

FSKTM E-Conference System

Noorshazwanie Ilya Rahmat¹, Hairulnizam Mahdin^{2*}

^{1,2} Faculty of Computer Science & Information Technology, Universiti Tun Hussein Onn Malaysia, Parit Raja, 86400, MALAYSIA

Corresponding Author: hairuln@uthm.edu.my

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Abstract

This project aims to develop a tailored e-conference submission system, "FSKTM ECS," for the Faculty of Computer Science and Information Technology (FSKTM) at Universiti Tun Hussein Onn Malaysia (UTHM). Unlike existing systems like EasyChair and EDAS, FSKTM ECS addresses the specific and stringent requirements set by journals, such as JOIV, which mandates a maximum of four sections in articles and strict limitations on references. These constraints present significant challenges, necessitating a flexible and adaptable solution. The FSKTM ECS is designed to simplify article submission, ensure compliance with diverse journal guidelines, and enhance the transparency of the review process. Developed using PHP in Visual Studio Code, the system empowers faculty members to define submission requirements, aligning with evolving academic standards. By streamlining the submission and publication process, FSKTM ECS aims to foster educational excellence and facilitate the dissemination of research within FSKTM. The system will be developed using a prototype methodology, ensuring continuous improvement and alignment with user needs.

1. Introduction

Conference organization is one of the yearly activities done in FSKTM, UTHM. Currently, there are two main conferences which are Soft Computing and Data Mining (SCDM) and the International Conference on Artificial Intelligence and Autonomous Systems (ICAIAS) that are organized by FSKTM [11]. The participants must submit their research papers to be presented at the conferences. The paper then will be published in a selected journal or proceedings. The current method of submission is by using systems available on the Internet such as EasyChair and EDAS. These systems also function as an e-conference system.

Introducing an e-conference system submission for the Faculty of Computer Science and Information Technology for Universiti Tun Hussein Onn Malaysia (UTHM). The system is made to tailor the requirements of the journal that will publish the articles from the conference organized by FSKTM. The need for this system arises from the increasingly stringent requirements posed by journals like JOIV, which mandate a maximum of four sections in articles and impose strict limitations on the number of references. These constraints present a significant challenge for the existing systems, necessitating the development of an innovative solution to facilitate the submission and publication of academic work within FSKTM.

As part of its core objectives, this project aims to create a user-friendly and efficient platform that simplifies the submission of articles, including research papers, while concurrently promoting a transparent review process for faculty members. Furthermore, the system seeks to empower faculty members with the flexibility to define the submission requirements, ensuring alignment with the diverse guidelines of target articles. By achieving these goals, the “FSKTM ECS” project is poised to enhance the academic experience and research dissemination within FSKTM, setting a new standard for academic excellence and scholarly productivity in the field of computer science and information technology.

2. Related Works

Three existing systems have been selected for comparison to make the project successful. The three existing systems are EasyChair, EDAS, and Springer. Each system has advantages, and the deficiencies obtained will be used as a benchmark to build the proposed system.

EasyChair is a comprehensive conference management system designed to streamline the organization and coordination of academic conferences, workshops, and events. EasyChair is fully owned and run by EasyChair Ltd, a company incorporated in England & Wales, on 18th October 2006 [13]. As an integrated platform, EasyChair facilitates various aspects of the conference lifecycle, including the submission of papers, peer review process, session scheduling, and publication of proceedings. Moreover, authors can submit their research contributions through the system. EasyChair supports a structured and efficient peer-review system, enabling reviewers and program committees to assess the quality of submissions. Additionally, the platform assists in managing conference logistics, such as participant registration, communication, and schedule coordination. EasyChair’s organizers, researchers, and participants contribute to the efficiency and success of academic events in diverse fields.

EDAS (Editora Digital de Actas S.L) is an online conference management system that offers a comprehensive suite of tools to streamline the organization and execution of academic conferences and events [12]. Through EDAS, conference organizers can manage various aspects of the conference lifecycle, including abstract submission, paper reviewing, program generation, and proceedings publication. The platform also supports the organization of virtual and hybrid conferences through its Virtual Conference System (VCS). Participants can use EDAS for conference registration, including online payment options, making the process efficient for organizers and attendees. Additionally, EDAS provides features like Smart CFP for publishing calls for papers, Smart Slide for sharing conference presentations, and support for publishing conference proceedings and other volumes. This versatile system is crucial in facilitating communication, collaboration, and the dissemination of scholarly work within the academic community.

Lastly, Springer is a renowned academic publishing platform that hosts a vast repository of scholarly articles, books, and conference proceedings across various disciplines [14]. As a leading publisher in the scientific and technical community, Springer provides researchers, academics, and professionals with access to a wealth of peer-reviewed content. The platform is a comprehensive resource for staying updated on the latest developments in various fields, offering a user-friendly interface for efficient navigation and exploration of academic literature. Researchers can find valuable insights, methodologies, and findings through Springer’s extensive collection of publications, contributing significantly to the global dissemination of knowledge and advancements in research. Springer Nature offers EquinOCS, an online manuscript submission and review system for conference proceedings. Any conference for which proceedings are published with Springer Nature may now use EquinOCS with technical support free of charge.

2.1 Comparison between the existing system and the proposed system.

A comparison table is displayed and compares the existing system and the proposed system based on their specific features. The comparison is diagnosed and verified by different aspects such as compatibility, operating systems, and user interface. The comparison of the existing systems with the proposed system is shown in the table below.

