

**Implementasi *Adaptive Instruction* Berdasarkan Kemampuan Metakognitif  
pada AMetative dengan Algoritma *Iterative Dichotomiser 3 (ID3)***

*(Implementation of Adaptive Instruction Based on Metacognitive Ability in  
AMetative with Iterative Dichotomizer 3 (ID3) Algorithm.* Intan Sulistyaningrum  
Sakkinah, S.Pd., M.Eng. as chief counselor.

**Rizky Jein Nur Aulia**  
**Study Program of Informatic Engineering**  
**Majoring of Information Technology**  
Program Studi Teknik Informatika  
Jurusan Teknologi Informasi

***ABSTRACT***

*Metacognitive ability plays a crucial role in students' problem-solving skills and their capacity for independent learning. This research introduces an adaptive learning system that is grounded in metacognitive levels, utilizing the ID3 algorithm. Data were gathered through questionnaires and subsequently validated using Stratified k-Fold (k=5) and GridSearch optimization techniques. The findings revealed an average training accuracy of 95.66% and a validation accuracy of 96.97%, accompanied by an F1-score of 97.01%. In hold-out testing, the model attained flawless accuracy (100%) with no instances of misclassification. This system is capable of automatically modifying instructional materials in accordance with students' metacognitive levels, thereby facilitating more effective and personalized learning.*

**Key words:** *metacognitive, metacognitive instruction, HLE, adaptive instruction, ID3.*