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Design and Implementation of a Web-Based Online Registration System for HIMATIF Using the Agile Development Method

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A B S T R A C T

Efficient and well-organized registration processes are essential for supporting the activities and membership management of student organizations. The Information Technology Student Association (HIMATIF) requires a system that can streamline registration, reduce administrative workload, and improve data accuracy. This study focuses on the design and implementation of a web-based online registration system for Himatif using the Agile development method. The system features member registration, data validation, document uploads, activity selection, and administrative dashboards for managing registrant information. The Agile approach, specifically the Scrum framework, was applied to enable iterative development, continuous feedback, and rapid adaptation to changing requirements. The system was developed using PHP with the Laravel framework and MySQL for database management, ensuring secure and scalable performance. Testing results show that the application meets functional requirements, operates reliably across multiple devices, and significantly reduces the time required for registration compared to manual processes. This system enhances operational efficiency, improves data management, and provides a better user experience for both members and administrators.

INTRODUCTION

Amidst the rapid development of information technology, the use of application systems has become a primary requirement to support the efficiency and quality of services in various organizations, including the Information Technology Student Association (HIMATIF). As a student organization in the Information Technology Department of the University of Muhammadiyah North Sumatra (UMSU), HIMATIF plays a vital role in shaping and developing student potential.

To date, the HIMATIF UMSU member registration process still relies on Google Forms, which may have limitations in terms of accessibility, interactivity, and responsiveness. Therefore, developing an integrated online registration system is urgently needed to improve administrative efficiency, increase member participation, and provide a better registration experience. The obstacles that HIMATIF UMSU may face through Google forms currently are the lack of automation in managing member data, the lack of interactivity and direct feedback to applicants, and limitations in monitoring and evaluating the overall registration process.

Student organizations play a significant role in developing leadership skills, fostering collaboration, and supporting extracurricular activities in higher education institutions. The Information Technology Student Association (Himatif) regularly organizes programs, events, and recruitment activities that require efficient and well-structured registration processes. Traditionally, registration has been conducted manually through paper-based forms or basic spreadsheets, which often results in slow processing times, data entry errors, and difficulties in managing large volumes of information.

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These limitations highlight the need for a digital solution that can automate and streamline the registration process while ensuring accuracy, accessibility, and security.

To address these challenges, this research focuses on the design and implementation of a web-based online registration system tailored for Himatif. The system is intended to provide features such as user registration, profile management, document uploads, activity selection, and administrative dashboards for managing and verifying member data. The development process adopts the Agile methodology, specifically the Scrum framework, to allow for iterative development, continuous feedback, and rapid adaptation to changing requirements.

METHOD

The research methods used in this study are the Agile Development Method and the Traditional Software Development Method. The Agile Development Method is a software development approach that emphasizes flexibility, collaboration, and iteration in the development process (Schwaber & Sutherland, 2017). In the context of this study, the Agile Development Method will be used as a framework to design, develop, and implement a web-based online registration system for HIMATIF. The Traditional Software Development Method will be used as a comparison to evaluate the effectiveness of the Agile Development Method in the context of developing an online registration system. This method includes software development stages such as requirements analysis, system design, implementation, testing, and maintenance (Pressman, 2014). By comparing the performance of the two methods, this study aims to evaluate the advantages, disadvantages, and relevance of the Agile Development Method in developing an online registration system.

By combining Agile Development Methods with Traditional Software Development Methods, this study will gain comprehensive insight into the development process of an online registration system. The data and results will provide a deeper understanding of the effectiveness of Agile Development Methods in the context of web-based information system development. Thus, this research will provide a valuable contribution to the development of an online registration system in the HIMATIF organizational environment.