Table 1 Comparison between existing systems with the proposed system

Features	EasyChair	EDAS	Springer	FSKTM ECS
Android-based	X	X	X	X
iOS-based	X	X	X	X
Web-based	✓	✓	✓	✓
Online registration process	✓	✓	✓	✓
Online paper evaluation	✓	✓	✓	✓
Attractive user interface	✓	✓	X	✓
Submission and review of paper	✓	✓	✓	✓
Effective event manager	✓	✓	✓	✓
Online paper discussion	✓	✓	✓	X

3. Methodology

A prototype is an early sample, model, or release of a product built to test a concept or process or to act as a thing to be replicated or learned from. The design methodology is sometimes known as evolutionary design or incremental development. Different versions of prototyping are used in software design, system development, and electronics engineering. Besides, subsequent models are created by refining earlier versions, with the aim of convergence on the desired product stated by David Walker, Ph.D.: Executor Director of the Learning Technologies at McMaster University [17].

The prototyping methodology aims to enhance communication between developers and stakeholders by providing a tangible representation of the proposed system [3]. The process typically begins with the identification of user requirements, followed by the construction of a basic prototype that demonstrates key features and interactions. Users can then interact with the prototype, providing feedback and insights that inform further iterations. Prototyping is particularly beneficial when user requirements are not well-defined initially or when stakeholders need a concrete visualization to make informed decisions.

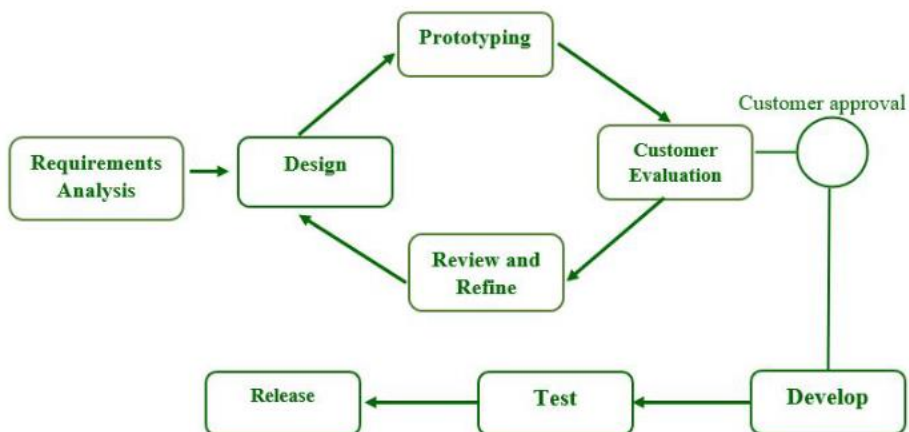


Figure 1 The Prototyping Model (Naimishsa, 2023)

3.1 Prototyping Phases

Table 2 shows the list of tasks taken during each phase in the prototyping model for the proposed system.

Table 2 *Tasks and phases in prototyping*

Phases	Task
Planning	<ul style="list-style-type: none"> Project Proposal Develop a Gantt chart
Analysis	<ul style="list-style-type: none"> Perform an interview and hardware and software requirements
Design	<ul style="list-style-type: none"> Design CD, DFD and ERD Design wireframe
Implementation	<ul style="list-style-type: none"> Build a web-based system. Establish database connection
Testing	<ul style="list-style-type: none"> Conduct system testing

4. Design and analysis

The development of the "FSKTM ECS" aims to streamline the submission and publication process for conferences at the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia (UTHM). The user-friendly interface will simplify article submissions and enhance the transparency of the review process, empowering faculty members to customize submission criteria according to diverse journal standards. This initiative is expected to significantly improve academic experiences and research dissemination at FSKTM, fostering higher standards of scholarly excellence in computer science and information technology.

4.1 Functional Requirement

Functional requirements represent the specific features, capabilities, and functionalities that a software system must process to meet the needs of its users and stakeholders. These requirements outline the system's behaviours under multiple conditions and describe the interactions between users and the software [16]. Functional requirements are typically expressed in terms of specific actions or operations that the system must perform, such as authentication, data manipulation, or process automation. Table 3 shows the functional requirements for the proposed system (FSKTM ECS).

Table 3 *Functional requirements of the proposed system*

Modules	Functionality
User registration and authentication module	<ul style="list-style-type: none"> Handles user registration and authentication processes. Allow users to create accounts, log in, and access the system securely.
Submission management module	<ul style="list-style-type: none"> Allow users to submit their research papers electronically. Collects and organizes submitted materials. Supports pdf file formats.
Peer review module	<ul style="list-style-type: none"> Facilitates the peer review process by assigning submitted works to qualified reviewers. Tracks the progress of reviews and deadlines.

Publication approval workflow	<ul style="list-style-type: none"> • Manages the workflow for approval. • Allows reviewers to make recommendations for acceptance or rejection.
Author Dashboard	<ul style="list-style-type: none"> • Offers author a dedicated space to track the status of their submission. • Allow authors to upload modified versions.
Reviewer dashboard	<ul style="list-style-type: none"> • Provides an overview of assigned submissions. • Allow reviewers to submit recommendations and comments.
Admin control panel	<ul style="list-style-type: none"> • Enables admin to manage user roles, permissions, and access. • Monitors the overall progress of the submission and review process.

