

ABSTRAK

Hafidh. 2025. sistem pendukung keputusan bimbingan konseling akademik siswa menggunakan algoritma *decision tree* C4.5 di SMP Negeri 3 Ngawi.. *Skripsi*. Program Studi Teknik Informatika, FT, Universitas PGRI Madiun. Pembimbing (I) Fatim Nugrahanti, S.T., M.T., Pembimbing (II) Sri Anardani, S.Kom., M.T.

Pengambilan keputusan dalam layanan bimbingan konseling akademik di sekolah sering kali masih bersifat subjektif dan kurang berbasis data. Penelitian ini bertujuan untuk membangun sistem pendukung keputusan bimbingan konseling akademik siswa menggunakan algoritma Decision Tree C4.5, dengan studi kasus di SMP Negeri 3 Ngawi. Sistem ini dikembangkan berbasis web menggunakan framework Laravel, dan memanfaatkan data kategorikal siswa seperti nilai rapor, tingkat kehadiran, minat belajar, dukungan orang tua, serta permasalahan pribadi sebagai input klasifikasi. Metode pengembangan perangkat lunak yang digunakan adalah waterfall, meliputi tahap analisis, desain, implementasi, pengujian, dan pemeliharaan. Model klasifikasi dibangun menggunakan algoritma C4.5 yang dilatih di Google Colab dan digunakan untuk merekomendasikan strategi bimbingan yang sesuai. Hasil pengujian menunjukkan bahwa sistem telah berjalan sesuai fungsi (Black Box Testing) dan model klasifikasi menghasilkan akurasi yang tinggi berdasarkan pengujian menggunakan classification report dan K-Fold Cross Validation. Sistem ini diharapkan dapat membantu guru BK dalam memberikan layanan yang lebih tepat, objektif, dan sistematis berdasarkan data historis siswa.

Kata Kunci: Bimbingan Konseling, *Decision Tree C4.5*, Sistem Pendukung Keputusan, SPK, *Waterfall*, Laravel

ABSTRACT

Hafidh. 2025. A decision support system for student academic guidance and counseling using the C4.5 decision tree algorithm at SMP Negeri 3 Ngawi. Thesis. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Supervisor (I) Fatim Nugrahanti, S.T., M.T., Supervisor (II) Sri Anardani, S.Kom., M.T.

Decision-making in academic guidance and counseling services in schools is often subjective and lacks data-based support. This study aims to develop a decision support system for student academic guidance and counseling using the C4.5 Decision Tree algorithm, with a case study at SMP Negeri 3 Ngawi. This web-based system was developed using the Laravel framework and utilizes student categorical data such as report card grades, attendance, learning interests, parental support, and personal problems as classification input. The software development method used is the waterfall method, encompassing the stages of analysis, design, implementation, testing, and maintenance. The classification model was built using the C4.5 algorithm trained in Google Colab and used to recommend appropriate guidance strategies. Test results showed that the system performed as intended (Black Box Testing), and the classification model produced high accuracy based on testing using classification reports and K-Fold Cross Validation. This system is expected to assist guidance and counseling teachers in providing more precise, objective, and systematic services based on historical student data.

Keywords: Guidance and Counseling, Decision Tree C4.5, Decision Support System, DSS, Waterfall, Laravel