Conceptual Framework

The conceptual framework structure that will be used to complete the research on the Himatif registration website is as shown in the following image:

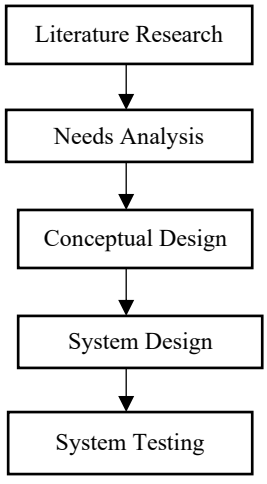

Figure 1. Conceptual Framework Structure

Based on the conceptual framework above, the discussion at each stage can be outlined as follows:

1. Literature research is conducted to gather information from articles, scientific journals, and other resources related to the development of an online registration system and the implementation of the Agile Development Method. This research will utilize various resources such as Google Scholar, IEEE Xplore, and other leading scientific journal portals. Possible tools include search engines, online journal databases, and reference management software such as Zotero or Mendeley.
2. Requirements analysis involves identifying the features and functionality required for the HIMATIF online registration system. This can be done using techniques such as interviews with potential users, case studies, and

requirements analysis. Useful tools for organizing and documenting requirements include Microsoft Excel, Google Sheets, or requirements management software such as IBM Rational DOORS.

3. Conceptual design involves creating workflow diagrams, user interface wireframes, and database structure designs. Useful tools for conceptual design include user interface design software such as Adobe XD, Figma, or Sketch for wireframing, and database design software such as MySQL Workbench or Microsoft Visio.
4. System design involves implementing the conceptual design into concrete code. This includes creating the database structure using SQL or NoSQL, developing the user interface with HTML, CSS, and JavaScript, and developing business logic using programming languages such as PHP, Python, or JavaScript (Node.js). Tools that may be used include code editors such as Visual Studio Code, Sublime Text, or IntelliJ IDEA, and a local web server such as XAMPP for local development and testing.
5. The testing phase will involve functional and integration testing to ensure that the HIMATIF online registration system functions as intended and meets established requirements. Useful tools for testing include automated testing frameworks such as Selenium WebDriver, and bug management and tracking software such as Jira or Bugzilla. Additionally, user feedback can also be collected through online surveys or user acceptance testing sessions using tools such as Google Forms or Survey Monkey.

RESULTS AND DISCUSSION

The result of the analysis and design of a web-based member recruitment information system at HIMATIF UMSU is a ready-to-use application to support the member recruitment process in a structured and efficient manner. This system is designed using the CodeIgniter framework, where this application includes several main features, namely the login menu, master data, the selection test process, and the announcement of selection results.

Main Menu

The main menu is the page that serves as the primary link to various application features. This menu consists of a login page and a main menu for accessing user data and selection tests. The following are the menu details:

1. Login Menu: The login menu aims to secure the system from unauthorized users. System access rights are divided based on the user. The login menu displays as follows:

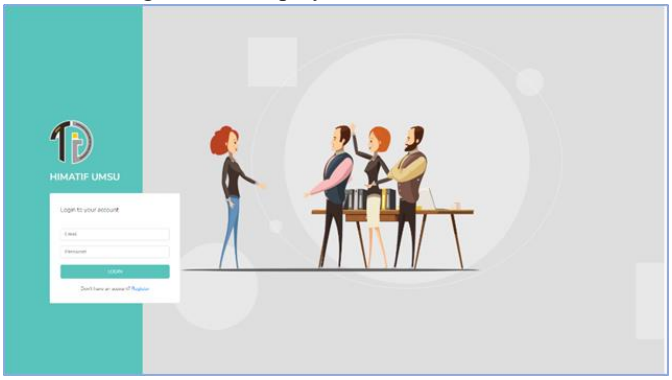

Figure 2. Login Menu

2. Main Menu The main menu provides access to various features such as applicant data, selection tests, and selection results reports. The main menu displays as follows:

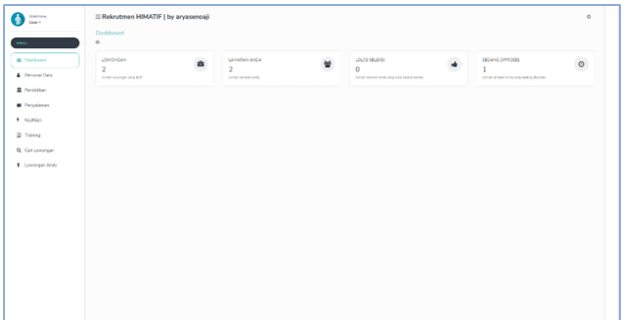

Figure 3. Main Course

Administrator Page

The administrator page is the part of the system used to manage data, such as applicant data, vacancies, and selection tests. The following details the available features:

