
Prediction Of Diabetes Induced Complications Using Different Machine Learning Algorithms

Medical Science has advanced many fold in recent decades. Contribution of science, hard work from researchers and advanced technology has made it possible to detect various diseases in their initial stages. Courtesy to Genetic Engineering, scientists can actually predict if a child is going to have any genetic diseases even before birth. Incredible breakthroughs has been made in the fields of medicine which has made it possible to cure many terminal diseases. Doctors has found various new aspects in the field of Diabetes in past years.

Many research papers have been published on which factors assist Diabetes development more. Furthermore, numerous researches have been conducted to find impact of Diabetes on health and what type of complications it can cause. Doctors have conducted tests on fixed set of people and has found out that diabetes can induce Nephropathy, Neuropathy, Retinopathy and Cardiovascular diseases in the long run. However, most medical researches require high end lab facilities, funding, volunteers and above all, time. On the other hand, Artificial Intelligence is becoming more accurate in pattern recognition and predictions. Recent development in Neural Network systems has made it even easier to teach a system how to solve a problem; there are many AI bots that can beat humans in games like chess, go, checkers etc.

In July 2018 an AI system beat 15 Chinese doctors in a tumor detection competition and this bot is not the first one to do such a thing. Machine learning is the branch of AI that has successfully been used to generate predictive models for stock markets, weather condition, traffic condition, suitable habitat detection and many more. Nowadays, embedded pipeline of machine learning based algorithms is being used to predict onset of various diseases. In it is described how the onset of diseases like cancer, mental health and coronary diseases scientists are applying predictive algorithms and the accuracy of these models are satisfactory. Abundance of machine learning models exist that can diagnosis if a person has diabetes or is prone to develop diabetes. However, models that can predict onset of diabetes induced health complications is very rare.

One such model used data mining pipeline to predict T2DM related complications using electronic health record data. In author Dagliati (2018) predicted complications such as Neuropathy, Nephropathy and Retinopathy with an accuracy of 0.83. The researchers had a complete dataset and they used very few features to conduct the research which reduced complexity of the model. Another notable work done by Cho in 2008 explains a model which used visualization and feature selection to predict diabetic Nephropathy.

Apart from the above mentioned work, there is almost no significant research that has directly addressed how machine learning can help predict T2DM induced health complications. Nonetheless , it is possible to develop such model that can accurately predict onset of diabetes related complications. Machine learning is an asset that has the ability to help doctors overcome their limitations and improve diseases diagnosis and prediction systems.