EAI Endorsed Transactions
on Scalable Information Systems
Research Article EAI.EU

# Kconnect: The Design and Development of Versatile Web Portal for Enhanced Collaboration and Communication

Anshula Gupta[1], Harsh Vardhan[2, *], Sakshee Varshney[3] , Shivi Saxena[4] , Sandhya Singh[5] and Nidhi Agarwal[6]

[1]Department of Computer Science, KIET Group of Institutions, Delhi- NCR, Ghaziabad, Uttar Pradesh, India, anshula.gupta@kiet.edu
[2]Department of Computer Science, KIET Group of Institutions, Delhi- NCR, Ghaziabad, Uttar Pradesh, India, harsh.vardhan@kiet.edu, vardhan2520@gmail.com
[3]Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India, sakshee.1923co1045@kiet.edu
[4]Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India, shivi.1923co1019@kiet.edu
[5]Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India, sandhya.1923co1125@kiet.edu
[6]Department of CSE, Galgotias University, greater Noida., nidhi.agarwal@galgotiasuniversity.edu.in

## Abstract

.The design and creation of a web gateway to improve cooperation and communication among campus communities are discussed in this essay. The portal is designed to be flexible and adaptive to various user groups and their unique requirements. The writers discuss the numerous features and functionalities integrated into the portal as well as the user-centered design methodology they utilised to construct it. The site has resources for resource management, event planning, group communication, and information exchange. The writers also go through the difficulties that were experienced during creation and make suggestions for future advancements. Overall, the online portal offers a useful setting for campus communities to communicate and work together.
As we all know that pandemic has brought a huge change in everyone's life and work from home has become THE NEW NORMAL. One of its drawback is the lack of interaction among peers. This hinders the flow of information in the hierarchy. In order to cope up with this problem, we have come up with a solution "KCONNECT" that aspires to bridge the communication gap. KConnect is anetworking platform that will help students to connect with each other and gain relevant knowledge about new opportunities regarding career, scholarships, club activities and higher studies. The results of the study show the implementation of a web portal as an effective way to allow students increase connections and stay updated.

Keywords: Student networking portal, online web portal, solving queries, authorized connection, exploring opportunities

Received on 11 July 2023, accepted on 04 September 2023, published on 02 October 2023



doi: 10.4108/eetsis.4022

*Corresponding author. Email: harsh.vardhan@kiet.edu

## 1. Introduction

A web portal [1] is a platform that collects information from various sources and integrates them into a single page for information. This enables users to receive relevant information tailored to their individual needs.

The development of such portals offers several advantages for companies and organizations [24].
Portals [2], as collections of resources, are therefore not only used to store content information and user specific information but the student networking[23] portal is the

online platform that allows students to log in to their website to enhance their connection and access the important information[5]. Our portal provides links to helpful web resources such as upcoming opportunities [9]. The online student portal allows the students to easily connect with the other students and access important information anytime and anywhere.
According to existing portals there is no possibility for the students to ask queries and get answers accordingly by connecting with peers of the institution [7]. Moreover, there is no feature which could show all the opportunities [8] at one place. This platform will provide an easy process to apply for opportunities. The existing portals do not provide a well- established fully functional system to interact and get associated with various communities [11]. The holistic goal [25] of this research is to define a new and enhanced [13] version of the framework for students. This framework is an extension of the current networking portal for students which will help the people belonging to a single community [14] to interact on a virtual platform designed exclusively.

## 2. Literature Review

Over the past ten years i.e. from 2012 to 2022, there have been 337 conferences, 98 journals, and 4 magazines. The query, performed on IEEE Explorer on NOV 27, 2022. Figure1 shows a comparison of all the documents that were made accessible.

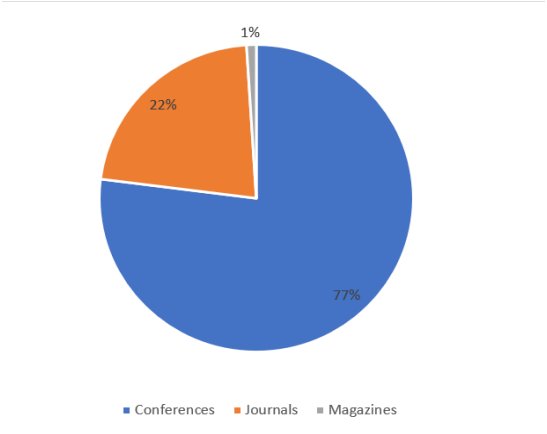


**Fig. 1.** Published Article by Type [2012-2022]

Figure 2 introduces the total number of publications published annually. It makes it evident that, between 2012and 2022, there has been a huge increase in the number of documents. In addition to this, we can observe general growth.