1. Applicant Master Data. This page is used to enter and manage applicant personal data, including personal information, education, organizational experience, and skills. The applicant data page displays as follows:

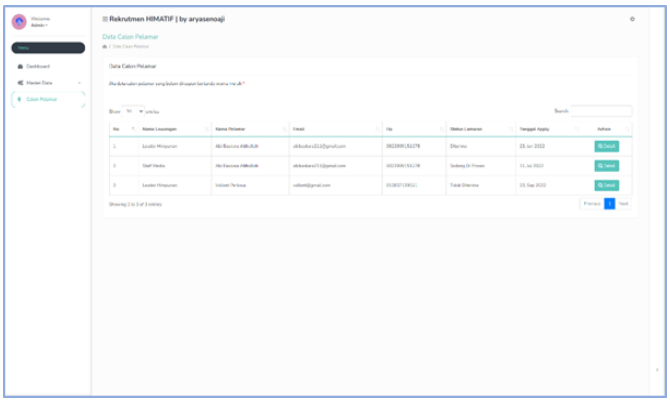

Figure 4. Applicant Data Menu

2. Vacancy Master Data: This page is used to manage job vacancy data, such as job title, applicant criteria, and position description. The job vacancy data page displays the following:

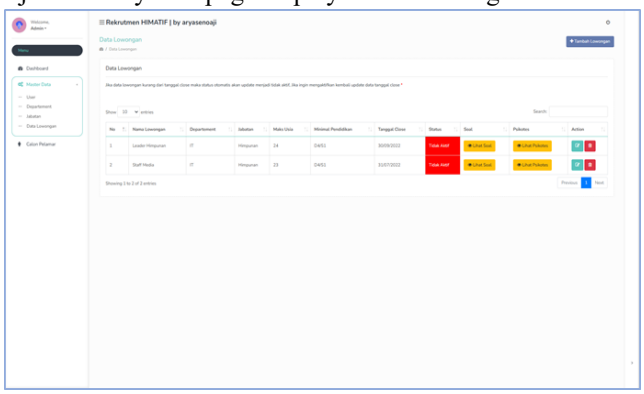

Figure 5. Vacancies Data Menu

Testing

Testing was conducted to ensure the system functioned properly and met user needs. This testing was conducted using a workflow from a previously developed website to verify the system's accuracy and reliability in the recruitment selection process. The system testing process is as follows:

1. Admin Creates Recruitment Openings
   Admins can create recruitment openings based on the required roles and departments. They can also create multiple-choice tests and psychological assessments for the applicant selection process.

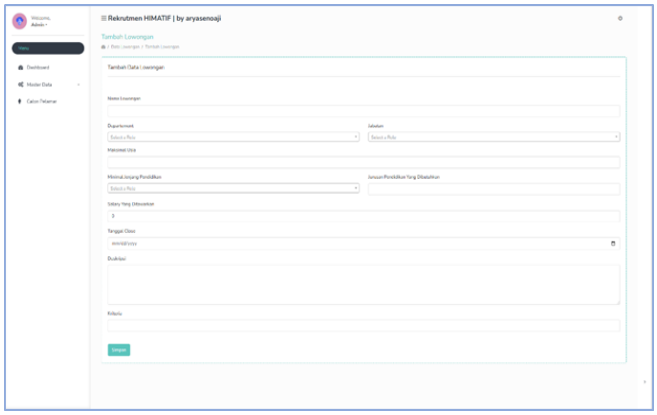

Figure 6. Admin Creates Vacancies

2. User Registration and Completion of Personal Data
   Users register an account and complete personal data such as name, address, contact information, and other information required for recruitment purposes.

