internet, user will obtain the public key. Then the private key is shared using secure server client connection ensuring legitimate user receives the private key. Both the keys are generated as RSA Tokens using Random password number Generator which are synchronized between server and client and the login expires once the current time limit exceeds the access time. The main aim is to use session login narrowing the login time thereby reducing the probability of hacking. These algorithms are very economical to implement provided they are time synchronized with the user.

D. Paper Name: Design and Implementation of Intranet Search Engine System

Author Name: Yan Hongyin and Qi Xuelei

Description: With the development of internet technology, the information in the website increases sharply. In view of

the problem of the user's great desire for intranet information retrieval and the inefficiency of the intranet information retrieval service provided by web search engines, in this paper, we study the architecture, key technologies and implementation of the intranet search engine system. We designed and implemented an intranet search engine system based on Lucene. The system contains information gathering module, indexing module, searching module and system interface module, which can index and search many document formats, such as html, word, excel, pdf and so on. Experiments show that the system has a good indexing and retrieval efficiency and performance, which can provide intranet information retrieval service for users effectively.

E. Paper Name: Social Q&A: An Online Social Network Based Question and Answer System

Author Name: Haiying Shen, Guoxin Liu, Nikhil Vithlani

Description: Question and Answer (Q&A) systems play a vital role in our daily life for information and knowledge sharing. Users post questions and pick questions to answer in the system. Due to the rapidly growing user population and the number of questions, it is unlikely for a user to stumble upon a question by chance that (s)he can answer. Also, altruism does not encourage all users to provide answers, not to mention high quality answers with a short answer wait time. The primary objective of this paper is to improve the performance of Q&A systems by actively forwarding questions to users who are capable and willing to answer the questions. To this end, we have designed and implemented Social Q&A, an online social network-based Q&A system. Social Q&A leverages the social network properties of common interest and mutual-trust friend relationship to identify an asker's friends who are most likely to answer the question. We describe the architecture, algorithms and user interface of Social Q&A, and analyze the Q&A behavior of real users and questions from a small-scale real-world Social Q&A system. We also conducted comprehensive large-scale simulation to evaluate Social Q&A in comparison with other methods. Our results suggest that social networks can be leveraged to improve the answer quality and asker's waiting time.

III. PROPOSED SYSTEM

A. Problem Definition

When we want any information and answers to our questions related to our college or campus, we search it on the web but we don't always get what we were finding. And also, there is a lot of Hate speech, abusiveness, and toxicity going on the internet nowadays which sometimes leads to mental harassment, and by that someone can quit the conversation, social media and might affect their lives also. Therefore, making a question-and-answer platform & also, detecting Toxic Comments & restricting them is significantly important.

