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Evaluation of Le MaC Wireless Storage Management System by Modified Waterfall Model

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ABSTRACT

This paper presents the findings of Modified Waterfall Model for Le MaC Wireless Storage Management. The system store users files using offline connection to save all their activities inside the computer laboratories. As a result, the notion of user made it easy for end users v to save their files without a help of a flash drives. Information Technology thus plays a key role in the development of the autonomous learner extends to operators as well as to programmers, which are users of components such as software libraries. The standard provides a framework for organizations to define a quality model for a software product. In doing so, however, it leaves up to each organization the task of specifying precisely its own model. This may be done, for example, by specifying target values for quality metrics which evaluates the degree of presence of quality attributes.

***Keywords*:** Database, hard drives, information technology, Le MaC, modified waterfall, sensors, storage management system, wireless

1. INTRODUCTION

In this modern age, many people are technology-driven, and they intend to save or make their works in electronic devices such as the computer. Saving or storing of data and files requires stable storage devices with a proper memory allocation.

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For users, the common devices used in saving files are by use of External Hard Drives or USB Flash Drive; Floppy Disks these devices are becoming more common. Technology has moved too fast, as it grows, and developed. There is no doubt that the emergence of internet has opened up more possibilities about the big progress of it, which is the main factor in the IT world, especially with regards to the speed in data transfer, both in terms of wired and wireless communication.

The need for online services have increased, the extent of services available through the internet, such as online software and storage, is also growing. This leads to collision between users accessing online at the same time. So, the researcher presents the Le MaC Wireless Storage Management System that stores data across server.

The main concern is to provide a large amount of services in a virtualized manner to reduce the server sprawl, inefficiencies and high costs. Unlike traditional storage, there is no need to spend large amounts of capital on buying expensive devices or sophisticated hardware that they might never need again. The use of remote storage systems is to store personal documents and professor to upload activities for students, do their researches, complete their studies, save their files etc. by using the facilities available via server.

One of the possible cases that the researcher found is that the computers inside of some computer laboratories are set to be in deep freeze to prevent end users in installing and storing files that are not necessary to their studies and the internet connection is very slow. In addition, many IT professors give their students an activity inside the laboratories that in some instances the students failed to complete the given activities to them. The computers in each laboratory are not wireless ready so a dongle is necessary to access everything in offline cloud.

The goal of Le Mac Wireless Storage Management System is to make storage easy to access inside or outside the computer laboratories without the help of a USB drive disk but through a wireless connection that requires the authentication of the user. This will also be able to make a wireless storage system with the use of a router and a dongle where the end users can save their unfinished activities or files inside the computer laboratories. Moreover, it will help the end users in accessing their personal storage in a computer in any laboratory room for personal computer and show others what the proponents have in their system about how the end users shares their files within a network.

1. 1. Cloud Computing

Cloud-friendly infrastructure to facilitate small and medium enterprises (SMEs) growth is being pushed across the region [1, 30]. The Philippines ranked ninth out of 14 parameters in this area, excelling in affordability. As 96% of the region's enterprises are SMEs, cloud computing comes in handy in time for the ASEAN economic integration. More SMEs will have access to this technology once they see it as cost-efficient. Private enterprises are encouraged to tap cloud providers and use public cloud for developmental projects and testing.

Cloud Computing has taken commercial computing by storm. Cloud computing platforms provide easy access to a company's high-performance computing and storage infrastructure through web services. With cloud computing, the aim is to hide the complexity of IT infrastructure management from its users. At the same time, cloud-computing platforms provide massive scalability, 99.999% reliability, high performance, and specifiable configurability [42].

These capabilities are provided at relatively low costs compared to dedicated infrastructures. It gives a quick introduction to cloud storage. It covers the key technologies in Cloud Computing and Cloud Storage, several different types of clouds services, and describes

the advantages and challenges of Cloud Storage after the introduction of the Cloud Storage reference model [2, 16, 31]

1. 2. Network Connections

The present invention relates to a method for determining whether a mode change condition for performing a hand-over to a cellular network through which devices communicate with each other is satisfied, transmitting a mode change instruction message to a base station when the mode change condition is satisfied, receiving a mode change command message for starting a mode change from the base station, transmitting a first data packet index with respect to a data packet transmitted to a second device at a final stage through the communication between the devices to the base station, ending the communication with the second device when the inter-device communication end request message is received from the base station, and transmitting data to the second device through the cellular network [3, 17, 32].

