ABSTRAK

Penelitian ini bertujuan untuk memprediksi risiko attrition karyawan pada PT Inti Ganda Perdana menggunakan pendekatan machine learning guna mengatasi tingginya tingkat attrition yang berdampak pada produktivitas dan stabilitas organisasi. Metode yang digunakan adalah CRISP-DM yang meliputi tahapan business understanding, data understanding, data preparation, modeling, evaluation, dan deployment. Dataset yang digunakan merupakan data karyawan dengan variabel seperti usia, gaji, lembur, kepuasan kerja, dan masa kerja. Algoritma yang diterapkan adalah Logistic Regression dan Random Forest untuk melakukan klasifikasi risiko attrition. Hasil penelitian menunjukkan bahwa Random Forest memiliki performa yang lebih unggul dibandingkan Logistic Regression berdasarkan metrik accuracy, precision, recall, dan F1-score, dengan kemampuan yang lebih baik dalam mendeteksi karyawan berisiko keluar. Selain itu, variabel overtime, job satisfaction, work life balance, dan years at company terbukti berpengaruh signifikan terhadap attrition. Dengan demikian, model yang dihasilkan dapat digunakan sebagai sistem pendukung keputusan bagi pihak Human Resource dalam melakukan deteksi dini dan strategi retensi karyawan secara lebih efektif.

Kata Kunci: attrition, human resource, machine learning, prediksi, random forest

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ABSTRACT

This study aims to predict employee attrition risk at PT Inti Ganda Perdana using a machine learning approach to address the high attrition rate that affects productivity and organizational stability. The research adopts the CRISP-DM methodology, which includes business understanding, data understanding, data preparation, modeling, evaluation, and deployment stages. The dataset consists of employee data with variables such as age, salary, overtime, job satisfaction, and years at company. Logistic Regression and Random Forest algorithms were applied to classify attrition risk. The results indicate that the Random Forest model outperforms Logistic Regression based on accuracy, precision, recall, and F1-score, demonstrating a better ability to detect employees at risk of leaving. Furthermore, variables such as overtime, job satisfaction, work-life balance, and years at company significantly influence attrition risk. Therefore, the proposed model can be utilized as a decision support tool for Human Resource management to enable early detection and implement more effective employee retention strategies.

Keywords: *attrition, human resource, machine learning, prediction, random forest*

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