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CohMat: Cross-Campus Collaborative Social Networking System for Knowledge Sharing

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Abstract: - *Campus life affords learners time to interact and, in the process, discover new interests and passions in a particular field of study. Cross-campus interactions are now possible with the dynamic change in technology, increasing the scope for learners to collaboratively harness convergent study interests through knowledge sharing. While there are extant social networks (SN) like Facebook and WhatsApp with various technological affordances, many of these applications are general purpose and house people of diverse interests. Consequently, content shared on these platforms can be grouped into different categories, including Personal, Professional, Entertaining, Promotional, and Educational. Despite the richness of these platforms in content, learners still struggle to find information on specific topics, and if they do, they often land on stale information that is of little help in academic success. This research aims to develop a dedicated and collaborative networking platform that connects learners across campus based on their study interests. Once connected, learners can share knowledge and get real-time peer-to-peer assistance to enhance competency in their study interests. As such, CohMat for 'Cohort Match' is developed to help in achieving this objective. The application is based on the main assumption that the learners' interest changes based on what one is learning at each particular time, supporting both one-to-one and one-to-many communications. The project could help new students find their study community within multiple institutions with ease. The collaboration will encourage learners to improve their competency in a particular area of interest and become more skillful in the job market.*

Keywords: Cross-Campus, Collaborative learning, Social Networks, Knowledge Sharing, people of similar interests

Introduction

The years spent on campus affords learners time to meet important people in life, enabling the discovery of interests and passion in a particular field of study. With the dynamic change in technology, such connections are significant as they bring together learners with similar interests to be up-to-date on happenings around them. While there are extant social networks (SN) like Facebook and WhatsApp with various technological affordances, many of these applications are general-purpose, housing people of diverse interests. Consequently, content shared on these SNs can be grouped into different categories, including Personal, Professional, Entertaining, Promotional, and Educational. Despite the richness of these contemporary platforms in content, learners still struggle to find information on specific topics, and if they do, they often land on stale information that is of little help in their academic success.

While hundreds of WhatsApp and Facebook groups have been created to bring together students with similar interests, the phrase 'similar interests' is pretty ambiguous if closely examined. Consider a case of two Computer Science (CS) Students whereby one of them chooses to specialize in networking and the other one in Software Engineering. Generally, we can say that the two students have similar interests since they are all interested in Computer Science. But technically, their interests are different. Again, we can recursively subdivide Software Engineering into smaller fields such as Android development, Web development, Data Science, and Machine Learning. Consider even a 'narrow' field like web development. There are numerous ways of creating a

website; PHP, VB.Net, Python flameworks such as Django and Flask, and Open-source web builders such as Wix, WordPress, and Squarespace. Whatever technology you can think of, people specialize in it, rendering them to be of similar interests, and there are subfields in that particular technology that again splits their interests. Therefore, creating a WhatsApp group for Computer Science students cannot be of much technical help as such a group can only be used for general purposes such as bulletins on all computer science students and not to seek technical assistance. As such, nobody has time to scrutinize hundreds of irrelevant chat messages looking for a question that relates to their field of specialization and responding to it.

While platforms like Stack Overflow exist where you can find a solution to almost any programming question, with the rapid technology change, you may find that a solution that worked in 2015 no longer works, and you have to maneuver your way out of the problem as of now. There is a need for smaller groups for those students with similar interests but still, keep the wider group for generic issues. Now the big question that lies here is; who are these students with very similar interests? For this study, the researchers have naively redefined the phrase 'people of similar interests as comprising those who are currently working on the same thing. If, for instance, you are currently learning HTML and someone elsewhere is also learning the same thing, then you two have similar interests, and you can work together to improve your skills. This way, one can get real-time support from fellow learners whenever they encounter a problem other than relying solely on outdated solutions from Stack Overflow and other Platforms. On this basis, we endeavor to break down wide academic fields into smaller fields and provide real-time connections to college students based on their specific areas of interest.

Consequently, we argue that there are many social networking sites (SNSs) that are too broadly such that to get what you want, you have to perform an explicit search which even so returns hundreds of search results. Consequently, if you do not key in the right wordings, you may probably miss the correct search results. Another issue is that they are open to the public with members having different levels of expertise. At times people who are beginners in their field of study fear seeking help from groups that have been established in these SNSs due to imposter syndrome and fear of being looked down upon. While on the one hand, there are websites like Quora, WikiHow, Stack Overflow, and GitHub, where you can ask questions and get answers.

And on the other hand, SNSs like LinkedIn, Facebook, Twitter, Google+, and Instagram. They lack a dedicated and collaborative learner-oriented platform that integrates these two functionalities effectively. A learner can connect to a group of fellow learners interested in the same topic as them and learn collaboratively without their attention being distracted by advertisement and entertainment content. Therefore, this research comes in handy to bridge this gap by providing a platform where learners can collaboratively share knowledge on a particular area of interest. To the best of our knowledge, this is the first study that attempts to bridge this gap.

Developing a collaborative platform that facilitates interaction among scholars will undoubtedly yield a pool of benefits. First, it will help students find their study community as early as possible and with much ease. There will be no need for students to visit neighboring schools collecting contacts of their coursemates. Also, it will promote competition among scholars, making them study hard, thus improving their academic competency in the long run. As a result, students will be more skillful by the time they graduate, rendering them employable. Therefore, it will relieve employers of the cost of having to train them again as they already have the required skills.