More particularly, a system and method of locating a user preferred wireless connection among a plurality of possible wireless connections. The method includes scanning for available networks and determining whether the available networks satisfy one or more user preferences. The method further includes establishing a secondary network connection with one of the available networks based on one or more user preferences being satisfied [4, 18, 33].

According to [5, 43], a system and method of locating a wireless connection among a plurality of possible wireless connections. More particularly, a system and method of locating a user preferred wireless connection among a plurality of possible wireless connections. The method includes scanning for available networks and determining whether the available networks satisfy one or more user preferences. The method further includes establishing a secondary network connection with one of the available networks based on one or more user preferences being satisfied.

1. 3. Database Management System

Systems for controlling access to a database are provided. A system may include a computing platform that may receive a request to access a database from a computing device [6, 19, 34]. A unique identifier of the computing device may be compared to pre-registered device identifiers to determine whether the computing device is authorized to access the database. If not, the computing platform may prevent the computing device from accessing the database. If the computing device is authorized to access the database, the system may receive credentials from a user associated with the computing device. The system may determine whether the credentials of the user match credentials of a user authorized to access the database. If not, the system may prevent the user from accessing the database. If the user authorized to access the database, the system may determine one or more types of data the user is authorized to access. Database security is a double-sided matter, especially in modern times [7, 20, 35].

People who monitor, use and repair databases need to be aware always that they must monitor database security from both ends; databases are vulnerable from the breaking of confidentiality within the companies which use them as well as being vulnerable from the more well-known hacks from outside sources. There are different cases where data loss due to loop holes in our security methods for example considers a case when the users send the computer for repair when the hard disk is still working — either the drive works intermittently, or hard drive isn't the issue requiring repair [8, 21, 36].

If users are concerned about data security and users' hard disk is still functioning, the users should back up their important data and use the secure erase functions in Disk Utility to reformat the drive before sending in computer for service. Another instance is when their hard disk gets stolen. In both the cases the data can be easily lost and misused by an unauthorized person. And hence, an unauthorized person can gain access and manipulate valuable data.

2. PROJECT DEVELOPMENT

The researcher made use of waterfall model to evaluate the Le MaC Wireless Storage Management System because it gave the researcher an easy overview of the software based on the required specifications, and to present the general flow on the development of the software application.

Waterfall approach was first SDLC Model to be used widely in Software Engineering to ensure the success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases.

Figure 1 shows the model used for the software development which is the Modified Waterfall Methodology and the stages undertaken in developing the Le MaC Wireless Storage Management System. And in addition, its intensive documentation and planning make it work well for projects in which quality control is a major concern.

