LITERATURE SURVEY

DOMAIN:DATA SCIENCE

Early Detection of Chronic Kidney disease using Machine Learning

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1)Alloghani, M., Al-Jumeily, D., Hussain, A., Liatsis, P., Aljaaf, A.J. (2020). Performance-Based Prediction of Chronic Kidney Disease Using Machine Learning for High-Risk Cardiovascular Disease Patients,2020.

In this work, a retrospective electronic medical database on chronic kidney disease was analyzed using 12 supervised machine learning methods. The least accurate algorithms among those considered were CN2 rule induction and decision tree boosted decision tree. However, support vector machines (Radial Basis Function and Polynomial) and neural networks (logistic and stochastic gradient descent) exhibited very good accuracy and efficiency. The Polynomial Support Vector Machine approach had the highest efficiency (93.4%) and classification accuracy (91.7%). The model suggested 253 2-dimensional combinations of characteristics with a history of vascular illnesses and smoking as the most influential factors. The additional combinations may yield data that can be utilized to anticipate or identify chronic renal disease.

2)P. Ghosh, F. M. Javed Mehedi Shamrat, S. Shultana, S. Afrin, A. A. Anjum and A. A. Khan, "Optimization of Prediction Method of Chronic Kidney Disease Using Machine Learning Algorithm," 2020.

This paper conveys extremely accurate prediction outcomes, the complete study has been implemented based on four trustworthy approaches: Support Vector Machine (henceforth SVM), AdaBoost (henceforth AB), Linear Discriminant Analysis (henceforth LDA), and Gradient Boosting (henceforth GB). These algorithms are used using a dataset from the UCI machine learning repository that is available online. Gradient Boosting (GB) Classifiers produce results with a predictably high accuracy of roughly 99.80%. Later, several performance evaluation measures were also displayed to demonstrate the right results. Finally, based on these benchmarks, the most effective and optimized algorithms for the requested job can be chosen.

3. Makino, Masaki, et al. "Artificial intelligence predicts the progression of diabetic kidney disease using big data machine learning." Scientific reports 9.1 (2019): 1-9.

Medical clinical judgment is anticipated to be supported by artificial intelligence (AI). Based on the electronic medical records (EMR) of 64,059 diabetes patients, we developed a new predictive model for diabetic kidney disorders (DKD) utilizing AI, processing natural language and longitudinal data using big data machine learning. Using a convolutional autoencoder, this model retrieved raw features from the preceding six months as the reference period and chose 24 factors to uncover time series patterns linked to the six-month DKD aggravation. Using logistic regression analysis, AI created the predictive model with 3,073 features, including time series data. DKD aggravation may be predicted by AI with 71% accuracy. In addition, over a 10-year period (N = 2,900), the group with DKD aggravation experienced a considerably higher incidence of hemodialysis than the non-aggravation group. This new AI predictive model may help with more precise and effective intervention to minimize hemodialysis by detecting DKD progression.

4. S.Revathy, B.Bharathi, P.Jeyanthi, M.Ramesh. "Chronic Kidney Disease Prediction using Machine Learning Models". International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-9 Issue-1, October 2019

Data mining and machine learning are important in this area of bioscience. Chronic Kidney Disease (CKD) is a disorder in which the kidneys get damaged and are unable to filter blood as they should. CKD can be caused by a family history of renal disease or failure, excessive blood pressure, or type 2 diabetes.This is long-term kidney injury that has the potential to worsen over time. This study demonstrates a variety of machine learning strategies used for CKD prediction. This research predicts CKD using data preprocessing, data transformation, and several classifiers, and it also presents the optimal CKD prediction framework. The outcomes of the framework shows promising early findings of better prediction stage of chronic kidney disease.

5. Gupta, Deepa, Sangita Khare, and Ashish Aggarwal. "A method to predict diagnostic codes for chronic diseases using machine learning techniques." 2016 International Conference on Computing, Communication and Automation (ICCCA). IEEE, 2016.

The simplest definition of healthcare is the diagnosis, prevention, and treatment of any damage by a medical professional. It is essential to the society's ability to provide a high standard of living. How to deliver better service using less expensive but therapeutically similar alternatives is the main concern. This goal is accomplished with the aid of machine learning techniques (ML). There are many different types of data in the healthcare industry, including clinical, claims, drug, and hospital data. In order to analyze 11 chronic diseases such as kidney disease, osteoporosis, arthritis, etc. utilizing claims data, this article focuses on clinical and claims data. ML approaches are used to investigate the relationship between chronic diseases and the relevant diagnostic tests. Various diagnostics for each chronic condition are effectively assessed, taking into account the clinical relevance.