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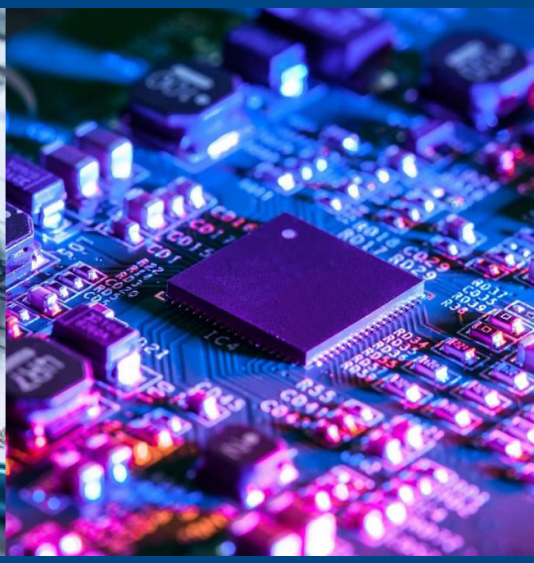

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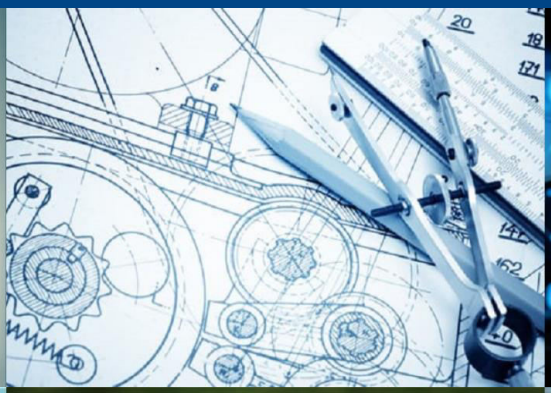

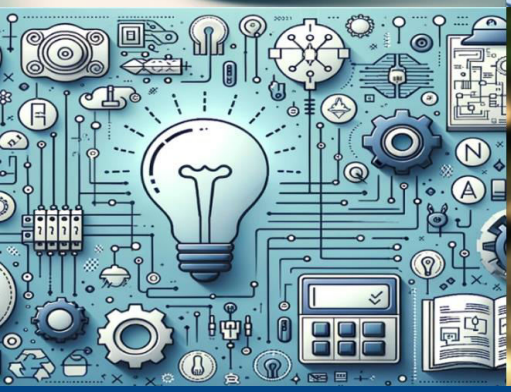

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NEMSU Assist: A Smart Chatbot for NEMSU Students

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ABSTRACT: This study developed NEMSU Assist, an AI-powered chatbot designed to improve information accessibility for students, faculty, and visitors of North Eastern Mindanao State University. The chatbot uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to provide real-time responses to user inquiries regarding admissions, courses, campus services, and academic concerns. Agile methodology and ISO/IEC 25010 standards were applied in the system's development and evaluation. Results showed that the system achieved very high ratings in functionality, usability, reliability, efficiency, maintainability, and security. The study concludes that NEMSU Assist effectively enhances digital communication and support services within the university.

KEYWORDS: Artificial Intelligence, Chatbot, Natural Language Processing, NEMSU Assist, Student Support System, ISO/IEC 25010, University Website, AI-powered Chatbot.

I. INTRODUCTION

This study focuses on the development of NEMSU Assist, a smart AI-powered chatbot designed to support students of **North Eastern Mindanao State University (NEMSU).** Many learners struggle to find the information they need on the current website because important details are scattered across multiple pages, making the browsing experience time-consuming and sometimes confusing. NEMSU Assist aims to **address** this problem by allowing students to ask questions in natural, everyday language and instantly receive clear and accurate responses. Through the integration of Artificial Intelligence (AI) and Natural Language Processing (NLP), the chatbot is designed to make information easy to access, improve navigation, and provide a faster, more personalized support experience for every NEMSU student.

Martinez-Requejo et. al (2024) stated that AI-enabled chatbots are gaining popularity in academia as they can respond to queries, train students in their studies, and prepare them for lectures, all while being available around the clock. The results of their studies indicate that the introduction of chatbots leads to **increased student satisfaction, reduced pressure on staff, and improved accessibility of school services**. **Thus,** the conclusion seems inescapable that the application of Artificial Intelligence and Natural Language Processing on university websites can contribute to a significant increase in the quality of communication and assistance with students. **In line with this,** this study asserts that the implementation of an AI-supported chatbot at NEMSU would be beneficial, as it would provide a reliable and friendly support online for the students in a quick manner.