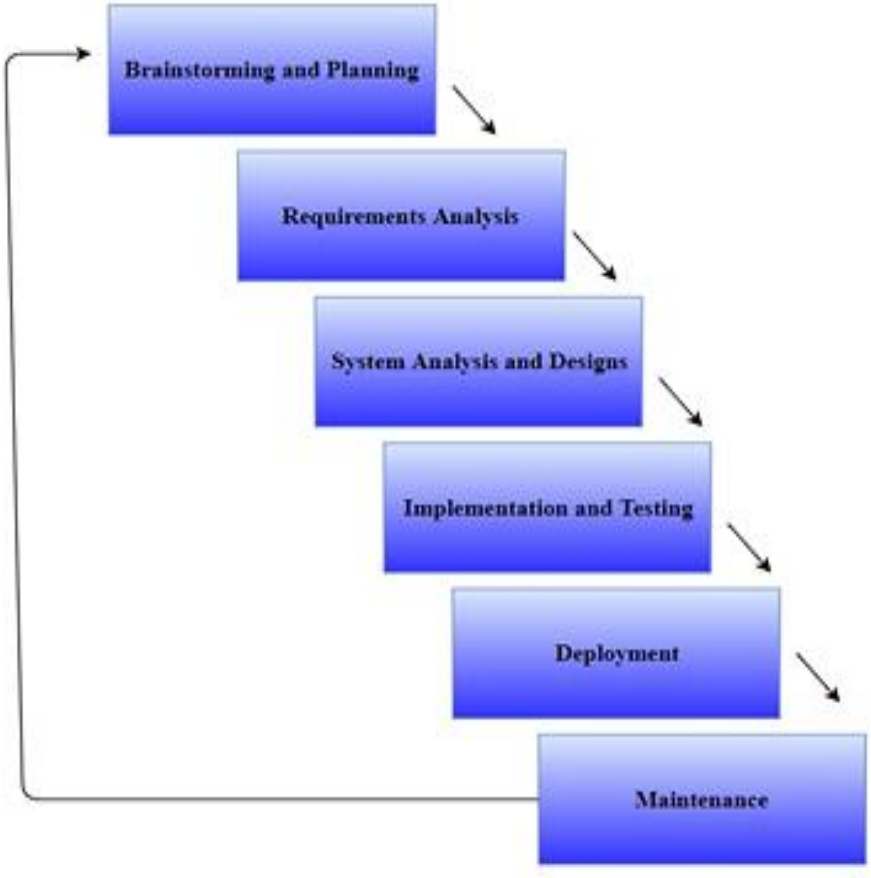

Figure 1. The Modified Waterfall Methodology

2. 1. Brainstorming and Planning

This is the phase where the researchers had the spontaneous contribution of ideas and the process of generating each creative ideas and solutions through intensive and freewheeling discussion [9, 22, 37].

2. 2. Requirements Analysis

This phase entails the gathering of requirements from the previous and current users of the system in the process of researching, reading journals and articles, and as well as the help of the related literature and studies that the researchers gathered online [10, 38].

2. 3. System Analysis and Design

The requirement specifications are studied in this phase and the system design is conducted. The researchers studied and analyzed some of the previous and existing systems for the best results of their proposed project. All the scope and limitations of the proposed system are analyzed and improved upon. Different design tools are being used for this project, including PHP, Bootstrap, and MySQL [11, 23, 39]. The proponents were designed the data structure based on the system requirements.

2. 4. Implementation and Testing

In this step, the proponents will start coding using HTML and JavaScript for the graphical user interface. MySQL is used in designing a robust database and PHP for the application logic which enables communication between the front-end and the backend of the system [12, 24, 28]. And the coding and synchronizing of the software and hardware to make sure that these two components are working together. All the units developed in the implementation phase, the entire system and the hardware used by the proponents is being tested for any errors and failures.

2. 5. Deployment

Once the functional and non-functional testing is done, the system is ready to deploy to the beneficiary. This stage involves training of the assigned officials that will be given the privilege of operating the system, populating the database with existing records, and converting such data [13, 25, 29].

2. 6. Maintenance

Assures the system will continue to accomplish the task acquired. This includes checking for bugs and errors and ensuring that the entire system is working properly [14, 26, 40].

Moreover, the research aims to evaluate the Le MaC Wireless Storage Management System in terms of accuracy, efficiency, security, user-friendliness and reliability on the basis of empirical data. Agreeableness's is typically measured using self-report questionnaires, where a person is asked to review an adjective or statement and then report the degree to which it describes their personality on a Likert scale [15, 27, 41]

The use of such questions to assess agreeableness allows a researcher to provide answers which provide a greater insight into their personality than the observation of his or her behavior might. However, questionnaires are also required researcher to be honest when providing answers.

The questionnaires are allocated to the proponents for assessment. With the use of Likert Scale in Table 1, the researcher will be able to identify if the game application meets the desired function.

Table 1. Likert Scale.