4.2 Data Flow Diagram Context Diagram

The context diagram for the FSKTM ECS system would thus provide a clear overview of the system's structure, helping developers understand how different parts of the system interact and how data flows through the system. This ensures the system is well organized and meets the functional requirements specified for the e-conference platform.

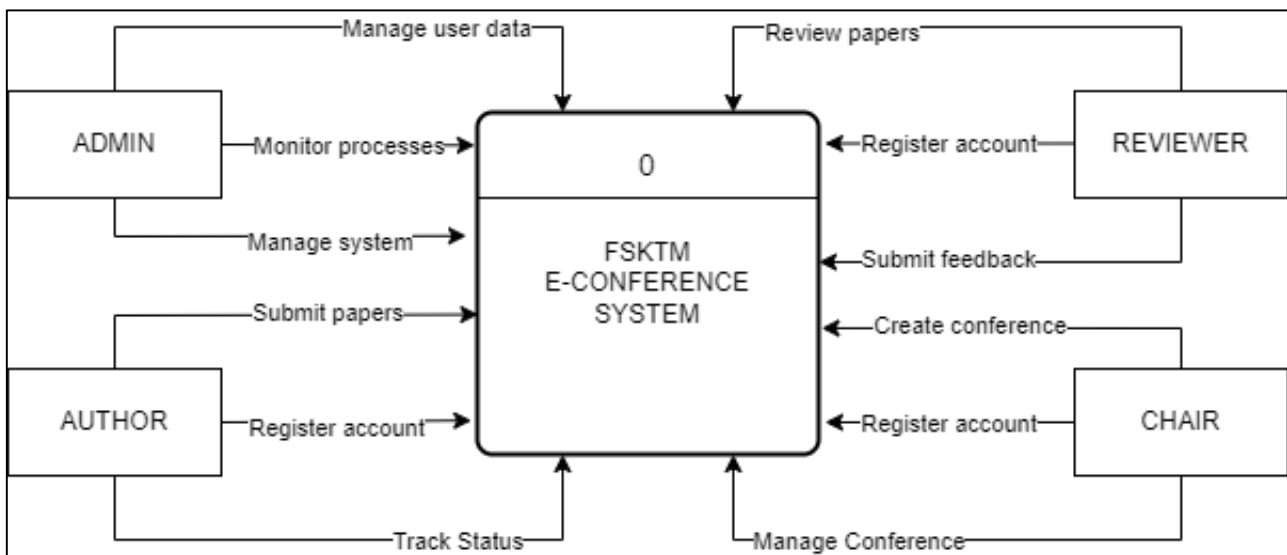


Figure 2 Data Flow Diagram Context Diagram (DFD CD)

4.3 Data Flow Diagram

DFD shows the way information flows via a process or system. It is used to explain the flow of data across the proposed system. DFD illustrates the data processing process in terms of output and input. The DFD level 0 shows all the processes at the first level of numbering, the data stores, external entities, and data flows among them.