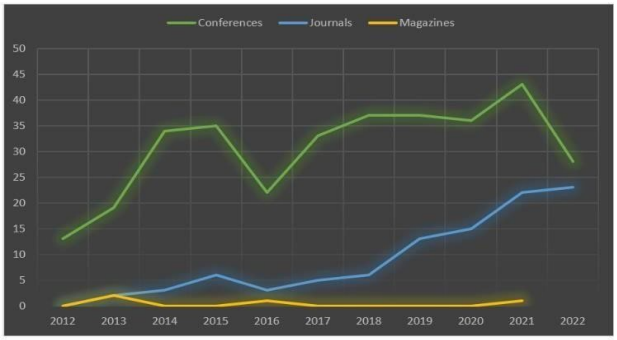


**Fig. 2.** Documents by Year [2012-2022]

The table shown in table 1 gives a brief distinctive contribution made in multiple research papers based on web portals. Web portals have proved to be a great benefit.

Table 1. Major Contributions in Web-Based Portals

| References | Major Contributions | Objective | Year | Result |
|---|---|---|---|---|
| [16] | Developed a multi-platform college management framework. | To provide a echanism to update and maintain student's data with minimumhuman efforts. | 2017 | The system combines the essential elements of the manual system with modern methods of managingcolleges. |
| [15] | Suggested design and technology to develop an online tour guide platform for college students. | To meet the needs of college student's traveland the tour's guide ability. | 2018 | Constructed a college tour website that includes modules for guides and students. |
| [3] | Introduced the idea of information management and cultivating teamwork in colleges for improving mental health. | To improve the mental health of college students. | 2020 | Suggested teachers to use real-time media and information technology forteaching. |
| [4] | Offered a web tool where students could file complaints and get remedy. | To provide an effective grievance support platform. | 2020 | Provided an effective grievance support system for students. |
| [6] | Developed a 3D game to create an actual campus environment where user can roam. | To provide a virtual 3D campus tour. | 2021 | Developed a 3D model to represent virtual college campus. |

## 3. Campus Connection Portal Architecture

### 3.1 Networking Portal Design

Figure 3 shows the use-case diagram of a campus networking [19] portal which is managed by the IT[21] cell of any organization. The user can use the portal to view the


**Fig. 3.** Use-case diagram of the Campus Connection Portal

profiles, explore multiple opportunities and connect with other users to solve any query by registering and joining the spaces. The registrations are based on the authentication of users, i.e. only with people with authorized domain in their ID can be registered. The use case uses admin actor as shown. The admin provides services [18] to the users such as students and staff after successful authentication according to their specific needs [20].

The admin is also responsible for adding new opportunities and making announcements in a timely manner.

## 3.2 Networking Portal Flow of Actions

Figure 4 depicts the generic flow of actions in the networking portal [8]. Along with this, the portal functions as a general network system, the general networking system provides users with communication medium that allows connection among peers. Users can browse the community based on different domains, choose from different categories available according to their interests and obtain information about that particular domain. Additionally, users post questions to the feed and get answers to their questions. Users can also follow spaces explore opportunities.

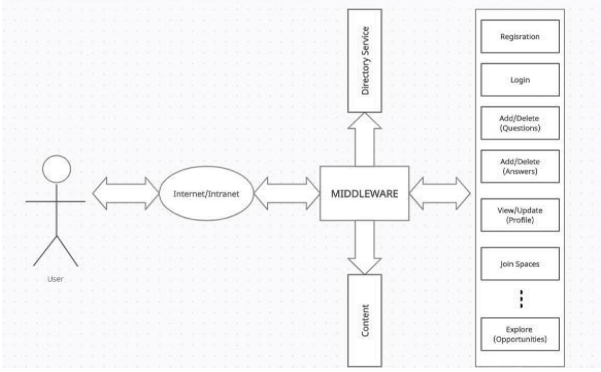


**Fig. 4.** Flow of Actions of the Campus Connection Portal

## 3.3 Networking Portal Activity Diagram

Figure 5 shows the proposed architecture for the portal that can be used for improving the interaction of members from a particular organization. As shown in fig 3, each user has to register themselves on the portal in order to use the services. After successful registration, all the supported features would be made available. Each user can perform the following operations-Post queries, post answers, view profile, add/delete posts, view notifications and many more. With the help of this, it becomes much easier to interact with peers and other people belonging to the same organization.