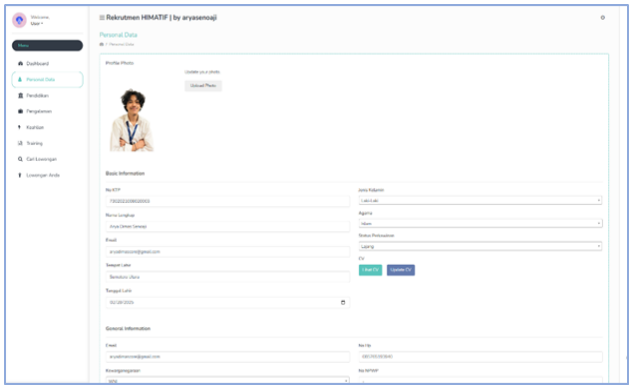

Figure 7. User Registration

3. Users Search for Recruitment Vacancies
   After successfully registering, users can search for available vacancies in the job openings section. The system displays a list of vacancies created by the admin.

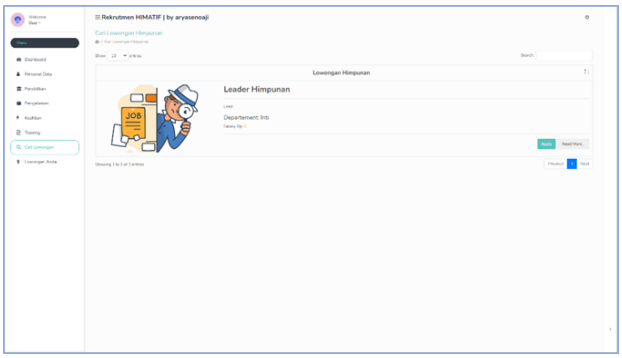

Figure 8. User Searches For Vacancies

4. Users Apply for Vacancies and Take the Test
   Users select the desired vacancy, then submit an application by filling in the required information and taking the provided tests (multiple-choice and psychological tests).

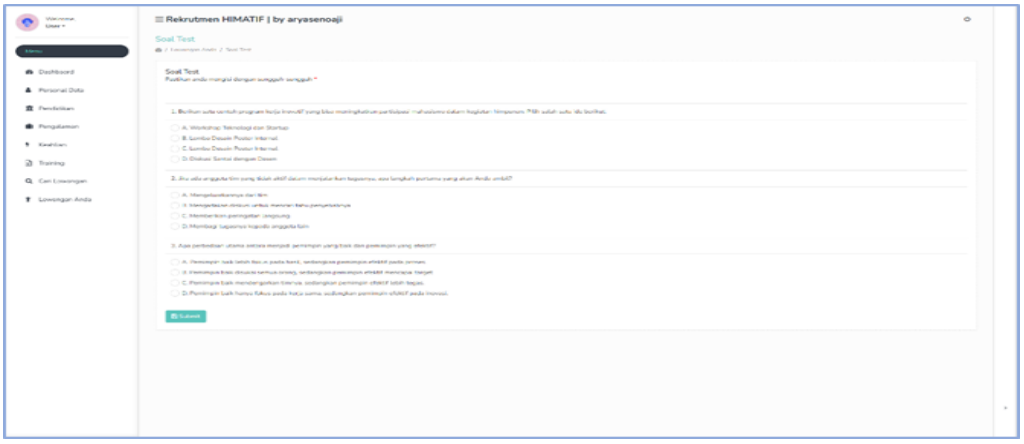

Figure 9. Users Do Tests

5. Admin Checks Applicant Data
   Admins monitor the list of applicants submitted through the system. Based on the results of the user's completed tests, the admin can decide to approve or reject the application.

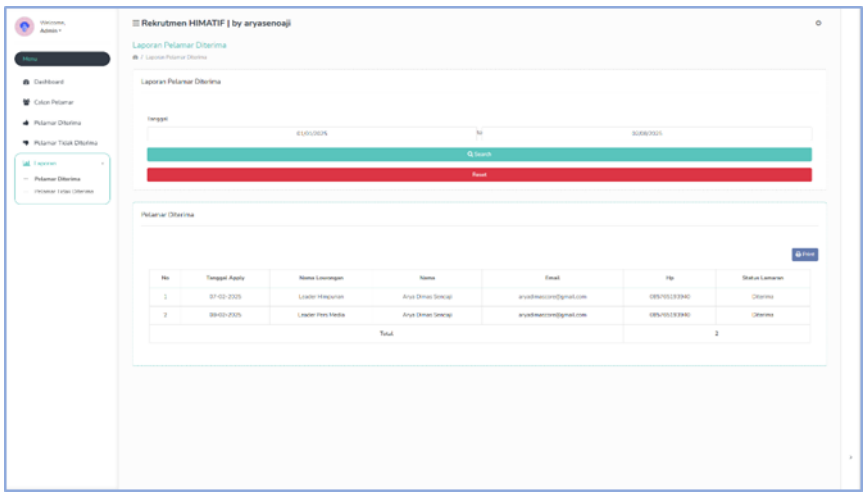

Figure 10. Admin Checks Applicant Data

6. Users Receive Application Status
   Users can view their application status in your vacancies section. The system will display whether the user has been accepted or rejected based on the admin's decision.

