

INTISARI

ANALISIS ALGORITMA NAIVE BAYES CLASSIFIER, SUPPORT VECTOR MACHINE, DAN DECISION TREE DALAM KLASIFIKASI CURAH HUJAN DENGAN MEMANFAATKAN TEORI EVALUASI CONFUSION MATRIX

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Iklim di Indonesia terkadang tidak stabil untuk saat ini. Perubahan iklim yang tidak stabil ini akan menyebabkan kesulitan saat memprediksi kondisi curah hujan. Dengan perubahan iklim yang tidak stabil, maka diperlukannya algoritma yang membantu khalayak dalam memprediksi kondisi curah hujan dengan menggunakan data curah hujan, suhu, kelembaban, lamanya penyinaran matahari, dan kecepatan angin dari portal online BMKG Stasiun Klimatologi Daerah Istimewa Yogyakarta. Penelitian ini bertujuan untuk memperoleh hasil analisis perbandingan dari dataset BMKG dengan tolak ukur hasil sistem klasifikasi menggunakan algoritma *Naïve Bayes Classifier* (NBC), *Support Vector Machine* (SVM), dan *Decision Tree* serta evaluasi akurasi dengan memanfaatkan teori *Confusion Matrix*.

Proses penelitian menggunakan data iklim harian dari BMKG Stasiun Klimatologi Daerah Istimewa Yogyakarta dengan rentang waktu 2018 – 2023. Dataset tersebut lalu diproses dengan tiga algoritma yang berbeda yaitu *Naive Bayes Classifier* (NBC), *Support Vector Machine* (SVM), dan *Decision Tree*. *Naïve Bayes Classifier* memiliki akurasi tertinggi 0.69, lalu *Support Vector Machine* memiliki akurasi 0.65, dan *Decision Tree* dengan akurasi 0.57. Sehingga, *Support Vector Machine* (SVM) memiliki performa terbaik dengan akurasi tertinggi, disusul dengan *Support Vector Machine* (SVM) kemudian *Decision Tree*. Selain itu, *Naïve Bayes Classifier* (NBC) dan *Support Vector Machine* (SVM) menunjukkan penurunan *overfitting* seiring bertambahnya data pelatihan sehingga model tidak lagi mengalami *overfitting*, sedangkan *Decision Tree* menunjukkan performa yang buruk dalam hal generalisasi.

Kata kunci: Klasifikasi, Curah Hujan, Suhu, Kelembaban, *Naive Bayes Classifier* (NBC), *Support Vector Machine* (SVM), *Decision Tree*, *Confusion Matrix*

ABSTRACT

ANALYSIS OF NAIVE BAYES CLASSIFIER, SUPPORT VECTOR MACHINE AND DECISION TREE ALGORITHM IN RAINFALL CLASSIFICATION USING CONFUSION MATRIX EVALUATION THEORY

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The climate in Indonesia is sometimes unstable to this day. This unstable climate change will cause difficulties in predicting rainfall conditions. With unstable climate change, an algorithm is needed that helps the public predict rainfall conditions using rainfall, temperature, humidity, duration of sunlight and wind speed data from the BMKG Yogyakarta Special Region Climatology Station online portal. This research aims to obtain analysis results from the BMKG dataset with benchmark results of the classification system using the Naïve Bayes Classifier (NBC), Support Vector Machine (SVM), and Decision Tree algorithms as well as evaluating accuracy using Confusion Matrix theory.

The research process uses daily climate data from the BMKG Yogyakarta Special Region Climatology Station with a time span of 2018 – 2023. The dataset is then processed with three different algorithms, namely Naive Bayes Classifier (NBC), Support Vector Machine (SVM), and Decision Tree. Naïve Bayes Classifier has the highest accuracy of 0.69, then Support Vector Machine has an accuracy of 0.65, and Decision Tree has an accuracy of 0.57. So, Support Vector Machine (SVM) has the best performance with the highest accuracy, followed by Support Vector Machine (SVM) then Decision Tree. In addition, Naïve Bayes Classifier (NBC) and Support Vector Machine (SVM) show a decrease in overfitting as the training data increases so that the model no longer experiences overfitting, while Decision Tree shows poor performance in terms of generalization.

Keywords: *Classification, Rainfall, Temperature, Humidity, Naive Bayes Classifier (NBC), Support Vector Machine (SVM), Decision Tree, Confusion Matrix*