Despite the presence of existing digital platforms, NEMSU users continue to encounter challenges in finding the information they need, primarily due to the lack of an interactive tool that can guide them or respond directly to their questions. The current website functions mainly as a passive information repository, offering no conversational assistance or personalized support. This gap shows the need for a more intelligent, accessible, and user-friendly system that can help students navigate the website more efficiently and reduce confusion or information overload.

To address this gap, the study **proposes** the development of an AI-based chatbot for the NEMSU website using Natural Language Processing technology to make the platform more interactive, responsive, and student-centered. By providing quick answers, guiding users to the right information, and remaining accessible even beyond office hours, the chatbot can reduce repetitive inquiries directed to staff and significantly improve the overall user experience. This initiative is

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important because it enhances the university's digital services, eases the workload of personnel, and creates a more convenient, supportive, and efficient online environment for the entire NEMSU community.

II. LITERATURE SURVEY

Several studies support the use of AI-powered chatbots in educational institutions. Foreign literature by Okonkwo (2021), Labadze et al. (2023), and Deng et al. (2023) emphasized that chatbots improve learning engagement, provide personalized assistance, and enhance access to information. Other studies such as Peyton (2025) and Chemnad et al. (2024) discussed the importance of accessibility, responsiveness, and efficient university services through AI systems. In the Philippines, Pimentel et al. (2024) and Agbong-Coates (2024) found that AI chatbots positively influence student engagement and personalized learning. Existing systems such as Ask Iska and IskOU, SePhi, and NEUST's chatbot request system demonstrate how universities use chatbots to improve administrative and academic services. These related studies collectively support the development of NEMSU Assist as an intelligent and accessible digital support tool.

III. METHODOLOGY / APPROACH

Research design

this study focuses on the development and evaluation of an AI-powered chatbot for the NEMSU website. The system was designed to improve accessibility, provide faster support, and deliver accurate information using Natural Language Processing (NLP). An Agile development methodology was used to allow continuous improvement through stages such as data gathering, analysis, system design, implementation, testing, and evaluation. The chatbot was also tested to ensure its usability, reliability, and overall performance before deployment.

System development approach

The System Development Life Cycle (SDLC) with an Agile Software Development approach to develop the AI-powered chatbot for the NEMSU website. The Agile methodology provided an iterative and flexible process that allowed continuous improvement of the system through user feedback and regular updates. The development process included key phases such as planning, design, development, testing, deployment, and revew.

CONCEPTUAL FRAMEWORK:

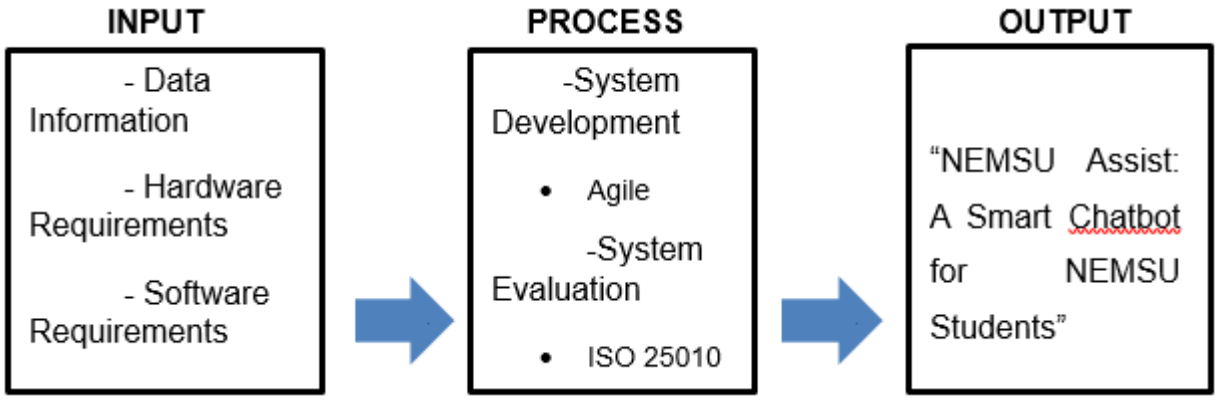

Figure 1.0 presents the Input–Process–Output (IPO) model used in developing the AI-powered chatbot for the NEMSU website.

The input stage includes gathering software, hardware, technologies, user requirements, and hosting needs. The process stage involves system analysis, front-end and back-end development, AI integration, database setup, testing, and evaluation to ensure the chatbot functions properly. The final output is an AI-powered chatbot that provides 24/7 assistance, improves accessibility, delivers quick responses, and enhances the overall digital experience for the NEMSU community.