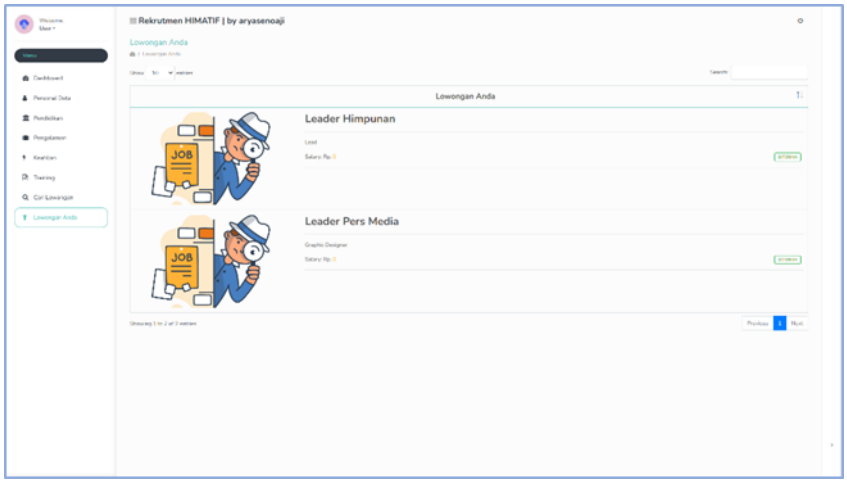

Figure 11. Users Get the Latest Status

CONCLUSION

Based on the analysis and discussion of the web-based member recruitment information system at HIMATIF UMSU, the following conclusions can be drawn: The Agile Development principles applied in system development, such as development iterations, inter-team collaboration, and flexibility to meet changing needs, have successfully supported the development of HIMATIF UMSU's online registration system. The HIMATIF UMSU online registration system was successfully implemented using Agile Development methods. The system development process was carried out in stages, focusing on completing key features, such as the login menu, applicant data management, online selection tests, and the announcement of selection results. Evaluation of the system implementation showed that the system successfully met the established success criteria, namely supporting the efficiency of the recruitment process, increasing the accuracy of selection results, and providing a simple user interface. Thus, the application of Agile Development has proven effective in developing an online registration system to support the HIMATIF UMSU member recruitment process.

REFERENCES

Buku
[1] Indah Purnama Sari. Algoritma dan Pemrograman. Medan: UMSU Press, 2023, pp. 290.

[2] Janner Simarmata Arsan Kumala Jaya, Syarifah Fitrah Ramadhani, Niel Ananto, Abdul Karim, Betrisandi, Muhammad Ilham Alhari, Cucut Susanto, Suardinata, Indah Purnama Sari, Edson Yahuda Putra. Komputer dan Masyarakat. Medan: Yayasan Kita Menulis, 2024, pp.162.
[3] Mahdianta Pandia, Indah Purnama Sari, Alexander Wirapraja Fergie Joanda Kaunang, Syarifah Fitrah Ramadhani Stenly Richard Pungus, Sudirman, Suardinata Jimmy Herawan Moedjahedy, Elly Warni, Debby Erce Sondakh. Pengantar Bahasa Pemrograman Python. Medan : Yayasan Kita Menulis, 2024, pp.180
[4] Zelvi Gustiana Arif Dwinanto, Indah Purnama Sari, Janner Simarmata Mahdianta Pandia, Supriadi Syam, Semmy Wellem Taju Fitrah Eka Susilawati, Asmah Akhriana, Rolly Junius Lontaan Fergie Joanda Kaunang. Perkembangan Teknologi Informatika. Medan: Yayasan Kita Menulis, 2024, pp.158
[5] Indah Purnama Sari. Buku Ajar Pemrograman Internet Dasar. Medan: UMSU Press, 2022, pp. 300.
[6] Indah Purnama Sari. Buku Ajar Rekayasa Perangkat Lunak. Medan: UMSU Press, 2021, pp. 228.

