An Overview of Machine Learning Techniques Used in Primary Care

Darius TURCIAN* and Vasile STOICU-TIVADAR

Politehnica University Timişoara, Department of Automation and Applied Informatics, Timişoara, Romania.
E-mails: darius.turcian@upt.ro; vasile.stoicu-tivadar@aut.upt.ro

* Author to whom correspondence should be addressed

Abstract

Machine learning is a branch of artificial intelligence that is increasingly used in medicine and is an important solution for digitizing various medical processes. Machine Learning techniques together with Data Mining and Big Data Analytics are used to examine and deduct meaningful information from multivariate datasets. Their common goal is to discover hidden patterns, unknown correlations, and other useful information for making better decisions. In recent years, developments of various systems in primary care that use machine learning techniques, have simplified, made the work of doctors easier, and made possible more accurate data analysis. In this paper, we gave an overview of machine learning techniques and models, the challenges of processing, handling big data, and their applications in different support systems in primary care or telemedicine and we have also given a critical reply to their use. We identified primary diagnosis systems, systems that determine the priority of patients for treatment for COVID-19 or gives treatment and drugs information online. These systems use Artificial Neural Networks (ANN), Multinomial Naive Bayes, Complement Naive Bayes, Random Forest, or Convolutional Neural Network (CNN) models and classification methods such as Decision Tree, Support Vector Machine, Logistic Regression Classifier, Naïve Bayes, and Random Forest Classifier and also Data Mining or Big Data Analysis. Compared to the analyzed data, the best results were obtained by the systems that use CNN and ANN models with an accuracy of over 80%.

Keywords: Machine Learning; Big Data; Data Mining; Primary Care

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