Scale	Verbal Interpretation
4.21-5.00	Strongly Agree
3.41-4.20	Agree
2.61-3.40	Moderately Agree
1.81-2.60	Disagree
1.00-1.80	Strongly Disagree

3. RESULTS AND DISCUSSIONS

The researcher evaluated the system based on the Software Quality ISO Standard and with the sub-characteristics. The evaluation is divided into 5 categories: Strongly Agree (SA), Agree (A), Moderately Agree (MA), Disagree (D), and Strongly Disagree (SD).

3. 1. Mean Responses of Researchers on Level of Agreeableness by Accuracy

Table 2 shows that the respondents' perception on the level of agreeableness in terms of accuracy has a mean of 4.71 verbally interpreted as "Strongly Agree". This reveals that the application provides ease in accessing data as assessed by the proponents. It implies that the system is accurate

Table 2. Level of Agreeableness by Accuracy

Accuracy	Scale	Verbal Interpretation
1. The users registration data are accurate	4.82	SA
2. The amount of storage available for the users is precise	4.46	SA
3. There are no alterations in the file downloaded compared to the uploaded file.	4,84	SA
Mean	4.71	SA

3. 2. Mean Responses of Researchers on Level of Agreeableness by Efficiency

Table 3 shows that the respondents' perception on the level of agreeableness in terms of efficiency has a mean of 4.54 verbally interpreted as "Strongly Agree". This implies that the Le Mac Wireless Storage Management System was easy to use in terms of efficiency. Generally, the user could easily follow the commands or instructions provided by the application.

Table 3. Level of Agreeableness by Efficiency

Efficiency	Scale	Verbal Interpretation
1. The system has functionality that the proponents provide	4.54	SA
2. The system helps users' workforce.	4.56	SA
3. The system has ability to avoid wasting time and effort	4.52	SA
Mean	4.54	SA

3. 3. Mean Responses of Researchers on Level of Agreeableness by Security

Table 4 shows that the respondents' perception on the level of agreeableness in terms of security has a mean of 4.76 verbally interpreted as "Strongly Agree". This implies that the software was highly secured with the aid of denying an access among unauthorized personnel in general.

Table 4. Level of Agreeableness by Security

Security	Scale	Verbal Interpretation
1. The system restricts access for unregistered user.	4.74	SA
2. Only the registered user can access their own/shared files	4.78	SA
3. The users are secured.	4.76	SA
Mean	4.76	SA

3. 4. Mean Responses of Researchers on Level of Agreeableness by User-Friendliness

Table 5 shows that the respondents' perception on the level of agreeableness in terms of user-friendliness has a mean of 6.81 verbally interpreted as "Strongly Agree". This means that the application. This implies that the users could easily follow the commands or instructions provided by the application.

Table 5. Level of Agreeableness by User-Friendliness

User-Friendliness	Scale	Verbal Interpretation
1. The system is simple to understand	4.54	SA
2. Access is fast & stress free	4.44	SA
3. The Graphical User (GUI) is easy to navigate through	4.64	SA
Mean	6.81	SA

3. 5. Mean Responses of Researchers on Level of Agreeableness by Reliability

Table 6 shows that the respondents' perception on the level of agreeableness in terms of reliability has a mean of 4.55 verbally interpreted as "Strongly Agree". This implies that the proponents can easily generate the function of the application. Generally, the application met the desired functions under stated conditions for a specified period.

Table 6. Level of Agreeableness by Reliability

Reliability	Scale	Verbal Interpretation
1. Users manage their data without errors	4.58	SA
2. The system is reliable in saving time	4.52	SA
3. The system can add & update information in the database	4.54	SA
Mean	4.55	SA

3. 6. Significant Differences in the Assessment of Le MaC Wireless Storage Management System

Table 7 shows the t-test for differences in the Assessment of Le MaC Wireless Storage Management System. It is found out that in accuracy**,** there is no significant value in the respondents' assessment on the Le MaC Wireless Storage Management System with regards to user-friendliness. Since the computed t-value of 0.83 is less than the tabular value of 2.042 using the 0.05 level of significance

Moreover, there is no significant difference in the respondents' assessment on the Le MaC Wireless Storage Management System with regards to reliability since the computed t-value of 0.95 is less than the tabular value of 2.042 using the 0.05 level of significance.

