

ABSTRACT

The high number of final project proposals with similar features often leads to duplication and inefficiency in application development. To address this issue, a machine learning-based system was developed to detect semantic similarity between student final project topics. This system helps students discover relevant topics, continue existing projects, and receive automated recommendations for supervisors, reviewers, and examiners. The development process includes data collection, text preprocessing, semantic embedding using Sentence-BERT (SBERT), and similarity indexing using FAISS. The system is integrated into the existing Monitor PA web platform and implemented using a Flask backend and Laravel frontend. Evaluation was conducted using Self Retrieval Testing, Coverage Evaluation, t-SNE visualization, and runtime testing. The results demonstrate that the system provides relevant recommendations with an average response time under 200ms. This solution is expected to improve efficiency and structure in the management of student final projects within the academic environment.

Keywords: final project, similarity detection, machine learning, semantic search, Sentence-BERT, Facebook AI Similarity Search