Literature review

The concept of social network is an emergent area that explains the changing learning paradigm in institutions of higher learning. For instance, Liu et al. (2017) explain the importance of social networking theory on individuals and society by indicating its strong links and weak relations. Accordingly, strong links bind groups of individuals who already share similar interests and thus allow them to exchange common information, while weak connections bridge dissimilar groups and are thus a source of new knowledge (Moseti & Mutula, 2016). Another concept of this theory is "Diffusion of innovations," which states that the interaction pattern between the actors who initiate, communicate, and implement technologies can be seen as a social network, where network interactions can take the form of friendship, advice, communication, or social support. Since innovations are relayed through an interconnected web of social connections, this network's structure and characteristics will decide how broad and how quickly innovations are adopted. This theory was deemed appropriate for this study because it discusses the essence of the scholarship concerning interactions and collaborations.

The Online Collaborative Learning (OCL) theory, as stipulated by Picciano(2017), offers a learning paradigm in which students are motivated and encouraged to work together to create knowledge: inventing, finding ways to improve, and thus pursuing the analytical information needed to solve problems rather than reciting what they consider to be the right answer. It emphasizes the position of peer discourse as a key to learning and describes learning as an intellectual convergence accomplished through three phases of group discourse*: 1) Generating an Idea* refers to a group's divergent thinking; knowledge generation, brainstorming, verbalization, and thus sharing ideas and positions on a particular topic or question. Many views come up. In this case, the instructor's role is to promote the development of ideas and to encourage active participation by all group members. *2) Organizing the Thoughts.* This step marks the beginning of conceptual change. As participants confront the new ideas created by their peers or experienced in the course lectures, they begin to address these many ideas in a more oriented way according to their relationships and similarities. Idea organizing activity demonstrates conceptual development and the beginning of integration when students debate and negotiate, choosing the strongest and pruning the weaker positions (using mechanisms such as referencing, agreement, disagreement, or questioning). *3) Intellectual Convergence.* The third phase, Intellectual Convergence, is typically a shared understanding, a common position (including agreeing to disagree), or a joint commitment to contributing and building a piece of shared knowledge.

Ibrahim et al. (2015) observed how the education system at most universities in Malaysia is exam-oriented – and so it is in many other universities across the globe, attaining the highest score in an exam is viewed as 'coup de tat' of one's academic life. The researchers, however, observed that despite their excellent performance in exams, things turn out to be tragic when these graduates start seeking jobs because they lack the necessary skills needed by the employer. As a remedy to this, they recommend collaborative (peer to peer) learning arguing that it makes the learning process more meaningful and interesting. Stoerger (2008) added that focusing on collaborative learning encourages the development of new modes of interaction among the educational community.

Another study conducted in Australia by Chandrasekaran et al. (2016) revealed that via social learning, learners get exposed to the same degree of knowledge, and they can easily access relevant study materials through peer-to-peer engagement. Students admitted that they learn a lot through discussion forums and by interacting with other students online. RIT (2014) categorizes online

educational interaction into three distinct yet convergent categories: learner-content, learner-instructor, and learner-learner. In this case, the concern is on the learner-to-learner, which is so paramount that University accrediting agencies such as the Middle States Higher Education Commission require proof of it in online courses and program design. Student-to-student interaction supports successful and effective learning and helps students develop analytical and problem-solving skills (RIT, 2014).

Looking at students-interactions from a different perspective, Amanda (2018) perceives meetups as an important tool for students-interactions. Meetups in this context mean events where students meet face-to-face to share experiences and swap ideas about a particular field of knowledge. The most popular site that facilitates meetups is 'meetup.com,' which was founded in 2002. Past study has shown that gatherings where people meet in the real environment also benefit from improved interpersonal connections, networking, and social capital ' alloy ' (financial capital rooted in partnerships established both online and offline). Amanda (2018), through a survey conducted within Worcester Polytechnic Institute in Massachusetts, observed that meetups provide opportunities for students to participate in extracurricular activities both for academic and recreational purposes in such activities as Hackathons and Workshops Conferences, and Club Meetings.

Sudha & Kavitha (2016) conducted a study on social networking on students' academic performance in Periyar University: India. Among their findings were both positive and negative impacts, with the negatives dominating the positives. Some of the benefits mentioned include: SNSs offers an effective communication medium, one can plan for consultancy with the experts via the SNSs, students often receive lectures and study materials via SNSs (shared either by an instructor or by fellow students), and that they also act as a discussion room for students. Some of the negative responses recorded, on the other hand, include: Some students argued that the more they used the SNSs, the more their performance deteriorated. Others said that SNSs are addictive and that they rob students of their time and money. Also, others stated that the SNSs are meant for personal/ social matters hence cannot be used for education and that they regarded them as distractions from the study. Talking of SNSs, they have undoubtedly played a huge role in promoting students' interaction across the globe. Below are some of them and how they have contributed to OCL:

Facebook: This website permits users to interact and collaborate within a pre-defined virtual community (Boyd & Ellison, 2007). it is a platform where users can construct a public or private profile that they can then use to attach and interact with people part of their extended social network. (Lantz-Andersson, Vigo & Bowen, 2013). consistent with Wise et al. (2011), students spend a mean of 1 hour per day on Facebook, majorly engaging in social interactions. Besides its social, Facebook is additionally used as an instructional tool thanks to its widespread acceptance and students' familiarity with it. (Duncan, 2016). Aydin (2012) recorded the main use of Facebook as communication. About students' use, he argued that it is often used for learners-instructor interaction. The researcher termed Educational use of Facebook as the activities enabling communication among students and their instructors, such as class discussions; scholar announcements about classes, courses, resources.; delivery of assignments by teachers. Selwyn (2009) classified all these activities under administrative use of Facebook, which is different from pedagogical use of Facebook, such as inquiring, reflecting, and commenting on particular course-related topics or issues.