Since the computed t-value of 0.73 is less than the tabular value of 2.042 using the 0.05 level of significance, there is no significant value in the respondents' assessment on the Le MaC

Wireless Storage Management System with regards to user-friendliness. There is no significant difference in the respondents' assessment on the Le MaC Wireless Storage Management System with regards to security since the computed t-value of 2.00 is less than the tabular value of 2.042 using the 0.05 level of significance.

Using t-test, it was found out that there is no significant difference in the respondents' assessment on the Le MaC Wireless Storage Management System with regards to Efficiency since the computed value of -0.32 is greater than the t-value of -2.042, a significance level of 0.05.

Therefore, there is no significant difference in the assessment of Le MaC Wireless Storage Management System is concern. That is, all stated functions of the proposed project met the user's satisfaction.

Table 7. Significant Differences in the Assessment of Le MaC Wireless Storage Management System

Features	T-value		Decision	Remarks
	Computed Value (CV)	Tabular Value (TV)		
Accuracy	0.83	±2.042	CV<TV fail to reject H_0	Not Significant
Reliability	0.95	±2.042	CV<TV fail to reject H_0	Not Significant
User-Friendliness	0.81	±2.042	CV<V fail to reject H_0	Not Significant
Security	2.00	±2.042	CV<TV fail to reject H_0	Not Significant
Efficiency	-0.32	±2.042	CV>TV fail to reject H_0	Not Significant

4. CONCLUSIONS

The development of Le Mac Wireless Storage Management System has given users the easier and faster way that would provide reliable and convenient storage for end users. The main purpose is to make a local storage that would allow them save, upload and download their files from the laboratories.

This storage can be access in any laboratories inside the school also through personal laptop and can manipulate its functionality firstly by installing the system given by the administrators. When the system is fully setup, user can now proceed by entering the USN and password that they registered and start accessing their saved files. The software requires having a Local Area Network or Wireless Fidelity for the application to connect to the specific laptop. In creating the system, the proponents used C# and Visual Basic for inputting and debugging

of codes. The findings of the study also show that the Le MaC Wireless Storage Management System can help the users to save their files easily and securely. The Le MaC Wireless Storage Management System made it easy for the users to save their files without a help of a flash drives.

References

[1] Ahmad, M. O., Dennehy, D., Conboy, K., & Oivo, M. (2018). Kanban in software engineering: A systematic mapping study. *Journal of Systems and Software*, 137, 96-113

[2] Alhammad, M. M., & Moreno, A. M. (2018). Gamification in software engineering education: A systematic mapping. *Journal of Systems and Software*, 141, 131-150

[3] Ali, N. S., Alyasseri, A., Abdi, Z., & Abdulmohson, A. (2018). Real-time Heart Pulse Monitoring Technique Using Wireless Sensor Network and Mobile Application. *International Journal of Electrical & Computer Engineering* (2088-8708), 8

[4] Baharom, F. (2020). A survey on the current practices of software development process in Malaysia. *Journal of Information and Communication Technology*, 4, 57-76

[5] Berg, V., Birkeland, J., Nguyen-Duc, A., Pappas, I. O., & Jaccheri, L. (2018). Software startup engineering: A systematic mapping study. *Journal of Systems and Software*, 144, 255-274

[6] Bhujang, R. K., & Suma, V. (2018). A Comprehensive Solution for Risk Management in software development projects. *International Journal of Intelligent Systems Technologies and Applications*, 17(1-2), 153-175

[7] Chau, P., Shin, J., & Jeong, J. P. (2018). Distributed systematic network coding for reliable content uploading in wireless multimedia sensor networks. *Sensors*, 18(6), 1824

[8] Colomo-Palacios, R., Fernandes, E., Soto-Acosta, P., & Larrucea, X. (2018). A case analysis of enabling continuous software deployment through knowledge management. *International Journal of Information Management*, 40, 186-189

[9] Devi, S. G., Nalini, C., & Kumar, N. (2018). An efficient software verification using multi-layered software verification tool. *International Journal of Engineering & Technology*, 7(2.21), 454-457

[10] Elshrkawey, M., Elsherif, S. M., & Wahed, M. E. (2018). An enhancement approach for reducing the energy consumption in wireless sensor networks. *Journal of King Saud University - Computer and Information Sciences*, 30(2), 259-267.