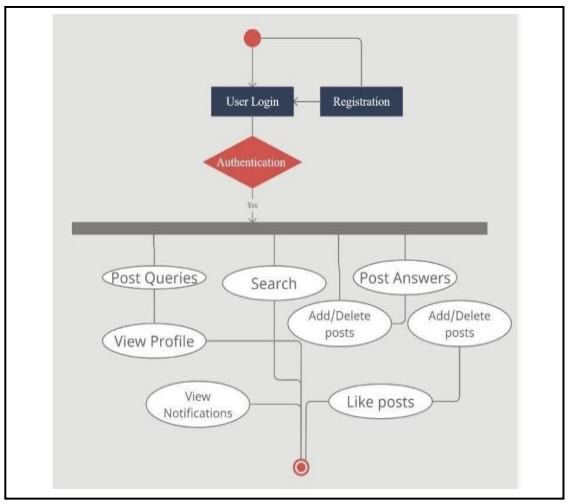


**Fig. 5.** Activity Diagram of the Campus Connection Portal

The users can add questions and answer. Apart from this, each user can also view a profile where all the questions and answers posted by that particular user will be displayed. A user can also explore the upcoming opportunities and register for them.

## 3.4 Networking portal Architecture

The web portal acts as a medium for people to connect and interact. It provides ease in solving problems and expanding networks by connecting with people with similar interests. The portal consists of several tools that enable us to develop a fully functional, authentic and secure portal. In order to make a web portal, it is important to understand its architecture. As shown in fig 4, we have proposed a basic architecture of the portal including REST API and integrated with database to store information about users. Here the database such as MongoDB can be used which works well for large amount of data. The user creates the profile which is validated and stored in the database. Each time a user tries to log in to the site, authentication is done using the stored information. After successful login, the user utilizes the features of portal. The REST API can handle various types of calls and formats, so it provides a huge amount of flexibility in dealing with data. Each time a user enters some information it is stored in the database portal.

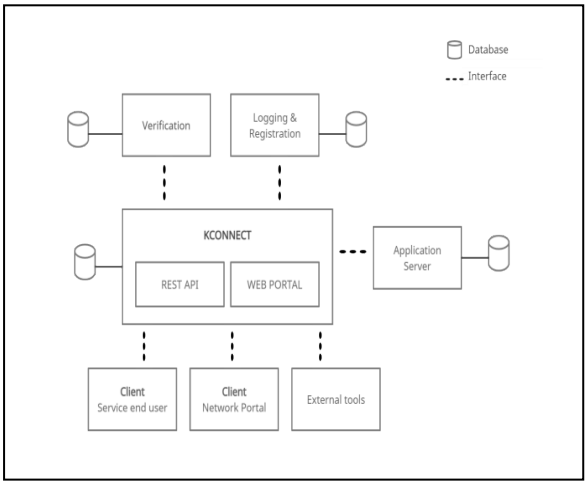


**Fig. 6.** Architecture of the Campus Connection Portal

## 4. Proposed Approach

The given approach has been proposed to enable community and peer interaction within any organization. This is specifically designed for an organization to provide an ease for interaction and networking within it. The organization for this approach consists of admin, students and every other member of the organization. The admin is responsible for managing the portal and validating users to give specific access. The IT-unit of organization is responsible for updating system and making necessary changes in the database. Each user needs to sign up and create their profile, also they can update it whenever they want. The user can explore opportunities in the events tab and register for the same using direct link to them. The students can ask their queries by adding their questions and posting them. The portal also consists of delete feature to delete the query or reply. The user can view top queries in the feed section and reply with relevant answers. The user can upvote a query or answer by liking it. Moreover, a user can join spaces according to their interest and gain important information. Suppose a user has some query regarding any of the upcoming event related to any space, he/she can join that space and post the query.