Similarly, Grosseck et al. (2011) argued that most students use Facebook to connect with friends and family, share profiles, photos. But less for academic purposes. They insisted that unless students got clear messages, they would not be pleased going through instructional activities shared through Facebook. The study results by Skues, Williams, and Wise (2012) try to explain why students are unpleased when it comes to studying through Facebook. They argued that there was almost no indication of Facebook's direct support for any academic activities. Besides, students' views showed that Facebook was often regarded as a break or distraction from study.

YouTube: this was launched in 2005 to record and share their videos without cost (YouTube, 2013). It is the biggest host for online video content and the third most popular website, following Google and Facebook (Tan & Pearce, 2012). Reports by Kaplan and Hoenlein (2010) showed over 10 to 20 hours of video footage posted to YouTube every minute. This massive and continuous contribution to the website renders it an endless source of information encompassing numerous fields. According to Kaplan and Haenlein (2010), 51% of YouTube users use the website weekly, and 52% of individuals between 18- and 34-years post videos to YouTube frequently. Although much of the content on YouTube is for entertainment purposes, there is much educational content (Bethany, 2014). Using YouTube in the classroom is viewed by Abell (2011) as an innovative and cost-effective of bridging the gap between students and their instructors. The website offers a wide variety of multimedia content that could be used for teaching (Tan & Pearce, 2012). This content could either be teacher-created or general content that may be useful in illustrating key ideas and showing students some theoretical aspects of their courses in a practical setting (Roodt et al., 2014). In addition, YouTube provides students with a platform to receive information from guest speakers without actually having the guest speaker present in the classroom (Abell, 2011). Lecturers also can share videos with their students allowing them to review what was covered in class at a place and time which suits them, and all this requires just an active internet connection (Clifton & Mann).

***LinkedIn*:** This is a professionally-oriented SN tool that enables the creation of a profile containing personal information, specific skills they possess, related work and educational experience, and samples of their professional work. It also enables its users to connect, participate in community forums, and subscribe to specific posts. (Anabo, 2017). It was created in 2003 as a networking site through which professionals could connect virtually without being in the same physical location (Anabo, 2017). Since going public in May 2011, LinkedIn has incorporated many new features, such as a newsfeed, user content, and the ability to follow professionals, improving user engagement and time spent on the site (Cooper & Naatus, 2014). Patterson (2019) highlights five reasons why students should be on LinkedIn: (i) It helps them to establish an online presence, (ii) It supplements the students' resume, (iii) They can use LinkedIn to apply for jobs, (iv) LinkedIn lets them research prospective employers and (v) It helps them connect with alumni from their college. Burriss(2018) adds to this when he notes that through LinkedIn, students can connect with their fellow students and engage with and on content related to their career or goals.

***WhatsApp*:** this is an instant messaging app, invented in 2009 by Brian Acton and Jan Koum (Tiwari & Sharma, 2016). Through this App, users can send instant text messages, audios, videos, images, any document file, and the user can also make full-duplex communication using internet connectivity. Multiple studies have reported that WhatsApp helps in communication as well as knowledge sharing. Instant messaging for academic purposes using WhatsApp allows students to interact and share knowledge (Aydın, 2012). The study conducted by Cetinkaya (2017) revealed that WhatsApp as a supportive technology had a positive impact on students' success. The

researcher argued that learners learn better in environments where text and images are used together rather than mere texts hence recommending WhatsApp as a good tool for sharing knowledge. The shortcomings of the channel include untimely and unnecessary messages sent by some group members.

Through an empirical study conducted in Nigeria, Samuel (2015) observed that classroom interaction patterns symmetrically influenced students' achievements and that poor students' performance was attributable to a lack of proper student interaction patterns. Ngoepe(2013), researching the University of South Africa, outlined the various forms of interactions in mathematical classrooms showing that student-to-student interactions constituted the lowest percentage of total interactions in each classroom, followed by student-initiated activity writing other representation of ideas; with teachers-to-students interactions taking the lead. Student-student interaction includes listening, communicating, asking, responding, thinking, and sharing opinions, making it a vital learning tool in the education system (Samuel, 2015). Asunka (2008) also discussed online student interaction in a study that included a community of undergraduate students in Ghana Regent University College of Science and Technology. The interviewed students were enrolled in an online course designed to establish the basis for the usage of ICT in learning. 66 percent of the interviewed students believed that online learning has no benefit over face-to-face instruction. One of the reasons they gave was that they would keep postponing the online tasks due to pressure from classroom learning. It would have been much better if all students were actively participating in the online discussions/forums. Perhaps the fact that it was more of teacher-student than student-student interaction made it boring.

Not much has been recorded in Kenya regarding the interaction among students at the university level, and even the available literature does not seem to deviate from the global and the regional perspectives. One study conducted by Ngussa et al. (2015) showed that students at the University of East Africa, Baraton Kenya, significantly use ICT in three forms of interaction: student-student, student-content, and student-administration. As a result, various websites include google scholar and an e-learning portal for student-content interaction, SNSs for student-student interaction, and emails and memos for student-administration interaction. The conclusion drawn from his study is that interaction is fundamental in maximizing learning outcomes. Another ultimate study conducted in the six leading universities in Kenya proves to be very important as much as this study is concerned. Moseti & Mutula(2016) conducted this study to determine how Kenyan scholars participate in local and international scholarly collaborations. An abstraction of the study showed that the collaborations mostly involved sharing information with colleagues and helping others understand scientific issues. Some respondents stated that they also spend time on personal discussions with colleagues about ideas, approaches, and research suggestions. However, most of the collaborations were limited to publishing articles since the study focused much on postgraduates. Again, the study does not mention the channels that these scholars use when collaborating. Presumably, they do so through SNSs since the researcher has used the Social Network Theory as the foundation for the study.