[11] Ganiron Jr, T. U., Chen, J. S., Dela Cruz, R., & Pelacio, J. G. (2019). Development of an Online Crime Management & Reporting System. *World Scientific News*, 131, 164-180

[12] Ganiron Jr, T. U., Manlutac, K. B., Castro, M. S., & Jerusalem, C. R. (2019). Development of User Guide on Interactive Way-Finder and E-Notices System. *World Scientific News*, 128(2), 363-390

[13] Gholami, M., Taboun, M. S., & Brennan, R. W. (2019). An ad hoc distributed systems approach for industrial wireless sensor network management. *Journal of Industrial Information Integration*, 15, 239-246

[14] Hsieh, M. Y., Hsu, Y. C., & Lin, C. T. (2018). Risk assessment in new software development projects at the front end: a fuzzy logic approach. *Journal of Ambient Intelligence and Humanized Computing*, 9(2), 295-305

[15] Hu, X., Chen, Z., & Yin, F. (2018). Channel and delay estimation for asynchronous physical layer network coding. *AEU-International Journal of Electronics and Communications*, 87, 101-106

[16] Iden, J., & Bygstad, B. (2018). The social interaction of developers and IT operations staff in software development projects. *International Journal of Project Management*, 36(3), 485-497

[17] Jia, Y., Khan, W., Lee, B., Fan, B., Madi, F., Weber, A. ... & Ghovanloo, M. (2018). Wireless opto-electro neural interface for experiments with small freely behaving animals. *Journal of Neural Engineering*, 15(4), 046032

[18] Jung, B. C., Sook Yoo, J., & Lee, W. (2018). A practical physical-layer network coding with spatial modulation in two-way relay networks. *The Computer Journal*, *61*(2), 264-272

[19] Lalisan, S. J. W., & Sobejana, N. P. (2019). Research and Capstone Project Electronic Repository. *Current Journal of Applied Science and Technology*, 38(4), 1-12. https://doi.org/10.9734/cjast/2019/v38i430378

[20] Li, L., & Li, D. (2018). An energy-balanced routing protocol for a wireless sensor network. *Journal of Sensors*, Volume 2018, Article ID 8505616, 12 pages. https://doi.org/10.1155/2018/8505616

[21] Lucitasari, D. R., & Khannan, M. S. A. (2019). Designing Mobile Alumni Tracer Study System Using Waterfall Method: an Android Based. *International Journal of Computer Networks and Communications Security*, 7(9), 196-202

[22] Menezes, J., Gusmão, C., & Moura, H. (2019). Risk factors in software development projects: a systematic literature review. *Software Quality Journal*, 27(3), 1149-1174

[23] Miller, J., Wienke, S., Schlottke-Lakemper, M., Meinke, M., & Müller, M. S. (2018). Applicability of the software cost model COCOMO II to HPC projects. *International Journal of Computational Science and Engineering*, 17(3), 283-296

[24] Mohindru, V., & Singh, Y. (2018). Node authentication algorithm for securing static wireless sensor networks from node clone attack. *International Journal of Information and Computer Security*, 10(2-3), 129-148

[25] Musa, M., Elgorashi, T., & Elmirghani, J. (2018). Bounds for energy-efficient survivable IP over WDM networks with network coding. *Journal of Optical Communications and Networking*, 10(5), 471-481

[26] Padal Jr, C. M., Salado, M. J. M. L., & Sobejana, N. P. (2019). SPAMAST Smart Garbage Bin Monitoring System Using Wireless Sensor Network. *Journal of Engineering Research and Reports*, 6(3), 1-16

[27] Peiró, L. T., Girón, A. C., & Durany, X. G. (2020). Examining the feasibility of the urban mining of hard disk drives. *Journal of Cleaner Production*, 248, 119216.