4.3.1 DFD Level 0

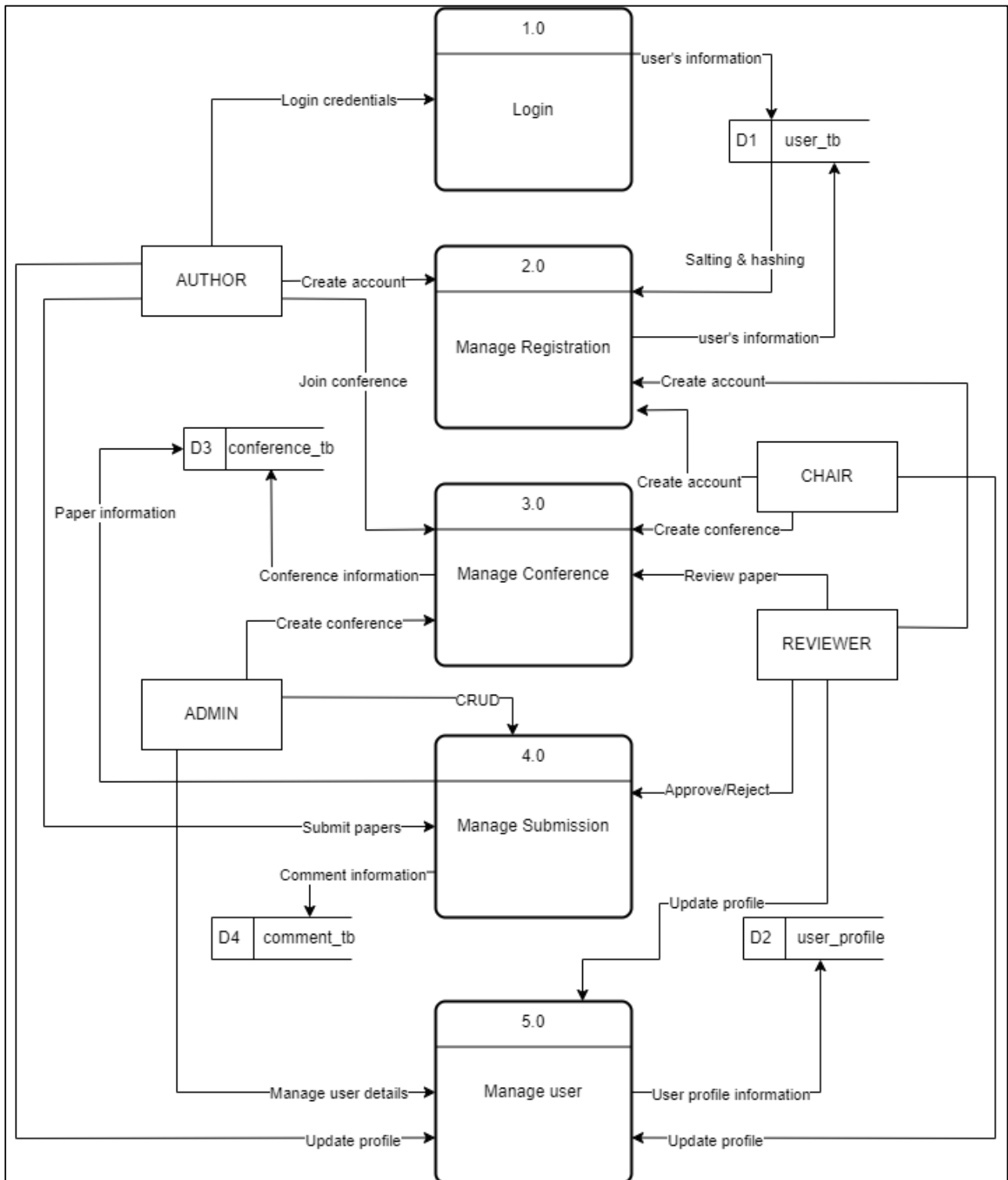


Figure 3 Data Flow Diagram Level 0

5. Result and Discussion

The conference management system design and analysis focus on creating an efficient and user-friendly platform for organizing academic conferences. The system features distinct user roles: Author, Reviewer, Admin, and Chair, each with specific functionalities. Authors can register, submit, update, or withdraw papers and view submission statuses. Admins create and manage conference details, while Chairs assign papers to Reviewers and make final decisions based on reviews. Reviewers access and evaluate assigned papers, providing feedback. The system ensures seamless coordination from paper submission to review and final decision, culminating in a well-organized conference schedule and participant management. This structured approach enhances the overall efficiency and experience for all stakeholders involved in the conference process.

5.1 Admin Interface

For admin interface, is the same interface as other users' login interfaces, what special features is that I have set the username and password which the email is admin@admin.com and the password is "pass3word". This username and email are only applied to admin users and is credentials from other users.

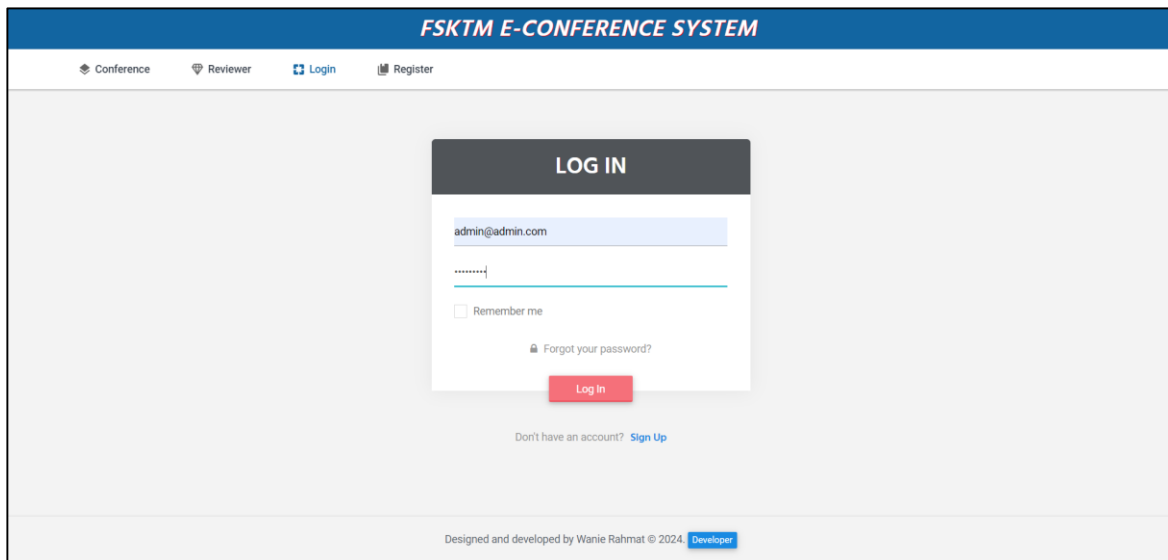


Figure 4 Admin login interface

Figure 5 displays the admin interface of the FSKTM ECS, where the admin can manage conferences. The function includes options to create, update, view, or delete conferences. The left sidebar provides navigation links for the dashboard, conference management, and user management. The main panel shows a list of conferences with details such as conference title, date, time, and venue, along with actions to edit or delete each conference entry.