B. System Architecture

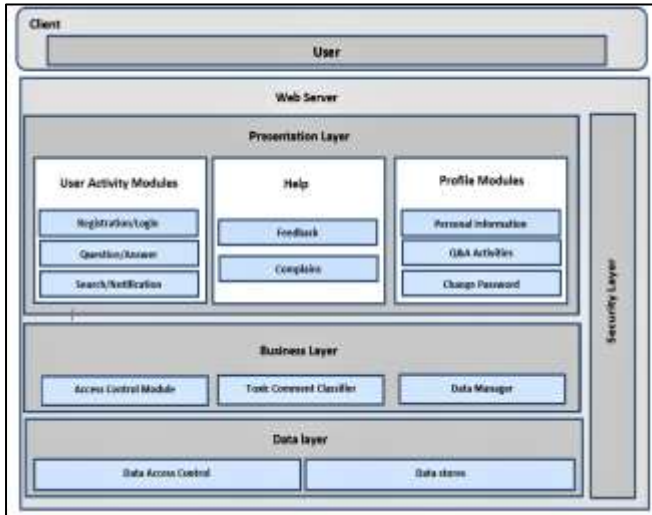


Fig. 1: System Architecture

C. Explanation of System Architecture

- 1) A common layered architecture has been developed based on the client-server model as shown in Fig. 1. On the client side, user agents are used for the presentation layer, business layer, and data layer. The security layer is shown as cross-cutting because security issues are mandatory and common to all layers. The security cross-cutting layer of the CampusQueries system supports operations like authorization, authentication, exception management, and validation.
- 2) **Presentation layer**
The presentation layer facilitates user interaction and consists of user interface components and presentation logic. This layer consists of three main components, i.e., user activity module, help, and profile module. The user activity module provides basic facilities like user registration, login, answering, and asking a query. The user activity module uses the services of data manager and access control module. CampusQueries site is based on user-generated content which is produced with collaborative efforts. The help module allows users to ask for help from the admin or provide feedback. This module also facilitates users to complain about abusive material. The third component of this layer is the profile module which uses the services of a data manager to display user's information, Q&A activities, and change the password.
- 3) **Business layer**
The business layer works as a mediator between the presentation layer and data layer and implements the core functionality of the CampusQueries system. CampusQueries business logic layer commonly consists of components like access control module, toxic comment classifier, and data manager. The access control module is responsible for controlling the access of community members consistent with their level, position, and authority by using predefined access control schemes. The toxic comment classifier is used to distinguish normal contents from bad ones and also, to send the post to the admin if found toxic. The data

manager component facilitates the maintenance and retrieval of contents.

4) Data layer

The data layer consists of two components, namely, data access components and data stores. The CampusQueries data like profile information, questions, answers, and other necessary information is stored in data stores. The business layer accesses this data by exploiting the services of data access components.

IV. UML DIAGRAM OF PROPOSED SYSTEM

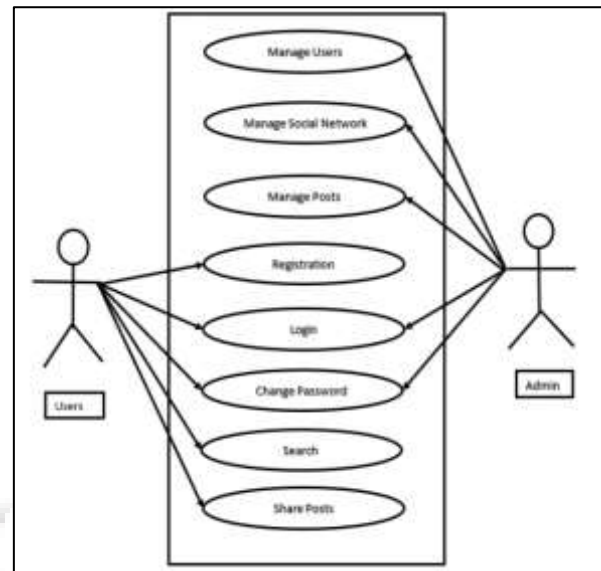


Fig. 2: UML Diagram of the System

A. System working

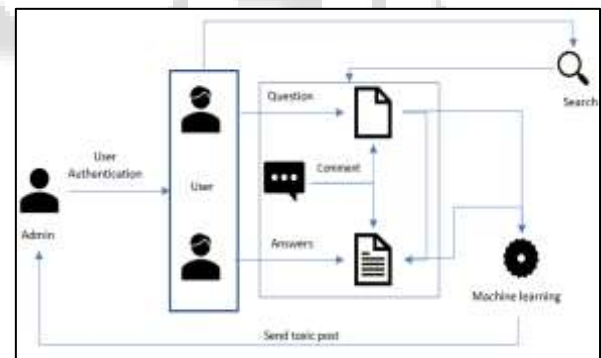


Fig. 3: Working of the System

The working of the site will be as shown in Fig. 3, firstly, the authenticated user will be able to login in the system. Then the user can either search their queries if they are already present on the database or not. If the query is already present and answered they can refer that or comment on it. Or the user can ask their query by posting it, so someone can answer it in the future. Or the user can simply post the answer to someone's query if they have knowledge about that. All these posts will go through the machine learning model, the output of the model will be sent to the admin if the post will be toxic. Then the admin can take appropriate actions for that.

V. CONCLUSION

To conclude, we know that nowadays technology is growing day by day, and there are so many Q&A websites and

applications available online on which many users ask their doubt or solve others but some only throw hate speech and abusive content, which leads to fights and even some platforms disable their comment sections because of these, so, there is a need to make sure that there is no such content allowed to be posted. Here is where our project will help users resolving the doubts as well as asking the queries with surety of facing no bad content on the platform, so they can freely put their queries or points without being abused. If anyone posts bad content then the toxic comment classifier will rectify it and if found toxic then it will send it to the admin and the admin will examine the post and will take suitable action.

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