It seems that there lacks a seamless channel dedicated to facilitating student-to-student interactions. Most established e-learning platforms are designed for use only within a given institution and are mostly meant for teacher-to-student interaction other than student-to-student. If a student wants to interact with students from another Institution, the easiest way would be through SNSs or by visiting that particular institution. Even so, doing, it will be difficult to identify those

students with matching interests as theirs without asking them. Therefore, this study has theoretical and practical significance.

Materials and methods

The researchers used a descriptive research design using surveys and observational studies. While carrying out field surveys, subjects were required to complete a questionnaire or interview in their natural setting. A descriptive survey design was used. The elements and the variables studied were observed without making any attempt to control or manipulate them. The target population comprised of all students of PAC University, and random sampling was adopted as the preferred sampling design, with the following formulas:

$$S = Si/1+[(Si-1)/population] \quad (1)$$

Where: S = Sample size and Si = Sample size of infinite population

$$Si = Z^2 * P * (1-P)/ M^2 \quad (2)$$

Where: Z = Z-score (determined based on confident level), P = Population proportion, and M = Margin of error.

The researchers used written questionnaires containing both structured and open-ended questions. The filled questionnaires were then collected, and the data analyzed. Oral interviews were conducted by approaching the respondents individually or as a group, asking them questions relevant to the study problem, and then noting their responses. In the data analysis process, the collected data were categorized as either qualitative or quantitative, and appropriate analysis methods were applied to each category. In the case of qualitative data, the analysis involved keenly examining the data to identify common patterns within the responses and critically analyzing these patterns to achieve the research aims and objectives.

On the other hand, quantitative data were first sorted into numeric data types – as most variables could only take numeric data – and frequencies tables were drawn to present the data. After tabulation, the data was then analyzed using descriptive statistics. Modern data visualization tools such as matplotlib were used to visualize the data into charts and graphs for easy interpretation.

Development Methodology

The software was developed using the Feature-driven/Incremental model, with the Initial version handling a limited number of finalized and prioritized requirements. The project will develop a prototype from which subsequent versions will be recursively made. Each development cycle was comprised of four steps, as highlighted in the diagram below.

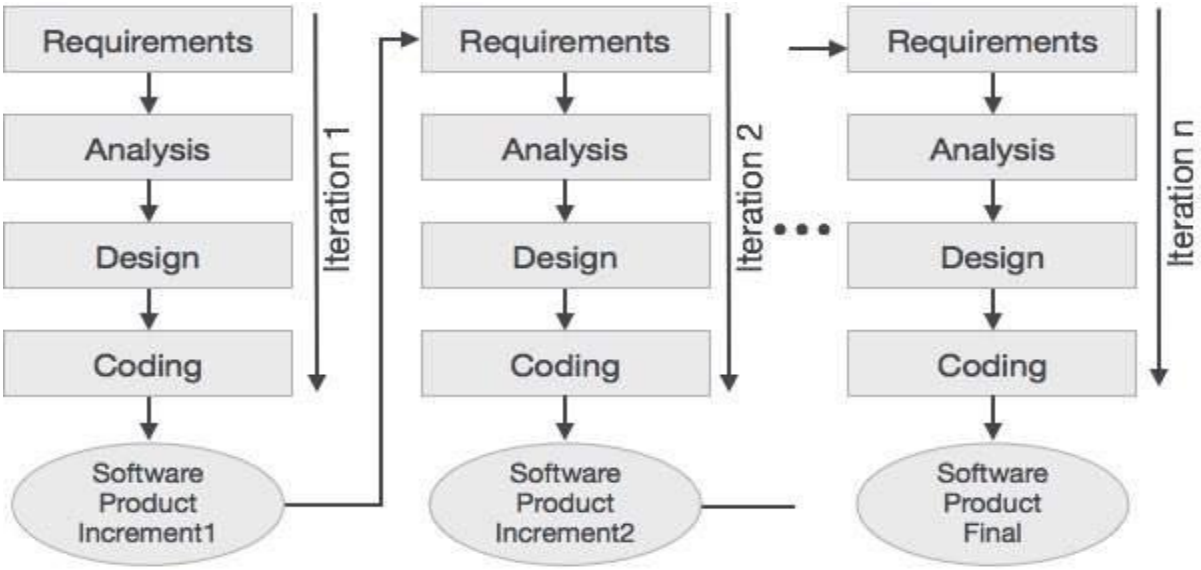

Figure 1: Feature-driven/Incremental model

Design Tools

UML diagrams were drawn using such tools as Visual Paradigm and StarUML to clearly understand the composition of the software in terms of the use cases. Data flow interaction between various components and the activities to be afforded by the software. Low-fidelity prototypes were first made for the UI, later scaling them into high-fidelity porotypes using such software as Photoshop.

Results

Sixty students from three different departments (20 from each): were interviewed and their responses recorded. 45 more were issued with written questionnaires to fill out, and the collected data was then analyzed in Table1 below. The respondents were asked how often they used social networks for academic-related purposes, and their responses were recorded. 63 of 105 respondents said they quite often used social networking platforms for academic-related purposes. 36 of them said they mostly used WhatsApp to send and receive class notes from lecturers and fellow students. 9 said that they often watched 'how-to' videos(tutorials) on YouTube, and 7 said that they were members of Facebook academic groups where they interacted with students from other universities and discussed academic-related matters at least twice a week. The remaining said that they used all the named channels collectively for varied academic undertakings. 39 of the respondents indicated that they used social media for academic purposes though not so often, while 3 said they have never used any social media platform for academic-related tasks.

