

ABSTRACT

The Faculty of Science and Mathematics (FSM) at Diponegoro University (UNDIP) faces challenges in meeting student expectations for responsive and accessible academic information services. Information service is a crucial need; however, conventional interaction methods are often limited by operational hours and lack flexibility in addressing the variety of student inquiries. This study aims to design and develop a web-based academic service chatbot using a hybrid approach that integrates the *Rasa Framework* as a Natural Language Understanding (NLU) system for structured dialogue management, and the Retrieval-Augmented Generation (RAG) method based on Large Language Models (LLM) to handle contextual inquiries based on SOP documents. The development methodology employed is the ICONIX Process, which includes requirement analysis, use case modeling, robustness analysis, sequence diagrams, and class diagrams. The implementation results in a web application developed using the Next.js and FastAPI *Framework*. Based on testing results from student respondents, the system has met functional requirements. These results indicate that the developed hybrid chatbot enhances service interactivity and is well-accepted by users.

Keywords : Chatbot, Hybrid, Rasa, Retrieval-Augmented Generation, Large Language Model, Web, ICONIX