Jurnal
[7] Schwaber, K., & Beedle, M. (2001). AGILE SOFTWARE DEVELOPMENT WITH SCRUM. PRENTICE HALL.
[8] Highsmith, J. (2001). Agile Software Development Ecosystems. Addison-Wesley.
[9] Larman, C. (2004). Agile and Iterative Development: A Manager's Guide. Addison-Wesley Professional.
[10] Martin, R. C. (2003). Agile Software Development: Principles, Patterns, and Practices. Pearson Education.
[11] Nugroho, A. Y. (2018). Implementasi Metode Agile Pada Pengembangan Perangkat Lunak. Jurnal Informatika Mulawarman, 13(2), 45-51.
[12] Wijayanti, I., & Sukaridhoto, S. (2019). Penerapan Metode Agile dalam Pengembangan Sistem Informasi Geografis (SIG) Di PT. Prambanan Kencana. Jurnal Teknologi Informasi dan Komunikasi, 7(1), 31-36.
[13] Setiawan, A., & Hidayanto, A. N. (2015). Penerapan Metode Agile Dalam Proses Pengembangan Perangkat Lunak Di Indonesia. Jurnal Informatika, 11(2), 1-9.
[14] Widiarina, F. Agustini, & A. Y. Nugroho. (2019). Implementasi Metode Agile Development pada Pengembangan Sistem Informasi Pendaftaran Online Berbasis Web di Universitas Islam Sultan Agung Yogyakarta. Teknika, 13(1), 49-54. https://jurnal.polsri.ac.id/
[15] Alfia, N. E. (2020). Perancangan Aplikasi Retensi Data Pada Database MySQL (Studi Kasus: PT. Telkomsigma). JUSIBI (Jurnal Sistem Informasi Dan Bisnis), 2(3), 364–374.
[16] Anggraini, Y., Pasha, D., & Damayanti, D. (2020). Sistem Informasi Penjualan Sepeda Berbasis Web Menggunakan Framework Codeigniter. Jurnal Teknologi Dan Sistem Informasi, 1(2), 64–70.
[17] Sari, I.P., Jannah, A., Meuraxa, A.M., Syahfitri, A., & Omar, R. (2022). Perancangan Sistem Informasi Penginputan Database Mahasiswa Berbasis Web. Hello World Jurnal Ilmu Komputer 1 (2), 106-110
[18] Satria, A., Ramadhani, F., & Sari, I.P. (2023). Rancang Bangun Sistem Informasi Penerimaan Peserta Didik Baru (PPDB) Sekolah Menengah Kejuruan Telkom 2 Medan Menggunakan Codeigniter. Wahana Jurnal Pengabdian kepada Masyarakat 2 (1), 23-31
[19] Sari, I.P., Azzahrah, A., Qathrunada, I.F., Lubis, N., & Anggraini, T. (2022). Perancangan sistem absensi pegawai kantoran secara online pada website berbasis HTML dan CSS. Blend sains jurnal teknik 1 (1), 8-15
[20] Hariani, P.P., Sari, I.P., & Batubara, I.H. (2021). Android-Based Financial Statement Presentation Model. JURNAL TARBIYAH 28 (2), 1-16
[21] Sari, I.P., Syahputra, A., Zaky, N., Sibuea, R.U., & Zakhir, Z. (2022). Perancangan sistem aplikasi penjualan dan layanan jasa laundry sepatu berbasis website. Blend sains jurnal teknik 1 (1), 31-37
[22] Sari, I.P., Al-Khowarizmi, A., & Batubara, I.H. (2021). Cluster Analysis Using K-Means Algorithm and Fuzzy C-Means Clustering For Grouping Students' Abilities In Online Learning Process. Journal of Computer Science, Information Technology and Telecommunication Engineering 2 (1), 139-144
[23] Hutasuhut, B.K., Sari, I.P., & Al-Khowarizmi, A. (2023). Analysis the Effect of Digitalization and Technology on Web-Based Entrepreneurship. Journal of Computer Science, Information Technology and Telecommunication Engineering 4 (1), 350-354
[24] Sari, I.P., Batubara, I. H., & Al-Khowarizmi, A. (2021). Sensitivity Of Obtaining Errors In The Combination Of Fuzzy And Neural Networks For Conducting Student Assessment On E-Learning. International Journal of Economic, Technology and Social Sciences (Injects) 2 (1), 331-338
[25] Sari, I.P., Fahroza, M.F., Mufit, M.I., & Qathrunad, I.F. (2021). Implementation of Dijkstra's Algorithm to Determine the Shortest Route in a City. Journal of Computer Science, Information Technology and Telecommunication Engineering 2 (1), 134-138