Looking at the data based on departments, most of those who used social media quite often for academics were from the IT department, followed by those in the Business department. The number of theology students who used social media for academics quite often seemed to balance with those that did so once in a while. No student from IT and business departments reported having never used social media for academic-related tasks. Two of the three who reported having never used social media for academics said they were not registered with any social media

platform, but they were hoping to do so in the future. One said she was familiar with social media and had a Facebook account, but she is not an active member.

Table 1:Use of social media for academics

Method used	Department	People used to collect data	Often	Sometimes	Never
Interview	IT	20	15	5	0
	Business	20	12	8	0
	Theology	20	11	8	1
Questionnaires	IT	15	11	4	0
	Business	15	8	7	0
	Theology	15	6	7	2

Challenges of using social media for academics

The respondents were asked to give the challenges they faced when using social media for academic purposes, and below are some of their responses;

a) Some of the students said that they struggled as group admins to keep the group focused as some members would still post content that was not in line with the group's purpose.
b) Others said that some social media platforms like WhatsApp only allowed a limited number of members, and this posed a great challenge when it came to extending the network to accommodate all interested members.
c) Some of those who said they often used Facebook and YouTube to perform academic tasks said they often got disrupted by advertisements and entertainment content.

With these challenges, the researchers got credence to design and implement the new system, christened '***CohMat***,' an acronym from *cohort match*. The system can match or bring together similar cohorts from different institutions of higher learning.

System Design

To develop a system that could ultimately solve the highlighted problem, the system design was necessary. The researchers started by listing the functional and non-functional requirements of the system. To effectively communicate these requirements to the system developers, various UML diagrams were drawn. These included the use case diagram, class diagram, sequence diagram, Entity Relationship Diagram, and activity diagram. These diagrams are shown below in Figure 2, Figure 3, Figure 4, and Figure 5.

Additionally, as a way of gauging the viability of the system, a feasibility study involving three types of feasibility analysis was conducted; (i) Operational feasibility – to explain how well the system solves the problem(s) that led to its development, (ii) Technical feasibility – to evaluate the ease of developing and maintaining the system and (iii) Economic feasibility - a cost/benefit analysis which involved comparing the benefits and savings that will be yielded from the developed system with the costs incurred to develop it. The conclusion drawn from this study was that the proposed system was viable and feasible, thus giving the researchers confidence to go

ahead and implement the system.