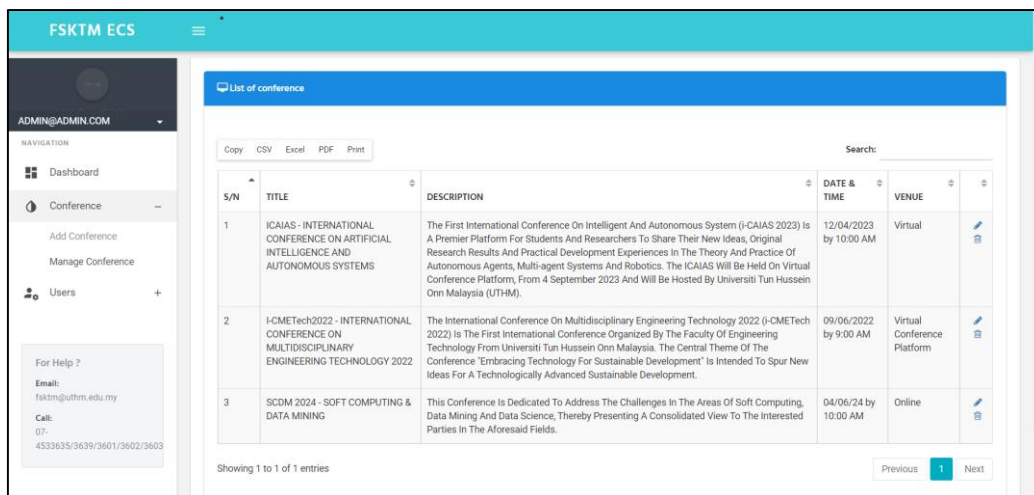


Figure 5 Admin manages conference interface

Figure 6 displays the functions where the admin can manage users including editing the user's profile, viewing the user's profile, and deleting the user. The admin can also add new users by their roles.

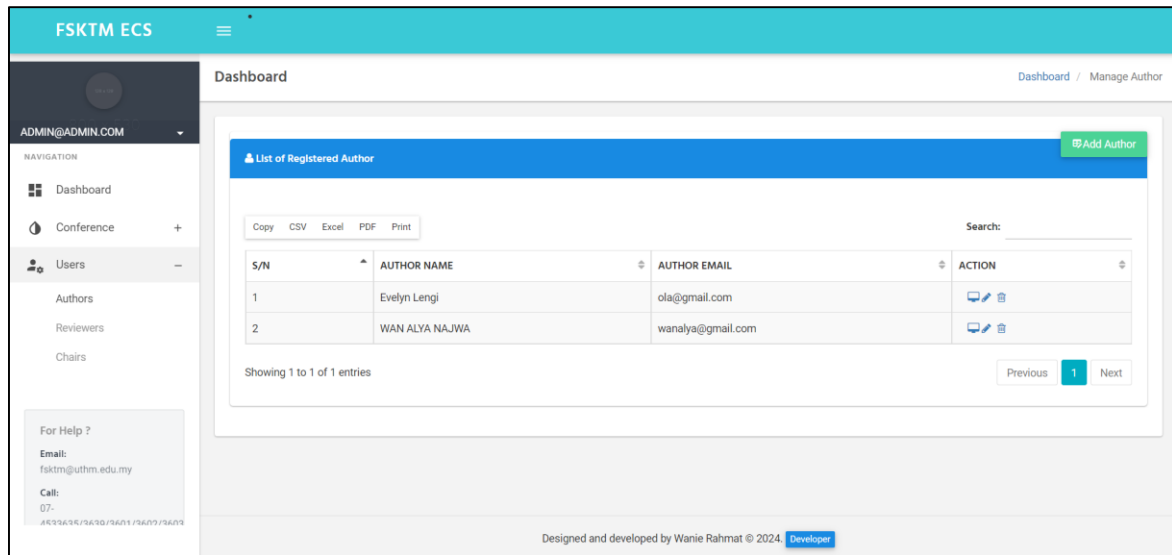


Figure 6 Admin manages user interface (Author, Reviewer, Chair)

5.2 User Interface

Figure 7 shows the registration form in the system for the user type as Author, Reviewer, and Chair. The user is required to fill in all the information needed as the developer needs to store and track the data. The information needed is email, username, password, confirm password, and a drop-down list of registration types. The security implementation that I have implemented for this page is that users are required to fill in valid information only. Otherwise, an error message will appear as "Error occurred! Please try again."

Figure 7 User register account interface

For user interface, is the same interface as the author, reviewer, and chair login interface. What special feature is that I implemented the “Remember Me” check box that uses cookies to store the user’s email so that the next time the user wants to log in, they do not have to fill in their email repeatedly.

