## *ORAL PRESENTATION*

# Classifcation of Benign and Malignant Tumors by Machine Learning Methods Using Mri Images of the Brain

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## Abstract

Brain tumor is one of the leading causes of human deaths in recent years. Tumors that develop due to the deterioration of cells in the brain are divided into two groups as benign and malignant tumors. Determining the type of this tumor by the specialist physicians is an important factor for appropriate treatment. Evaluating magnetic resonance (MRI) images, obtaining pathological results, and deciding the treatment method is a long process for the diagnosis of malignant tumor-induced disease. In this study, brain tumor types are classified with machine learning methods to minimize the diagnosis process and speed up the treatment process. Dataset obtained from Kaggle and used in the study; The mean size of the tumor in the brain MRI images taken from people includes variance, standard deviation, entropy, distortion value, pressure value, contrast, energy, ASM, homogeneity, difference, correlation, and coarseness values. A total of 3762 data sets are categorized by experts as good or malignant. In the experiments, the data is divided by 5-fold cross-verification. This data is classified and compared with 30 different machine learning algorithms. The best result is achieved with a three-layer artificial neural network with 98.95% classification accuracy. When the results were examined, 2058 of 2079 malignant tumors were classified correctly, 21 of them were classified incorrectly, with an accuracy rate of 98.98%. Of 1683 benign data, 1665 were correctly classified and 18 were incorrectly classified with a rate of 98.93%. According to the results obtained, it is evaluated that the classification methods used will help experts with high accuracy in the detection of benign and malignant brain tumors.

**Keywords:** Brain Tumor, Machine Learning, Classification.