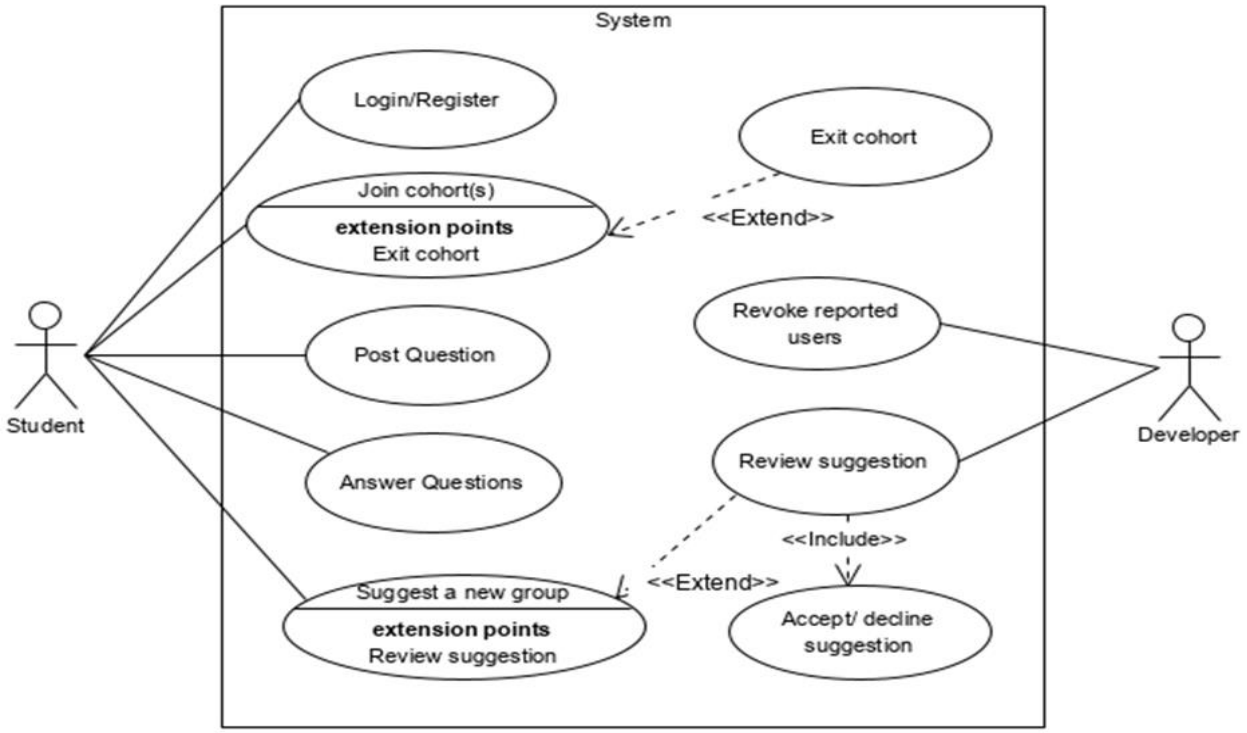

Figure 2: CohMat Use case Diagram

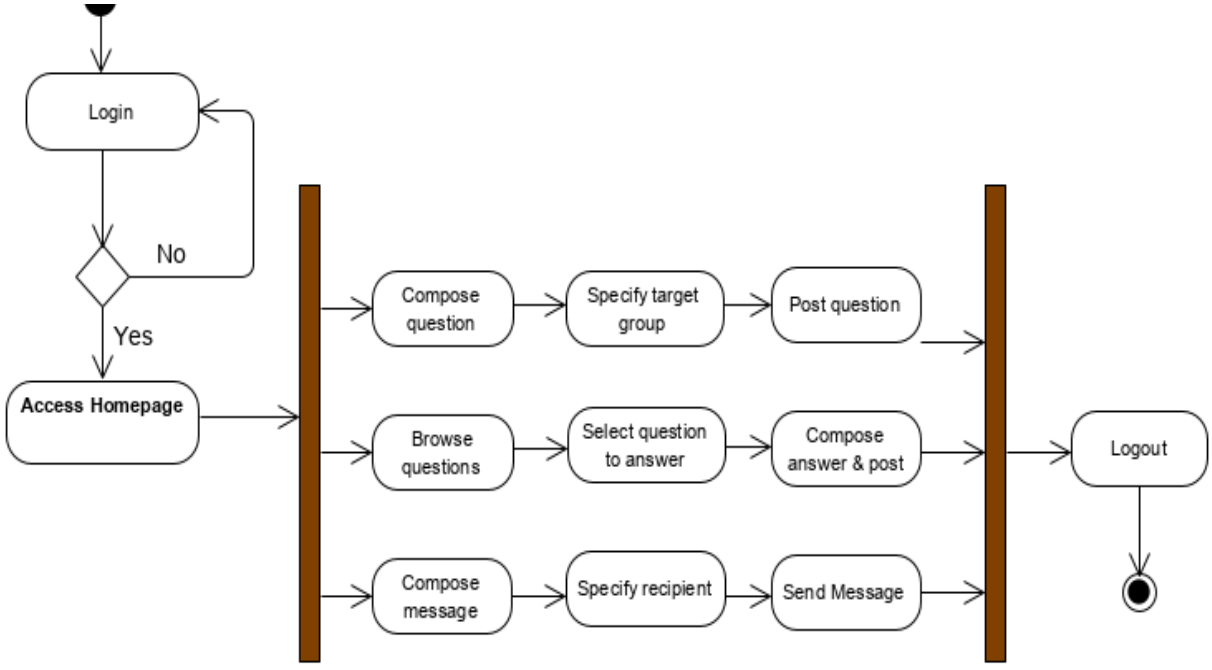

Figure 3: CohMat Activity Diagram

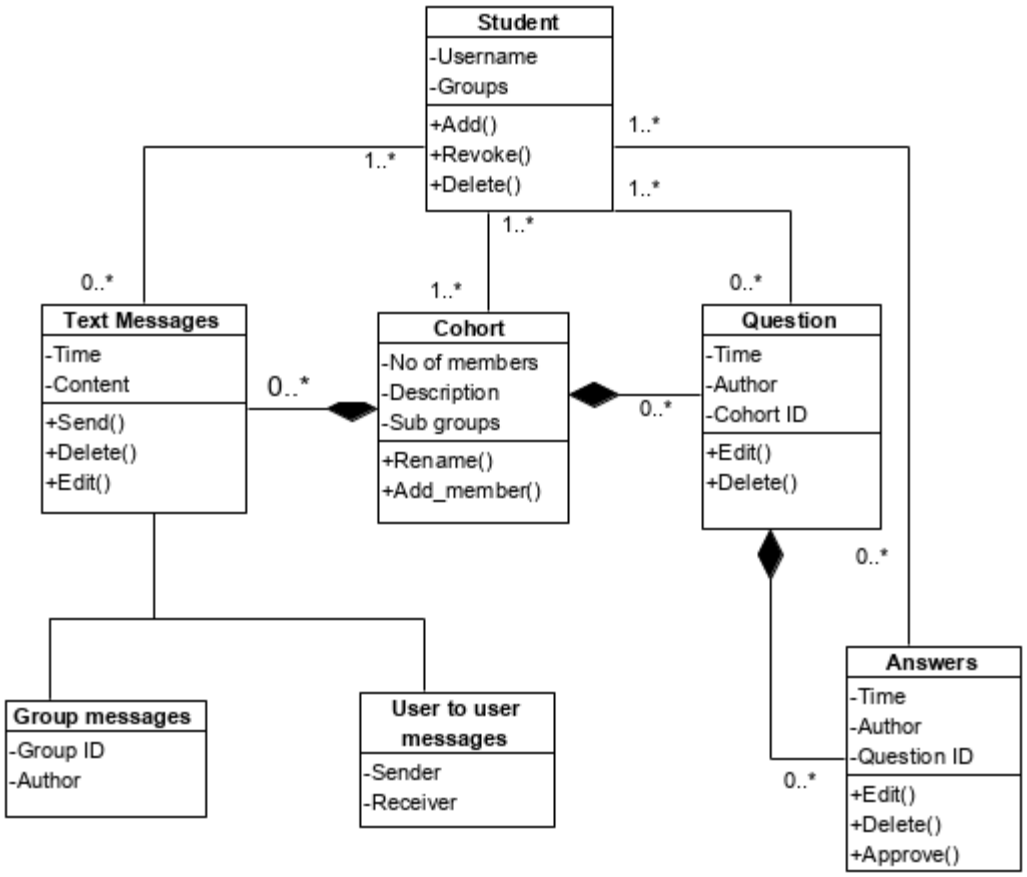

Figure 4: CohMat Class Diagram

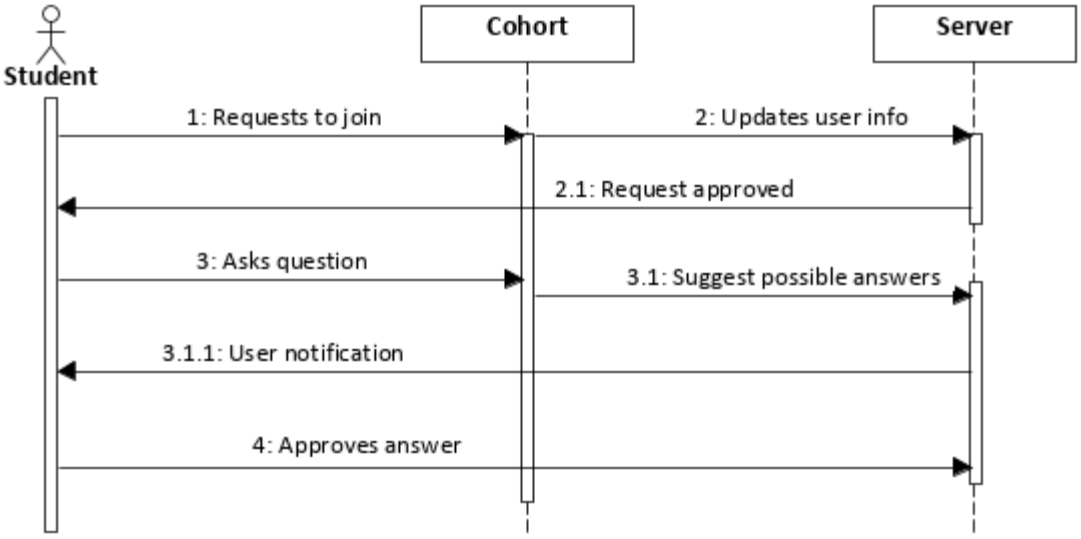

Figure 5 CohMat Sequence Diagram

Implementation

The implementation of the system under discussion was achieved through a website named CohMat. The website was developed using Django - a web development framework based on the Python programming language. The system also comprises user interfaces developed using HTML5, CSS, Bootstrap, JavaScript, amongst other front-end technologies. The current system supports various functionalities, including but not limited to user registration and authentication, creating, joining, and exiting cohorts/groups, posting textual and multimedia content to cohorts, commenting on own or other users' posts, and private messaging.

Various modules were developed, which together comprise the entire system. These modules include the accounts module to handle all user-related tasks such as account creation and authentication. - the homepage module - to cater for the core activities such as posts and comments - and the messaging module to handle the logic relating to private messaging. Also, the administration module handles the administrators' operations, such as approval of new groups, revoking users who do not abide by the system guidelines. Some of these modules are shown below in Figure 6 and Figure 7.

To gauge the completeness and usability of the developed system, various testing mechanisms were applied to the individual modules and the system as a whole. Three major types of tests were conducted. i.e., Component testing, System Testing, and Customer testing. During component testing, each module was scrutinized individually to check whether it was working as expected. Various approaches such as decision table testing, white box testing, and gray box testing were used to implement component testing.

On the other hand, system testing involved testing the system components collectively to check for cohesiveness, i.e., how information was passed to and from the various mentioned modules and how each module handled data passed to it by other modules. Finally, Customer testing was implemented by populating the application's database with 'actual' user data. Then several parties were asked to sign in as normal users and try interacting with the data by exploring all corners of the application. Any hitch identified was fixed immediately.

