

ANALISIS PREDIKSI KELULUSAN MAHASISWA TUGAS AKHIR FTTI UNJAYA DENGAN MENGGUNAKAN DECISION TREE

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INTISARI

Latar Belakang: Tingkat kelulusan mahasiswa menjadi indikator utama keberhasilan program studi di perguruan tinggi. Di Fakultas Teknik dan Teknologi Informasi (FTTI) Universitas Jenderal Achmad Yani Yogyakarta, keterlambatan kelulusan pada tahap tugas akhir menjadi perhatian penting karena dapat mempengaruhi akreditasi dan kualitas institusi. Oleh karena itu, diperlukan metode prediksi yang efektif untuk mengidentifikasi mahasiswa yang berisiko tidak lulus tepat waktu.

Tujuan: Penelitian ini bertujuan untuk menganalisis dan memprediksi kelulusan mahasiswa tugas akhir di FTTI UNJAYA menggunakan *Decision Tree*, dengan metode *CART* (*Classification and Regression Tree*).

Metode Penelitian: Data dikumpulkan dari mahasiswa yang sedang menempuh mata kuliah tugas akhir, dengan atribut seperti IPK, IPS, jumlah SKS, dan SKS kumulatif. Setelah melalui tahap *preprocessing*, data dibagi menjadi data pelatihan dan data pengujian. Model prediksi kemudian dibangun menggunakan algoritma *CART* dari metode *Decision Tree*, dan dievaluasi menggunakan metrik akurasi, *precision*, *recall*, serta *f1-score*.

Hasil: Hasil pengujian menunjukkan bahwa model *Decision Tree* dengan algoritma *CART* mampu memprediksi kelulusan dengan akurasi sebesar 93,62%, *precision* 93,33%, *recall* 96,55%, dan *f1-score* 94,92%.

Kesimpulan: Model prediksi kelulusan berbasis *Decision Tree* berhasil dibangun dan dapat digunakan sebagai alat bantu dalam proses pengambilan keputusan akademik, serta diimplementasikan dalam bentuk dashboard interaktif berbasis Streamlit.

Kata-kunci: *Decision Tree*, *CART*, Kelulusan, Prediksi, Data Mining.

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PREDICTION ANALYSIS OF STUDENT GRADUATION OF FINAL ASSIGNMENT FTTI UNJAYA USING DECISION TREE

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ABSTRACT

Background: Student graduation rate is a key indicator of the success of academic programs at universities. At the Faculty of Engineering and Information Technology (FTTI), Universitas Jenderal Achmad Yani Yogyakarta, delays in graduation during the final project stage are a concern, as they may affect institutional quality and accreditation. Therefore, an effective prediction method is needed to identify students at risk of not graduating on time.

Objective: This study aims to analyze and predict the graduation of final-year students at FTTI UNJAYA using the Decision Tree method, specifically the CART (Classification and Regression Tree) algorithm.

Method: Data were collected from students enrolled in the final project course, including attributes such as GPA, semester GPA, number of credits taken, and cumulative credits. After undergoing a preprocessing stage, the data were split into training and testing sets. The predictive model was then built using the CART algorithm from the Decision Tree method and evaluated using accuracy, precision, recall, and f1-score metrics.

Result: The evaluation results indicate that the Decision Tree model employing the CART algorithm achieved a prediction accuracy of 93,62%, precision of 93,33%, recall of 96,55%, and an f1-score of 94,92%.

Conclusion: The Decision Tree-based graduation prediction model was successfully developed and serves as a support tool for academic decision-making, implemented through an interactive dashboard built with Streamlit.

Keywords: Decision Tree, CART, Graduation, Prediction, Data

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