

ABSTRAK

IMPLEMENTASI *HYBRID WEIGHTING SYSTEM* BERBASIS INTEGRASI *ROC, RANDOM FOREST, DAN TOPSIS* PADA SISTEM PENDUKUNG KEPUTUSAN PEMILIHAN PESERTA MAGANG TERBAIK DI PT WESCLIC NEOTECH INDONESIA

Luthfi Emillulfata

H1D022017

Pemilihan peserta magang terbaik sering kali menghadapi kendala subjektivitas dan pemanfaatan data historis yang kurang optimal. Penelitian ini membangun sistem pendukung keputusan berbasis *website* di PT Wescllic Neotech Indonesia menggunakan metode *hybrid weighting* yang mengintegrasikan *Rank Order Centroid* (ROC) dan *random forest*. Sistem dikembangkan dengan *framework* Laravel dan FastAPI untuk menghubungkan pengelolaan data dengan pemrosesan *machine learning*. Metode ROC digunakan untuk menentukan bobot kriteria berdasarkan prioritas kebijakan perusahaan, sementara algoritma *random forest* mengekstraksi bobot objektif melalui nilai *feature importance* dengan tingkat akurasi model mencapai 94,44%. Bobot final yang dihasilkan kemudian diproses menggunakan metode TOPSIS untuk menentukan perankingan akhir peserta secara presisi. Hasil pengujian *black box* menunjukkan seluruh fitur fungsional berjalan sesuai spesifikasi. Implementasi sistem ini memberikan solusi bagi divisi HRD dalam menghasilkan rekomendasi pemilihan peserta magang terbaik yang transparan, objektif, dan terukur berdasarkan kombinasi kebijakan manajemen serta pola data aktual.

Kata Kunci: FastAPI, *Hybrid Weighting*, Laravel, *Random Forest*, *Rank Order Centroid* (ROC), Sistem Pendukung Keputusan, TOPSIS.

ABSTRACT

IMPLEMENTATION OF A HYBRID WEIGHTING SYSTEM BASED ON THE INTEGRATION OF ROC, RANDOM FOREST, AND TOPSIS IN A DECISION SUPPORT SYSTEM FOR SELECTING THE BEST INTERNS AT PT WESCLIC NEOTECH INDONESIA

Luthfi Emillulfata

H1D022017

The selection of the best interns often faces constraints of subjectivity and suboptimal utilization of historical data. This research develops a web-based decision support system at PT Wescllic Neotech Indonesia using a hybrid weighting method that integrates Rank Order Centroid (ROC) and random forest. The system is developed using the Laravel and FastAPI frameworks to connect data management with machine learning processing. The ROC method is utilized to determine criteria weights based on company policy priorities, while the random forest algorithm extracts objective weights through feature importance values, achieving a model accuracy rate of 94.44%. The generated final weights are subsequently processed using the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method to precisely determine the final ranking of the participants. Black-box testing results demonstrate that all functional features operate according to the specifications. The implementation of this system provides a solution for the HR division to generate transparent, objective, and measurable recommendations for selecting the best interns, based on a combination of management policies and actual data patterns.

Keywords: *Decision Support System, FastAPI, Hybrid Weighting, Laravel, Random Forest, Rank Order Centroid (ROC), TOPSIS.*