

## ABSTRACT

Manual grading of short answer questions is a subjective and burdensome task for educators. As a solution, Automated Short Answer Grading (ASAG) systems have been developed, but reliance on reference answers remains a major obstacle, especially for the Indonesian language. This study proposes an innovative solution: an ASAG system that operates without reference answers by leveraging the generalization capabilities of meta-learning. The system uses Sentence-BERT (SBERT) models to extract semantic representations from both questions and student answers. These representations are then used to compute cosine similarity scores between text pairs, which serve as the basis for value grouping during training. A Multilayer Perceptron (MLP) model is then trained using the Reptile algorithm, a meta-learning approach that enables the model to "learn how to learn" in recognizing semantic similarity structures between student answers and the given question, rather than relying on explicit answer patterns. The performance of this approach is evaluated in comparison with conventional supervised learning methods and two different loss functions (MSE and SMAPE). Results demonstrate the clear superiority of the meta-learning approach, achieving an average SMAPE of only 6.34%, significantly lower than the 13.09% achieved by the supervised learning baseline. This study conclusively shows that the meta-learning strategy can effectively generalize for dynamic short answer grading tasks, eliminating the need for explicit reference answers.

**Keywords** : *Automated Short Answer Grading, Meta-Learning, SBERT, Reptile, SMAPE*