

## ABSTRAK

Deteksi dini kanker paru-paru berperan penting dalam meningkatkan peluang kesembuhan pasien. Penelitian ini bertujuan untuk membandingkan hasil klasifikasi antara dua metode, yaitu *Support Vector Machine* (SVM) dan *Decision Tree* (DT), dalam mendeteksi kanker paru-paru. Kedua metode ini dipilih karena pada penelitian sebelumnya menunjukkan akurasi yang tinggi, sehingga perbandingan dilakukan untuk menentukan model klasifikasi yang lebih optimal. Dalam penelitian ini, digunakan teknik klasifikasi, yaitu metode pengelompokan data dengan karakteristik serupa ke dalam beberapa kelompok. Dua algoritma yang dibandingkan adalah *Support Vector Machine* dan *Decision Tree*. *Support Vector Machine* dikenal dengan kemampuannya memisahkan kelas dengan *margin* maksimal, sedangkan *Decision Tree* bekerja dengan membagi data menjadi beberapa subset berdasarkan nilai atribut dan menghasilkan struktur pohon yang mudah dipahami. Beberapa tahap *preprocessing* diterapkan untuk mempersiapkan data sebelum diklasifikasikan. Semua kombinasi tahapan *preprocessing* diterapkan pada kedua metode klasifikasi untuk memastikan dataset yang digunakan tetap sama. Pembagian data latih dan data uji dilakukan dengan teknik *cross-validation* sebanyak 10 *fold*, serta evaluasi performa menggunakan akurasi, presisi, dan *recall* berdasarkan *confusion matrix*. Hasil penelitian menunjukkan bahwa metode *Support Vector Machine* mencapai akurasi sebesar 85%, presisi sebesar 87%, dan *recall* sebesar 96%. *Decision Tree* memperoleh akurasi 82%, presisi 89%, dan *recall* 91%. Presisi Temuan ini mengindikasikan bahwa dalam penelitian ini, *Support Vector Machine* memberikan performa yang lebih baik dibandingkan *Decision Tree*.

**Kata kunci:** *Support Vector Machine, Decision Tree, Klasifikasi, Kanker Paru*

## **ABSTRACT**

*Early detection of lung cancer plays a crucial role in increasing a patient's chances of recovery. This study aims to compare the classification results of two methods, namely Support Vector Machine (SVM) and Decision Tree (DT), in detecting lung cancer. These two methods were selected because previous studies have demonstrated their high accuracy, making this comparison essential to determine the more optimal classification model. In this research, classification techniques are employed, which involve grouping data with similar characteristics into several categories. The two algorithms being compared—Support Vector Machine and Decision Tree—have distinct strengths. Support Vector Machine is known for its ability to separate classes with a maximum margin, while Decision Tree works by dividing data into subsets based on attribute values, producing an interpretable tree-like structure. Several preprocessing steps were applied to prepare the data before classification. All preprocessing steps were consistently applied to both classification methods to ensure the dataset remained the same. The training and testing data were split using 10-fold cross-validation, and performance was evaluated using accuracy, precision, and recall metrics based on the confusion matrix. The results showed that the Support Vector Machine method achieved an accuracy of 85%, precision of 87%, and recall of 96%. Meanwhile, the Decision Tree method obtained an accuracy of 82%, precision of 89%, and recall of 91%. These findings indicate that, in this study, the Support Vector Machine outperformed the Decision Tree in terms of classification performance*

**Keyword:** Support Vector Machine, Decision Tree. Clasification, Lung Cancer