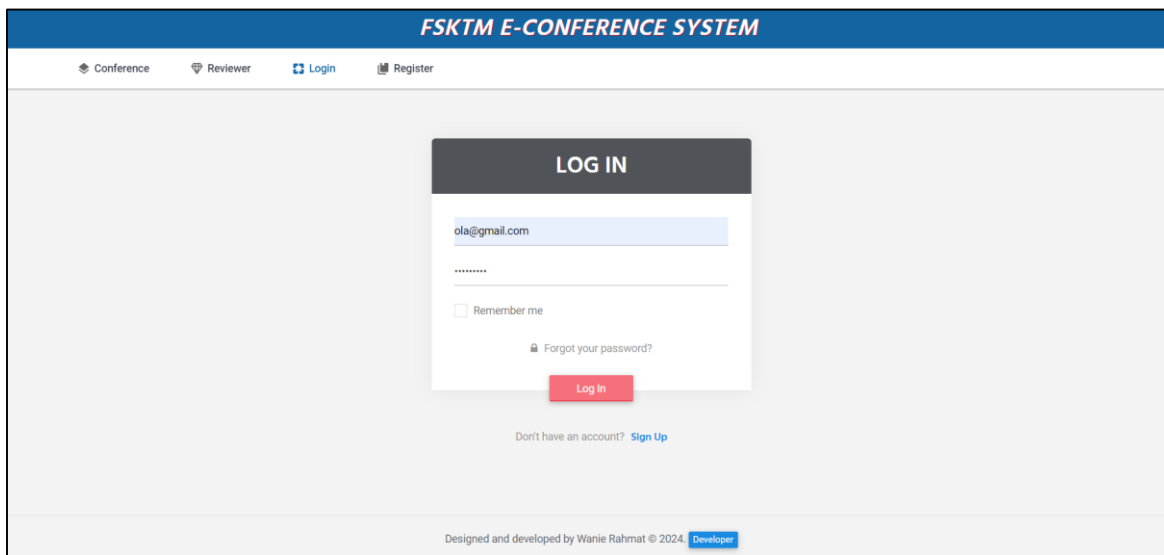


Figure 8 User login interface

Figure 9 shows the user's profile page. The users are required to update their account profile setup before doing anything in the system. This is to make sure that the title, full name, phone number, biography, and profile picture are updated, and the data will be stored in the database.

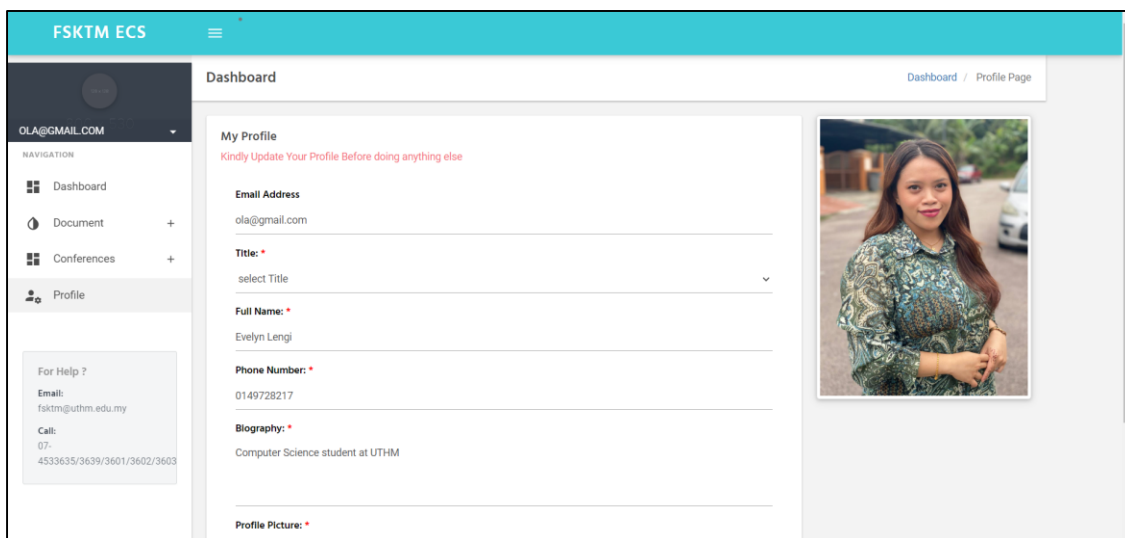


Figure 9 User profile interface

5.3 Author Interface

Figure 10 displays the interface for the Author's paper submission module. The sidebar will navigate the Author to submit a paper, view the submitted paper, view available conferences, join conferences, and print receipts of joined conferences. This interface allows the author to upload the paper in PDF format.

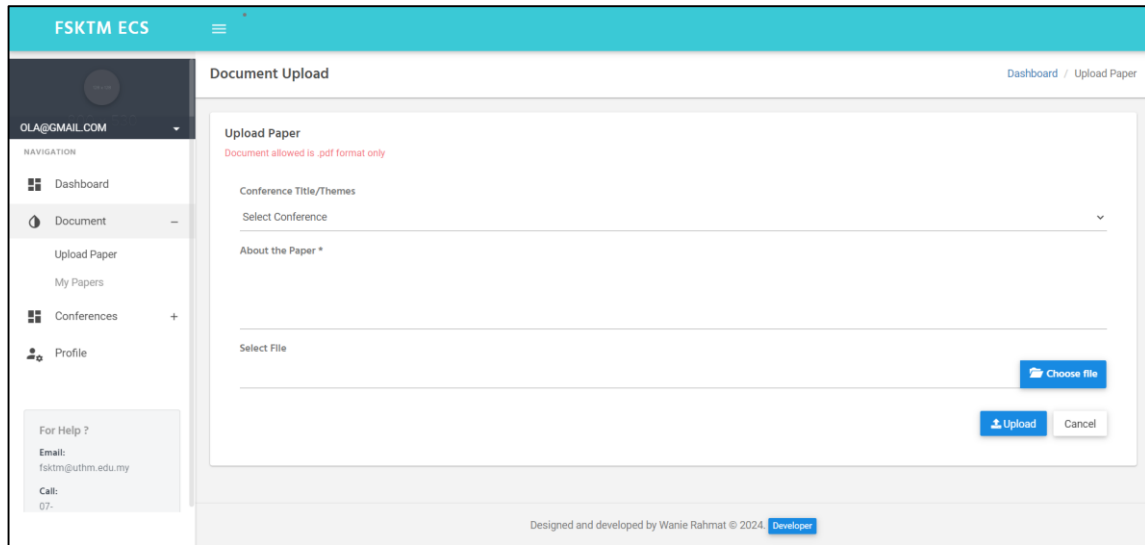


Figure 10 Author submits paper interface

Figure 11 shows the interface of the "My Papers" page for the author. There is a list of conferences that the author had joined and submitted a paper with the action of managing and deleting the paper.

