

## Introduction

The main goal of data mining is to discover new patterns in data and to interpret them so that meaningful and useful information are provided for the users. Data mining is being used for over a decade in many different fields and while it was initially put to use in the medical field to identify financial fraud, it was increasingly adopted in clinical areas as well. In medical sciences, a large amount of data is obtained during the processes of health care and treatment such that traditional methods cannot handle them. Thus, data mining techniques are of great interest in medical fields.

Nowadays, spread of various diseases is increasing. Also, diagnosis and treatment of diseases are becoming more difficult and complex. Among such diseases, multiple sclerosis (MS) is of particular attention. MS is a type of autoimmune disorder of central nerve system, and manifests itself via several signs and symptoms. As the number of MS patients is increasing, more accurate diagnosis procedures are in demand. Unfortunately, there is no universal diagnosis or rejection criteria and none of the available tests can firmly identify the disease. MS disease consists of four different types, each of which has signs, symptoms and complication of its own. The main issue in diagnosing MS is that a

single or even several medical tests over a short time span is not sufficient and several months or years are required for a physician to diagnose MS.

## Aim

Regarding the importance and difficulty of diagnosis in primary stages, this article aims to propose a diagnosing approach by data mining for diagnosing the type of MS. The approach has been previously utilized for diagnosis types of cancers and diabetes and obtained effective and accurate results.

## Materials & Methods

Data mining involves the use of tools include techniques, statistical models, mathematical algorithms, and machine learning methods for data analysis. Among them, data classification methods can be mentioned. There are different methods for data classifying. In this article we have used Support vector machine (SVM) and Naïve Bayes. Also, STATISTICA software used for classification in this research. The overall processes shown in figure 1.

## Results

For considered statistical dataset, including 148 samples with 12 main attributes for each of them, the results indicated that the SVM and Naïve Bayes classification can diagnosis the types of MS up to 77% and 30%, respectively. In this research the

excellence criteria of the methods is accuracy of prediction.

## Conclusion

According to the complexity of medical diagnosis of this disease, this study aimed to present a new approach for a more definitive diagnosis of this disease, so the importance of the achieved results is notable. Certainly, this diagnosis is a good guidance beside physician's and doctor's knowledge to diagnose the disease more accurate and quick for starting treatment. At least 30 percent diagnosing the type -which has been achieved in this paper-seems a remarkable value for a disease which has four different types with different symptoms and in medical science time should inevitably pass by for an effective diagnosis.

## Graphs

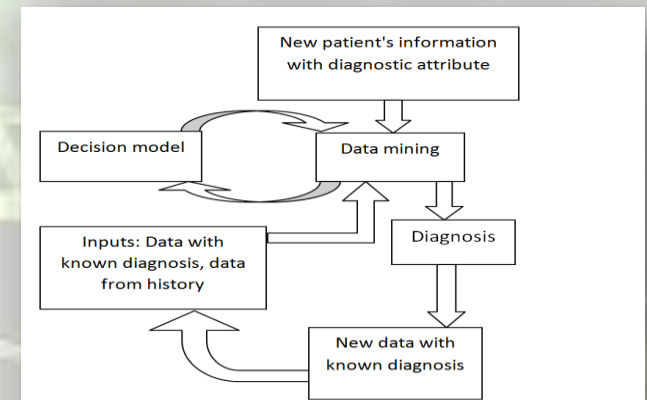


Fig. 1. The processes of classification and diagnosing the type of disease