### 4.1. Functions of Portal

Register. A user needs to register by making their profile to use the portal. Each user has some id related to the organization which is used as a method of permitting access to only valid users.
Login. If a user is authorized, he/she can login using id and password created during registering.
Add Questions. A user can add their queries using the add question tab so as to get relevant questions.
Add Answers. If any user knows the answer of any query posted he/she can reply accordingly, and gain likes for satisfactory answering.
Explore Events. A user can find all the upcoming events and opportunities at a place and register for the events of their interest by directly clicking on links.
Join Spaces. A user can join any of the spaces of their interest and learn about important events associated and discuss their thoughts and queries.
View/Update Profile. A user can update his/her profile from time to time and make necessary modifications.

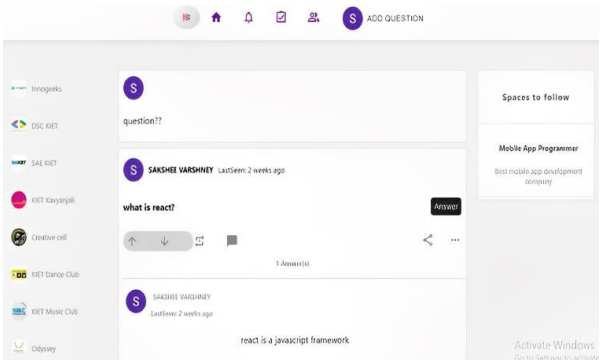


**Fig. 7.** Home Page of the Portal

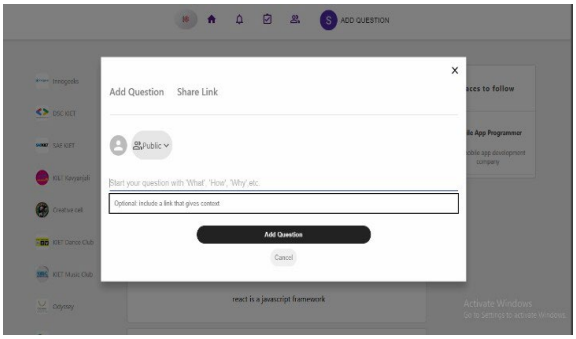


**Fig. 8.** Add Questions Page of the Portal

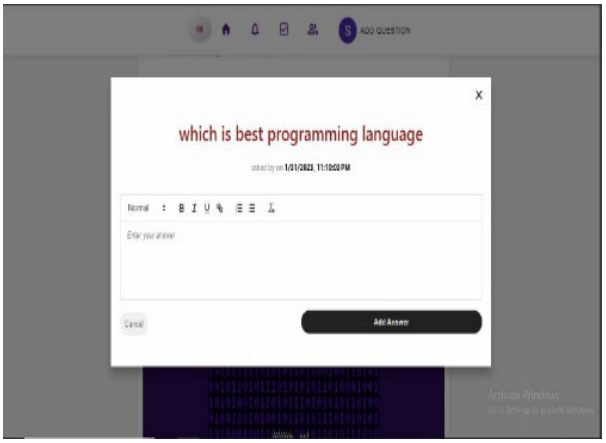


**Fig. 9.** Add Answer Page of the Portal


**Fig. 10.** Explore Opportunities Page of the Portal

## 5. Result and Discussion

To summarize, in this project, we created a portal to answer user's questions about placement, clubs, events, and future opportunities. We also looked into different ways to compare the proposed method to other accepted methods. Figure 11 shows the approximate number of visits on the portal throughout the year.

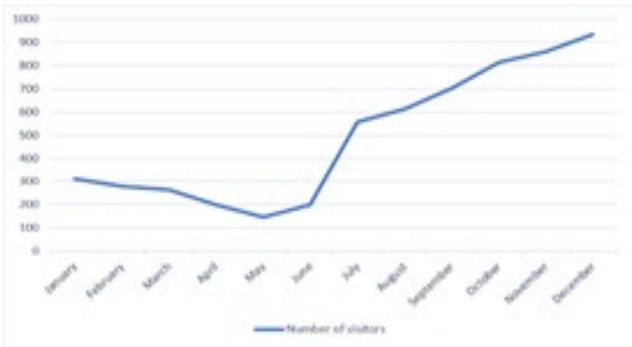

**Fig. 11.** Visitor Experience of the Campus Connection Portal

The web-based networking system that is proposed can be used by any organization by simply changing the structure. The base model is built around a networking portal intended for peer and hierarchical connectivity and query resolution, which can be modified for a particular organization. This is an authenticated connecting portal implemented with the security protocol. Only authorized users can access the network portal databases or any other information. An interactive interface makes it easy for users to post and resolve queries. This portal has been designed to comply with the restrictions and requirements. The network portal helps members to connect easily. The feed section is designed to post queries. Users can follow hashtags and view information regarding their interests.