[28] Peeters, J. R., Bracqguene, E., Nelen, D., Ueberschaar, M., Van Acker, K., & Duflou, J. R. (2018). Forecasting the recycling potential based on waste analysis: A case study for recycling Nd-Fe-B magnets from hard disk drives. *Journal of Cleaner Production*, 175, 96-108

[29] Purkar, S. V., & Deshpande, R. S. (2018). Energy efficient clustering protocol to enhance performance of heterogeneous wireless sensor network: EECPEP-HWSN. *Journal of Computer Networks and Communications*, Volume 2018, Article ID 2078627, 12 pages. https://doi.org/10.1155/2018/2078627

[30] Qazi, A. M., & Bashir, M. (2018). A Service Oriented Handover Process for Software Development Projects. *International Journal of Advances in Computer and Electronics Engineering*, 3(5), 1-8

[31] Rowaihy, H., & BinSahaq, A. (2018). Data delivery in wireless sensor networks with uncontrollable mobile nodes. *International Journal of Sensor Networks*, 26(4), 213-226

[32] Saad, M. (2018). An improved hybrid genetic algorithm for multi-user scheduling in 5G wireless networks. *International Journal of Internet Protocol Technology*, 11(2), 63-70.

[33] Sambrekar, K., & Rajpurohit, V. S. (2019). Fast and efficient multiview access control mechanism for cloud based agriculture storage management system. *International Journal of Cloud Applications and Computing* 9(1), 33-49

[34] Tanvar, H., Barnwal, A., & Dhawan, N. (2020). Characterization and evaluation of discarded hard disc drives for recovery of copper and rare earth values. *Journal of Cleaner Production*, 249, 119377

[35] Tuna, G. (2018). Clustering-based energy-efficient routing approach for underwater wireless sensor networks. *International Journal of Sensor Networks*, 27(1), 26-36

[36] Tereikovskyi, I., Mussiraliyeva, S., Kosyuk, Y., Bolatbek, M., & Tereikovska, L. (2018). An experimental investigation of infrasound influence hard drives of a computer system. *International Journal of Civil Engineering and Technology* 9, 1558-1566

[37] Velayudhan, D. P., & Thomas, S. (2018). Role of technological uncertainty, technical complexity, intuition and reflexivity in project planning–a study on software development projects. *International Journal of Project Organisation and Management*, 10(1), 82-92

[38] Wang, S., Zhao, Y., Huang, L., Xu, J., & Hsu, C. H. (2019). QoS prediction for service recommendations in mobile edge computing. *Journal of Parallel and Distributed Computing*, 127, 134-144

[39] Xiao, G., Cheng, Q., & Zhang, C. (2019). Detecting travel modes from smartphone-based travel surveys with continuous hidden Markov models. *International Journal of Distributed Sensor Networks*, 15(4). https://doi.org/10.1177/1550147719844156

[40] Yadav, R., Mittal, M. and Jain, R. (2018). Adoption of lean principles in software development projects. *International Journal of Lean Six Sigma*. https://doi.org/10.1108/IJLSS-03-2018-0031

[41] Yaghoobi Tahere. Prioritizing key success factors of software projects using fuzzy AHP. *Journal of Software: Evolution and Process* 30, no. 1 (2018): e1891. https://doi.org/10.1002/smr.1891

[42] Yan, X., He, F., Hou, N., & Ai, H. (2018). An efficient particle swarm optimization for large-scale hardware/software co-design system. *International Journal of Cooperative Information Systems*, 27(01), 1741001. https://doi.org/10.1142/S0218843017410015

[43] Zimmermann, L., Stephens, A., Nam, S. Z., Rau, D., Kübler, J., Lozajic, M. ... & Alva, V. (2018). A completely reimplemented MPI bioinformatics toolkit with a new HHpred server at its core. *Journal of Molecular Biology*, 430(15), 2237-2243. doi:10.1016/j.jmb.2017.12.007