[26] Sari, I.P., Batubara, I.H., Al-Khowarizmi, A., & Hariani, P.P. (2022). Perancangan Sistem Informasi Pengelolaan Arsip Digital Berbasis Web untuk Mengatur Sistem Kearsipan di SMK Tri Karya. Wahana Jurnal Pengabdian kepada Masyarakat 1 (1), 18-24
[27] Sari, I.P., & Batubara, I.H. (2021). Perancangan Sistem Informasi Laporan Keuangan Pada Apotek Menggunakan Algoritma K-NN. Seminar Nasional Teknologi Edukasi dan Humaniora (SiNTESa) (1).
[28] Sari, I.P., Batubara, I.H., & Basri, M. (2022). Implementasi Internet of Things Berbasis Website dalam Pemesanan Jasa Rumah Service Teknisi Komputer dan Jaringan Komputer. Blend Sains Jurnal Teknik 1 (2), 157-163
[29] Sari, I.P., & Ramadhani, F. (2021). Pengaruh Teknologi Informasi Terhadap Kewirausahaan Pada Aplikasi Perancangan Jual Beli Jamu Berbasis WEB. Prosiding Seminar Nasional Kewirausahaan 2 (1), 874-878
[30] Sari, I.P., Al-Khowarizmi, A., Ramadhani, F., & Sulaiman, O.K. (2023). Implementation of the Selection Sort Algorithm to Sort Data in PHP Programming Language. Journal of Computer Science, Information Technology and Telecommunication Engineering 4 (1), 377-381
[31] Ichsan, A., Al-Khowarizmi, A., & Azhari, M. (2024). Implementation of The Sales and Purchase Program Application Using the Rapid Application Development Model Web Based. Tsabit Journal of Computer Science 1 (1), 27-34
[32] Sari, I.P., & Batubara, I.H. (2021). User Interface Information System for Using Account Services (Joint Account) WEB-Based. International Journal of Economic, Technology and Social Sciences (Injects) 2 (2), 462-469
[33] Ramadhani, F., & Sari, I.P. (2021). Pemanfaatan Aplikasi Online dalam Digitalisasi Pasar Tradisional di Medan. Prosiding Seminar Nasional Kewirausahaan 2 (1), 806-811
[34] Sari, I.P., & Alfarisi, F. (2024). Perancangan Sistem Aplikasi Pendataan Membership Gym Menggunakan Metode Unified Software Development Process (USDP) Berbasis Web. Hello World Jurnal Ilmu Komputer 3 (1), 37-48
[35] Sari, I.P. (2020). Implementasi Pembayaran SPP Berbasis WEB Pada Sekolah Menengah Pertama (SMP) Muhammadiyah Kota Medan. Jurnal Pengabdian Barelang 2 (03), 11-14
[36] Habib, T.A., Azly, R., Irza, M.A., & Prasetya, I. (2024). User Interface Design for the Orca Music Player Mobile Application. Tsabit Journal of Computer Science 1 (1), 18-26
[37] Sari, I.P., Batubara, I.H., Ramadhani, F., & Wardani, S. (2022). Perancangan Sistem Antrian pada Wahana Hiburan dengan Metode First In First Out (FIFO). Sudo Jurnal Teknik Informatika 1 (3), 116-123
[38] Ramadhani, F., Satria, A., & Sari, I.P. (2022). Aplikasi internet berbasis website sebagai E-Commerce penjualan komponen sport car. Blend Sains Jurnal Teknik 1 (2), 69-75
[39] Sari, I.P., Ramadhani, F., Satria, A., Apdilah, D., & Basri, M. (2023). Rancangan UI/UX Aplikasi Analytics pada Toko Online Wao Sneakers Menggunakan Figma Berbasis Mobile. Factory Jurnal Industri, Manajemen dan Rekayasa Sistem Industri 1 (3), 93-101
[40] Sari, I.P., Al-Khowarizmi, A., & Batubara, I.H. (2021). Implementasi Aplikasi Mobile Learning Sistem Manajemen Soal dan Ujian Berbasis Web Pada Platform Android. IHSAN: JURNAL PENGABDIAN MASYARAKAT 3 (2), 178-183
[41] Sari, I.P., & Ramadhani, F. (2021). User Interface Prototype Using User Centered System Design Method in Motorvice Information System. 2021 International Conference on Computer Science and Engineering (IC2SE) 1, 1-6
[42] Ramadhani, F., Sari, I.P., & Satria, A. (2024). Perancangan UI/UX Surat Keterangan Waris dalam Pengembalian Dana Haji Berbasis Web. Blend Sains Jurnal Teknik 2 (3), 198-203
[43] Sari, I.P., Hariani, P.P., Satria, A., & Manurung, A.A. (2023). Rancang Bangun Sistem Informasi Pengelolaan Arsip Materi Ajar Berbasis Web untuk Guru MAS Darul Falah. Wahana Jurnal Pengabdian kepada Masyarakat 2 (2), 59-65
[44] Sari, I.P., Syafii, R., Lubis, D.F.,, Setyadi, A., & Nasution, P. (2022). Pemanfaatan fasilitas google dalam perkuliahan di fakultas teknologi informasi. Blend Sains Jurnal Teknik 1 (2), 107-113
[45] Ramadhani, F., & Sari, I.P. (2021). Improving the Performance of Naïve Bayes Algorithm by Reducing the Attributes of Dataset Using Gain Ratio and Adaboost. 2021 International Conference on Computer Science and Engineering (IC2SE) 1, 1-5
[46] Sari, I.P., Sulaiman, O.K., Al-Khowarizmi, A., & Azhari, M. (2023). Perancangan Sistem Informasi Pelayanan Masyarakat pada Kelurahan Sipagimbar dengan Metode Prototype Berbasis Web. Blend Sains Jurnal Teknik 2 (2), 125-134
[47] Sitompul, D.N., Rahmatika, A., & Sari, I.P. (2023). Application of The Sales and Purchase Program Using The Rapid Application Development Model. Al'adzkiya International of Computer Science and Information Technology (AIoCSIT) Journal 4 (1), 6-16