## 6. Conclusion and Future Work

The paper has proposed the idea to make a web- based portal that will serve the people by connecting people virtually. Every. Every organization will have the privilege of working remotely and still stay connected with each other. This web portal will not only help the people solve their queries but will also provide a common platform to share events and announcements all at one place. The portal has very high future scope as it can hold the position of one sufficient platform to serve all needs of the organization.
Moreover, a mobile app can be developed for the same as a part of further study as current trends reveal an increase in use of mobile apps because of easier access and portability.

## References

1. F.E. De Guzman, B. D. Gerardo and R. P. Medina, "Implementation of Enhanced Secure Hash Algorithm Towards a Secured Web Portal," 2019 IEEE 4th International Conference on Computer and Communication Systems (ICCCS), 2019, pp. 189-192, doi: 10.1109/CCOMS.2019.
2. S. Munir, A. Rahmatullah, H. Saptono and Y. Wirani, "Usability Evaluation using NAU Method on Web Design Technique for Web Portal Development in STT Nurul Fikri," 2019 Fourth International Conference on Informatics and Computing (ICIC), 2019, pp. 1-6, doi: 10.1109/ICIC47613.2019.8985913.
3. Y. Hu, "Improve the Mental Health of College Students by Means of Computer Network Technology," 2020 International Conference on Computer Engineering and Intelligent Control (ICCEIC), 2020, pp. 5- 9, doi: 10.1109/ICCEIC51584.2020.00008
4. K. Aravindhan, K. Periyakaruppan, K. Aswini, S. Vaishnavi and L. Yamini, "Web Portal for Effective Student Grievance Support System," 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS), 2020, pp. 1463-1465, doi: 10.1109/ICACCS48705.2020.9074344.
5. H. B. M. Alves et al., "Introducing a survey methodology for assessingLoRaWAN coverage in Smart Campus scenarios," 2020 IEEE International Workshop on Metrology for Industry 4.0 & IoT, 2020, pp. 708-712, doi: 10.1109/MetroInd4.0IoT48571.2020.9138300.
6. H. Shah, V. Tupe, A. Rathod, S. Shaikh and N. Uke, "A Progressive Web App for
Virtual Campus Tour," 2021 International Conference on Computing, Communication and Green Engineering (CCGE), 2021, pp. 1-5, doi: 10.1109/CCGE50943.2021.9776419.
7. Xiaorong Xiang and G. Madey, "A semantic Web services enabled Web portal architecture," Proceedings. IEEE International Conference on Web Services, 2004., 2004, pp. 834-835, doi: 10.1109/ICWS.2004.1314964
8. A. Baby and P. Shilpa, "An Integrated Web-based Approach for Security Enhancement by Identification and Prevention of Scam Websites," 2021 2nd International Conference on Advances in Computing, Communication, Embedded and Secure Systems (ACCESS), 2021,pp.38-43,doi:10.1109/ACCESS51619.2021.9563310.
9. Y.Bian, D. Ma, Q. Zou and W. Yue, "A Multi-way Access Portal Website Construction Scheme," 2022 5th International Conference on Artificial Intelligence and Big Data (ICAIBD), 2022, pp. 589-592, doi: 10.1109/ICAIBD55127.2022.9820236.
10. R. Wadagave, S. Karoshi, P. Ravan, R. Santikar and R. Deshmukh, "Web Application based Event Organisation Portal using MEAN Stack," 2022 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS), 2022, pp. 1427-1430, doi: 10.1109/ICSCDS53736.2022.9760955.
11. Z. Sadirmekova, A. Yerimbetova and A. Ibraimkulov, "Development of an Information Model of The Portal of Scientific Knowledge by Means of Semantic Web Technology," 2022 7th International Conference on Computer Science and Engineering (UBMK), 2022, pp. 182-187,doi: 10.1109/UBMK55850.2022.9919463.
12. K. S. R, R. M. Gomathi and Y. I. Imtiaz, "A Centralised Portal for a Student Support System based on Web Application," 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI), 2022, pp. 74-81, doi: 10.1109/ICOEI53556.2022.9776768
13. R. A. Sukamto, Y. Wibisono and D. G. Agitya, "Enhancing The User Experience of Portal Website using User-Centered Design Method," 2020 6th International Conference on Science in Information Technology (ICSITech), 2020, pp. 171- 175, doi: 10.1109/ICSITech49800.2020.9392044..
14. D. Shrestha, T. Wenan, S. Maharjan, B. Gaudel, J. Chun and S. R. Jeong, "A UML based approach for analysis and design of tourism web portal," 2020 International Conference on Smart Electronics and Communication (ICOSEC), 2020, pp. 236-243, doi: 10.1109/ICOSEC49089.2020.9215380.
15. M. Zhou, D. Chen and T. Yi, "The research on construction of college student online tour guide platform base on wisdom tourism," 2018 Chinese Control And Decision Conference (CCDC), Shenyang, China, 2018, pp. 3051-3054, doi: 10.1109/CCDC.2018.8407648.
16. D. Pojee, F. Shaikh, V. Kuvar, F. Rarh and M. A. Meghani, "Multi-platform college management framework," 2017 2nd International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2017, pp. 156-159, doi: 10.1109/CESYS.2017.8321255.
17. Parihar, A.S., Chakraborty, S.K. (2021) Token-based approach in distributed mutual exclusion algorithms: a review and direction to future research. The Journal of Supercomputing, Volume 77, pp. 14305–14355. https://doi.org/10.1007/s11227-021-03802-8