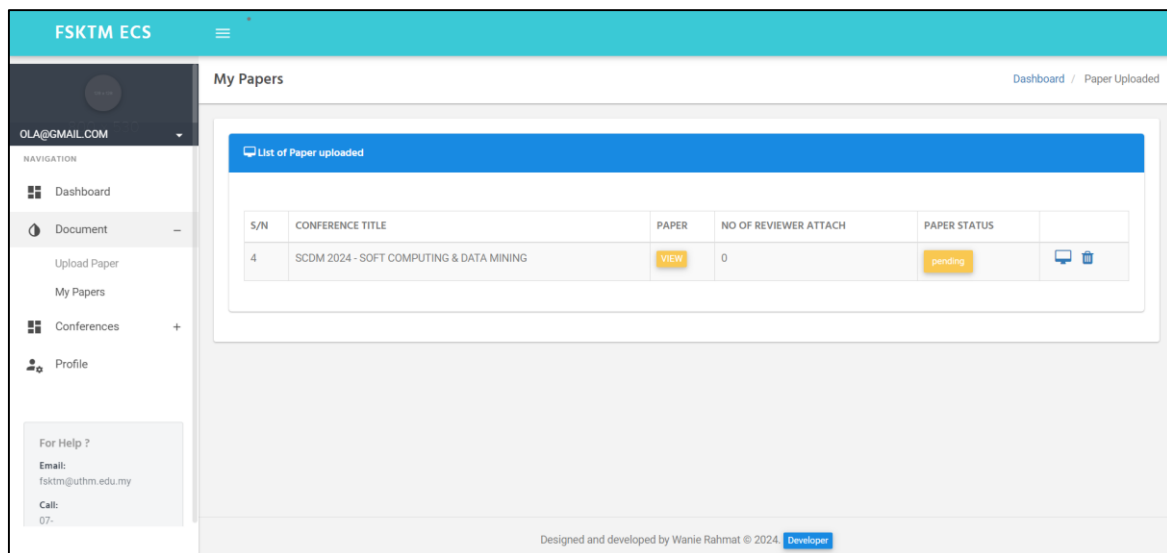


Figure 11 Author views the status of the paper interface

5.4 Reviewer Interface

This is the interface for the reviewer of the “List of Authors” page. The lists of authors assigned to the reviewer will appear in the table as S/N, Author Name, Author Email, Conference Title, and Action for edit and delete button.

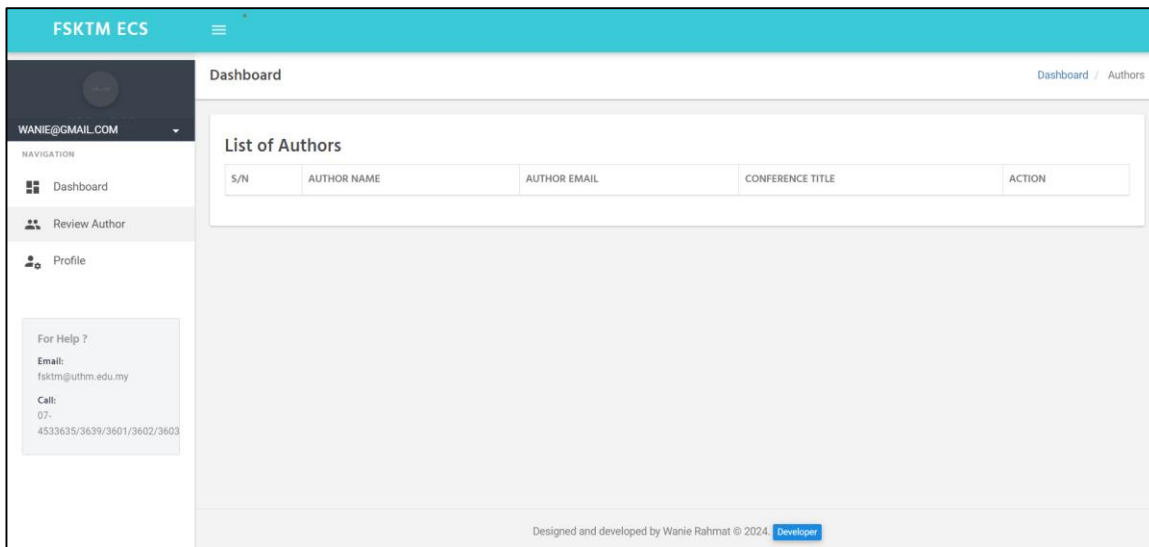


Figure 12 Reviewer view paper needs to review the interface

6. Functionality Testing

Functionality testing for the “FSKTM ECS” e-conference system involves verifying that each feature of the system operates in conformance with the required specifications. This testing ensures that all aspects of the system are functioning correctly and that users can perform their tasks without encountering issues.

