

## ABSTRAK

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### **PERBANDINGAN TINGKAT AKURASI *K-NEAREST NEIGHBOR* DAN *EXTREME LEARNING MACHINE* DALAM DIAGNOSIS PENYAKIT TUMOR OTAK**

(xiii + 183 halaman; 14 gambar; 11 tabel; 129 lampiran)

Tumor otak merupakan penyakit yang timbul akibat tumbuhnya sel-sel abnormal pada otak, yang dapat mengganggu fungsi kerja otak. Tumor otak memiliki dua jenis, yaitu tumor otak primer, dimana pertumbuhan sel abnormal di otak dan tumor otak sekunder, dimana pertumbuhan sel abnormal berasal dari organ lain yang menyebar ke otak. Tumor otak stadium awal, seringkali tidak terdeteksi keberadaan, sehingga ketika sudah diketahui keberadaannya, sudah memasuki stadium tinggi. Oleh karena itu, pentingnya pencegahan atau deteksi awal terhadap tumor otak. Salah satu cara pencegahan adalah implementasi *machine learning*. Penelitian ini menyajikan perbandingan tingkat akurasi *K-Nearest Neighbor* (KNN) dan *Extreme Learning Machine* (ELM) dalam diagnosis penyakit tumor otak. *K-Nearest Neighbor* merupakan algoritma *supervised learning* yang mengklasifikasikan *instance* baru berdasarkan mayoritas dari *k*-tetangga. *Extreme Learning Machine* adalah algoritma *feedforward neural network* yang memiliki 1 lapisan tersembunyi untuk menentukan nilai beban *input* dan *output*. Hasil penelitian menunjukkan bahwa *Extreme Learning Machine* lebih unggul dalam diagnosis penyakit tumor otak dengan tingkat akurasi 97.3% dibandingkan *K-Nearest Neighbor* dengan tingkat akurasi 81.5%.

**Kata kunci:** Tumor Otak, *Machine Learning*, *K-Nearest Neighbor*, *Extreme Learning Machine*

Referensi: 24 (2018-2022)

## **ABSTRACT**

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### **COMPARISON OF THE ACCURACY LEVEL OF K-NEAREST NEIGHBOR AND EXTREME LEARNING MACHINE IN DIAGNOSIS OF BRAIN TUMORS**

*(xiii + 183 pages; 14 figures; 11 tables; 129 appendices)*

*Brain tumor is a disease that emerge due to the growth of abnormal cells in the brain, which can interfere with the brain function. There are two types of brain tumors, first, primary brain tumors, where the abnormal cells grow in the brain, second, secondary brain tumors, where the abnormal cells growth originates from other organs that spread to the brain. Early-stage brain tumors are often not detected, so when they are known to exist, they have entered a high stage. Therefore, the importance of prevention or early detection of brain tumors is crucial. One way of prevention is the implementation of machine learning. This study presents a comparison of the accuracy of K-Nearest Neighbor (KNN) and Extreme Learning Machine (ELM) in the diagnosis of brain tumors. K-Nearest Neighbor is a supervised learning algorithm that classifies new instances based on the majority of k-neighbors. Extreme Learning Machine is a feedforward neural network algorithm that has one hidden layer to determine the input and output load values. The results showed that the extreme learning machine was superior in diagnosing brain tumors with an accuracy rate of 97.3% compared to k-nearest neighbor with an accuracy rate of 81.5%.*

**Keywords:** *Brain Tumor, Machine Learning, K-Nearest Neighbor, Extreme Learning Machine*

**References:** 24 (2018-2022)