

ABSTRACT

The thesis defense is the greatest challenge that causes anxiety and lack of confidence among students. This anxiety manifests as a decrease in confidence in their abilities during the examination. Therefore, this study aims to develop a thesis defense simulation system based on Large Language Model (LLM) and Retrieval Augmented Generation (RAG) that can provide a thesis defense simulation to help students prepare independently. The research focuses on developing a system capable of generating relevant and personalized questions and evaluations based on the student's thesis document. The study proposes a method that combines LLM with RAG to retrieve information from the uploaded thesis document. The system is also equipped with Text-to-Speech (TTS) and Speech-to-Text (STT) technologies to support verbal interaction. The research steps include data collection, system design, development, and testing and evaluation of the system using metrics such as answer relevancy, faithfulness, and context relevancy. The results show that the developed system can generate questions relevant to the thesis document and create a verbal discussion simulation. Testing the quality of responses generated using the LLM GPT-4o-mini shows average scores of 4.43/5 for answer relevancy, 4.73/5 for faithfulness, and 4.7/5 for context relevancy.

Keywords: *Thesis Defense Simulation, Large Language Model (LLM), Retrieval-Augmented Generation (RAG), Text-to-Speech (TTS), Speech-to-Text (STT).*