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Figure 3.0 Agile Software Development Lifecycle

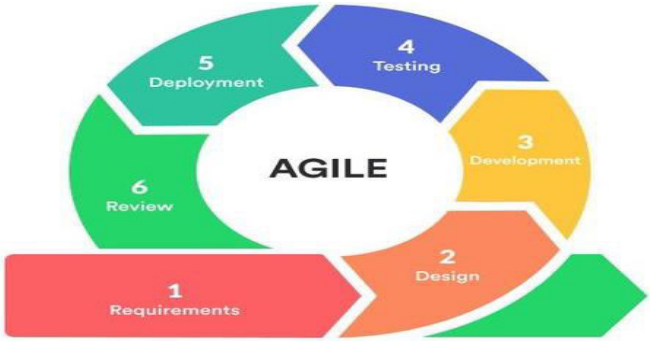

Figure 3.0 illustrates the Agile Software Development Lifecycle used in the development of the AI-powered chatbot for the NEMSU website. The Agile approach provides an interactive and iterative process that allows continuous improvement of the system throughout the development stages.

USE CASE DIAGRAM

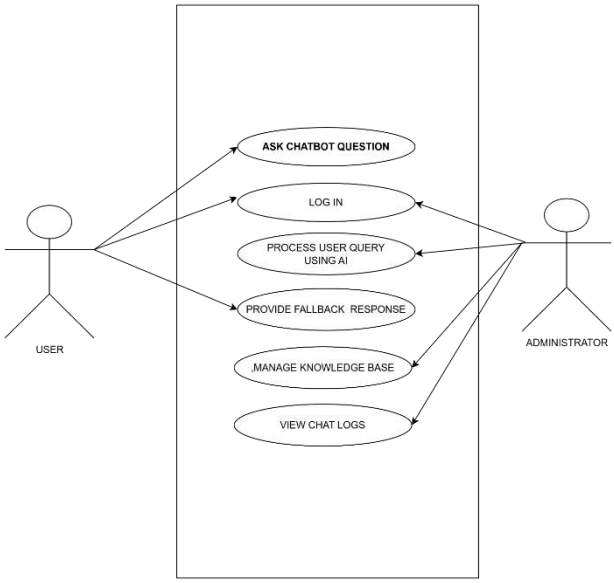

Figure 3.1 Use Case Diagram

As shown in Figure 3.1, the use case diagram illustrates the interaction between the **user, admin, and the system.** The diagram presents the primary functionalities that the actors can perform within the system. The **user can** log in to the system and submit questions through the chatbot interface. After receiving the query, the system performs the **"process user query using AI"** function to analyze the input and generate appropriate responses. Meanwhile, the Admin manages and monitors the system operations to ensure that the system functions properly. The use case diagram provides a clear visualization of how the actors interact with the system and how the system processes user requests using artificial intelligence to deliver responses efficiently.

IV. RESULTS AND DISCUSSION

The chatbot is evaluated using the ISO/IEC 25010 software quality standards, focusing on functionality, usability, reliability, responsiveness, and overall student satisfaction when interacting with NEMSU Assist.

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Interpretation of Conduct Survey

Table 4.6 Overall Summary of ISO/IEC 25010 Results

Criteria	Average Mean	Average SD	Description
Functionality	4.33	0.77	VGE
Reliability	4.28	0.66	VGE
Usability	4.33	0.62	VGE
Performance Efficiency	4.34	0.61	VGE
Maintainability	4.30	0.61	VGE
Security	4.46	0.65	VGE

Table 4.6 summarizes the overall ISO/IEC 25010 evaluation results of NEMSU Assist. All six criteria obtained average means ranging from 4.28 to 4.46, and all were interpreted as Very Great Extent, which indicates that respondents gave the system a highly favorable evaluation across all software quality dimensions. Among the criteria, security ranked highest (M = 4.46), while reliability ranked lowest (M = 4.28), though both still fall under the same very positive interpretation. Overall, the findings show that NEMSU Assist is functional, reliable, user-friendly, efficient, maintainable, and secure, making it acceptable for deployment as a student assistance chatbot.

V. CONCLUSION

Our study shows that NEMSU Assist is a helpful and reliable tool for students and faculty in accessing information more easily. It allows users to **obtain** quick and accurate answers without having to spend too much time searching or asking around. The chatbot became more effective through proper data preparation and continuous improvement, which helped it better understand user questions and provide more relevant responses. Users also found the system easy to use and convenient, especially because it is available anytime, even beyond office hours. However, while

NEMSU Assist works well for common questions, it still has some difficulty handling more complex or unclear inquiries. Because of this, it is important to continue improving the system and consider adding human support when needed. Overall, the chatbot is a valuable tool that can greatly assist the NEMSU community, especially when it is regularly updated and enhanced.

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