[48] Sari, I.P., Ramadhani, F., Satria, A., & Apdilah, D. (2023). Implementasi Pengolahan Citra Digital dalam Pengenalan Wajah menggunakan Algoritma PCA dan Viola Jones. Hello World Jurnal Ilmu Komputer 2 (3), 146-157

[49] Sari, I.P., Sulaiman, O.K., Ramadhani, F., & Satria, A. (2023). Perancangan Sistem Manajemen Surat Berbasis Web Pada Kantor Camat Tano Tombangan Angkola. INCODING: Journal of Informatics and Computer Science Engineering 3 (2), 61-76

[50] Guntur, S., Ichsan, A., & Sari, I.P. (2024). Designing a Web-Based Mail Management System at the Beringin Helvetia Sub-district Office. Altafani: Jurnal Pengabdian Masyarakat 1 (1)

[51] Sari, I.P., Al-Khowarizmi, A., Jannah, A., Meuraxa, A.M., & Tanjung, M.I. (2023). Web-Based Offline Game Suit Design: A Model Overview. Journal of Computer Science, Information Technology and Telecommunication Engineering 4 (2), 389-394

[52] Sari, I.P., Al-Khowarizmi, A., Sulaiman, O.K., & Apdilah, D. (2024). System Design for Ordering and Digitizing Website-Based Bus Tickets. Journal of Computer Science, Information Technology and Telecommunication Engineering 5 (1), 543-549