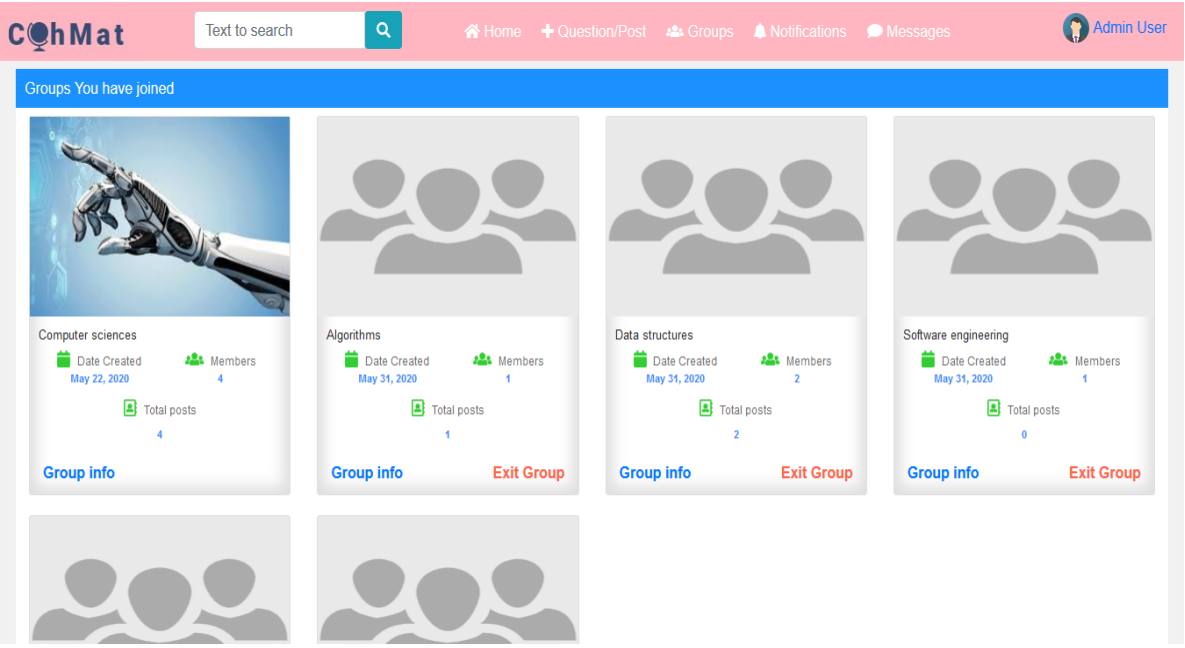

Figure 6: CohMat Home page Module

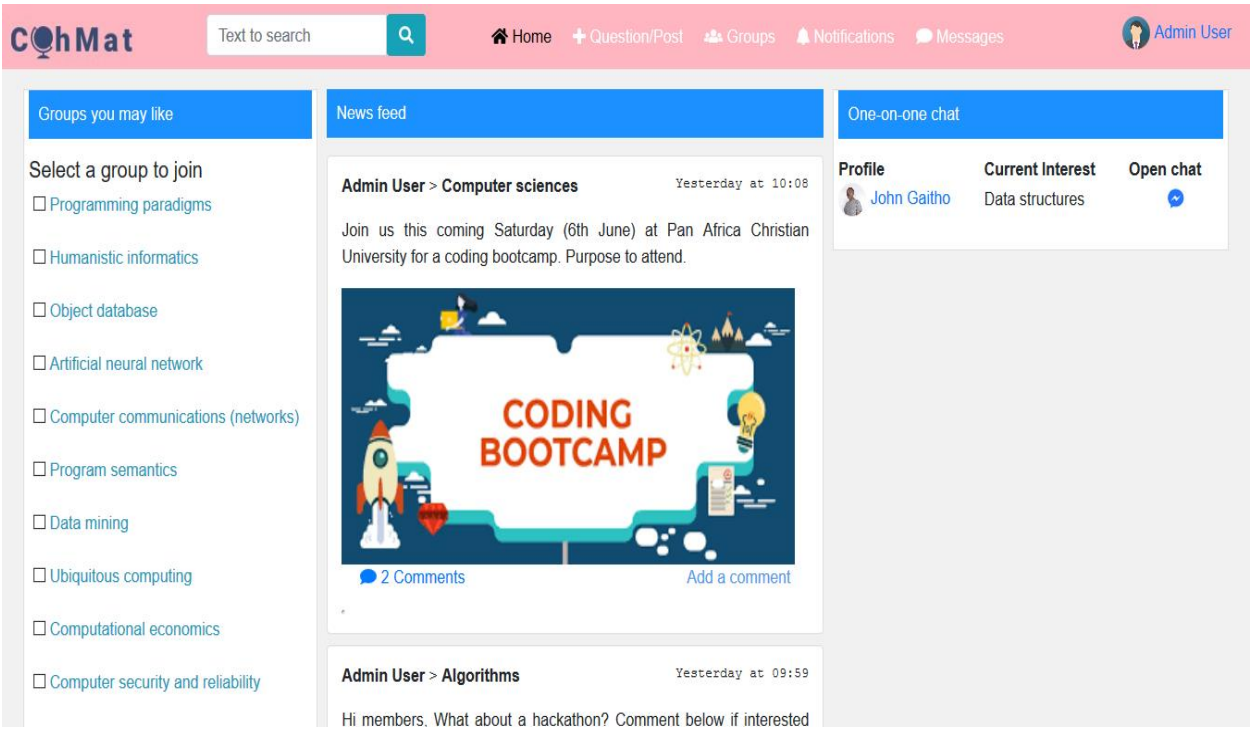

Figure 7: CohMat Group View

Discussion

The purpose of developing this application was to establish a real-time connection for students in institutions of higher learning in a smarter way than what the current social networking platforms do. The main idea was to recursively subdivide every academic field into smaller units such that the subfields at the very bottom level of the hierarchy system comprise the smallest units of any given academic field. By doing so, students can easily find their community by joining that field in which they have specialized and get to interact with other students from all over the world and who are also specialists in the given field. The founding of the study, however, revealed that a person's interest might change over time, and thus, to provide for this, the platform stores the user's current interest as part of their profile information, and the user can update it any time. As a result, those seeking help in a given field know whom they can contact.

The platform, just like any other social networking platform, allows for sharing of one's thoughts by either composing a broadcast message to the entire group or by targeting a particular individual and messaging them directly. The system has already been populated with data of the well-known academic fields together with their subfields. Other fields will be added on the go by individual users. A user can only join groups that lie within his/her academic field, i.e., the field that he/she selects when registering. The advantage of this application is that one can join any number of groups and exit any group. Whenever one has a question on any topic, he/she would just post it on the group under which the topic lies and will get real-time answers from specialists. Another advantage is that a user will only be notified about activities in the groups that he/she is a member of. subsequently, to keep each study field and its subfields as self-contained, thus barricading unnecessary information.

Conclusion

Generally, the entire process of composing this project was thrilling and fun, although overwhelming. The software, however, is not fully complete as many more features will continue to be added as time goes by using the incremental development model as discussed in chapter four of this documentation. However, the current version of the system is usable and will be ready for deployment after it is fed with the required data and tested. The initial function of the application as discussed here may, however, change with time after the application is deployed and the users give their feedback. If that happens, then this documentation will also be updated to match the new problem definition. This project will be very useful as it will substantially change how colleges and universities across the globe operate by bringing them together and having them work as a single community of learners other than competing individually. Students' competency will also be increased as they will be immersed into a pool of knowledge which, if used correctly and wisely, can help bring forth bigger and better ideas making '***CohMat'*** the biggest innovation hub.

Future Work

The future work shall entail collecting more and diverse data to help define the system requirements more accurately. As for the software, developing an equivalent mobile application would be a good move since smartphones have been on the rise. Also, a mobile application is handier than a website, so it helps increase audience engagement and retention. Another thought would be to expand the system and establish a network for lecturers as well.

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