18. Parihar A.S., Chakraborty S.K. (2022) Handling of resource allocation in flying ad hoc network through dynamic graph modeling. Multimedia Tools and Applications. https://doi.org/10.1007/s11042-022-11950-z
19. Parihar, A.S., Chakraborty, S.K. (2022) Token Based k-Mutual Exclusion for Multi-UAV FANET. Wireless Personal Communications. https://doi.org/10.1007/s11277-022-09886-6
20. Parihar A.S., Chakraborty S.K. (2022) A simple R-UAV permission-based distributed mutual exclusion in FANET. Wireless Networks. https://doi.org/10.1007/s11276-022-02889-y
21. Parihar, A.S., Chakraborty, S.K. (2022). A Cross-Sectional Study on Distributed Mutual Exclusion Algorithms for Ad Hoc Networks. In: Gupta, D., Goswami, R.S., Banerjee, S., Tanveer, M., Pachori, R.B. (eds) Pattern Recognition and Data Analysis with Applications. Lecture Notes in Electrical Engineering, vol 888. Springer, Singapore. https://doi.org/10.1007/978-981-19-1520-8_3
22. Parihar, A.S., Prasad, D., Gautam, A.S., Chakraborty, S.K. (2021). Proposed End-to-End Automated E-Voting Through Blockchain Technology to Increase Voter's Turnout. In: Prateek, M., Singh, T.P., Choudhury, T., Pandey, H.M., Gia Nhu, N. (eds) Proceedings of International Conference on Machine Intelligence and Data Science Applications. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-33-4087-9_5
23. H. Vardhan, A. Saxena, A. Dixit, S. Chaudhary and A. Sagar, "AR Museum: A Virtual Museum using Marker less Augmented Reality System for Mobile Devices," 2022 3rd International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT), Ghaziabad, India, 2022, pp. 1-6, doi: 10.1109/ICICT55121.2022.10064611.
24. Shivani, H. Vardhan, A. Gupta, D. Goswami, M. Zubair and L. Mangal, "Experimental analysis of Disease Prediction using Machine Learning," 2023 International Conference on Artificial Intelligence and Smart Communication (AISC), Greater Noida, India, 2023, pp. 1363-1367, doi: 10.1109/AISC56616.2023.10084972.
25. A. Mishra, H. Khatter, G. Gupta, A. Jamshed, A. K. Srivastava, "Enabling Secure and Transparent Crowd Funding Approach powered by Blockchain", Third International Conference on Emerging Technologies in Data Mining and Information Security, Institute of Engineering & Management, Kolkata, West Bengal, India,23-25 February 2022, Proceedings in LNNS, vol 490. Springer, Singapore. https://doi.org/10.1007/978-981-19-4052-1_64. Online 16 Sep 2022.