Table 4 Test Plan for User Registration and Authentication Module

No.	Test Cases	Expected Output	Actual Result
1	Users' input data in the registration form are validated	The users successfully sign up and will show the text “Successfully Registered!”	As Expected
2	Users' input data for login are validated	The user successfully logs in and will show the text “Successfully Log In”	As Expected
3	Users submit an incomplete form	Unsuccessful login or sign-up and an error message will display “Please fill in the blank”	As Expected
4	Users submit a short password	Unsuccessful login or sign-up and an error message will display “Please enter characters long password”	As Expected
5	Users submit an invalid email or the same email	Unsuccessful login or sign-up and an error message will display “Invalid email” or “Email already exists!”	As Expected

Table 5 *Test Plan for Paper Submission Module*

No.	Test Cases	Expected Output	Actual Result
1	Authors can submit their academic work	The authors successfully upload the pdf file and will show the text "Successfully Uploaded!"	As Expected
2	Authors can view the status of their papers	The authors successfully view and will show the result as Pending, Approved, or Rejected	As Expected
3	Authors can view their papers in the system	Successfully display the submitted papers in the system	As Expected

Table 6 *Test Plan for Paper Review Module*

No.	Test Cases	Expected Output	Actual Result
1	The reviewer can access the assigned papers	Reviewers successfully save the papers submitted in PDF file format	As Expected
2	The reviewer can leave a comment or feedback	The reviewer successfully left a comment and feedback	As Expected

Table 7 *Test Plan for Conference Management Module*

No.	Test Cases	Expected Output	Actual Result
1	Can create, update, read, and delete conferences	Successfully create, update, read, and delete conferences	As Expected
2	The chair can assign a reviewer to the author	Successfully assigned reviewer	As Expected
3	Verify the system can generate reports on submission and review statuses.	Successfully generate reports and save as PDF	Failed

7. Conclusion

In conclusion, the FSKTM E-Conference System is a customized and complete solution that has been thoroughly developed to satisfy the requirements of FSKTM. The system gives faculty members a user-friendly platform and solves the problems presented by academic journals, especially those like JOIV with restrictive article forms and citation limitations. It makes it easier for submissions to be easily customized to meet faculty's requirements and align with the institution's academic standards. By providing a level of specialization, the use of an exclusive peer review system improves the thoroughness and integrity of the review process.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm their contribution to the paper as follows: study conception and design: Noorshazwanie Ilya Rahmat, Hairulnizam Mahdin; data collection: Hairulnizam Mahdin; analysis and interpretation of results: Noorshazwanie Ilya Rahmat, Hairulnizam Mahdin; draft manuscript preparation: Hairulnizam Mahdin. All authors reviewed the results and approved the final version of the manuscript.

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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Appendix A

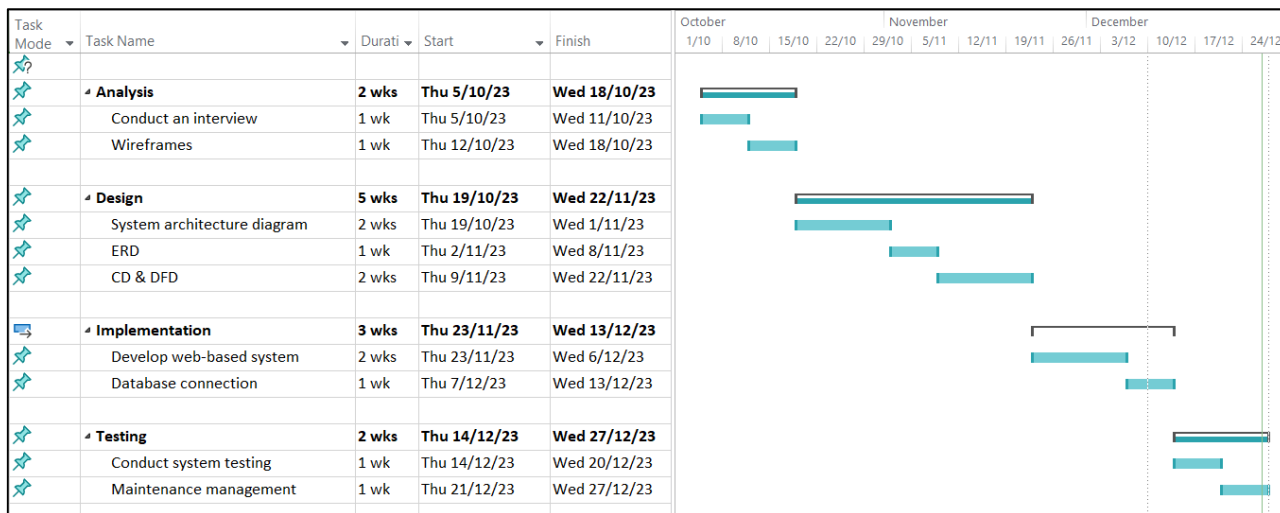


Figure A.1 Gantt Chart for the proposed system



Figure A.2 The QR code for the questionnaires

Overall Satisfaction

17. Overall, how satisfied are you with your experience using the ECS? *

Very dissatisfied Somewhat dissatisfied Neither satisfied nor dissatisfied Somewhat satisfied Very satisfied

Statement 1

18. How likely are you to recommend the ECS to others? *

Very unlikely Somewhat unlikely Neither likely nor unlikely Somewhat likely Very likely

Statement 1

19. What do you like most about the ECS? *

Enter your answer

20. What improvements would you suggest for the ECS? *

Enter your answer

Figure A.5 Likert scales on overall satisfaction section