

Chapter 7

An Improved Deep Learning Algorithm for Diabetes Prediction

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ABSTRACT

This chapter introduces the novel approach in deep learning for diabetes prediction. The related work described the various ML algorithms in the field of diabetic prediction that has been used for early detection and post examination of the diabetic prediction. It proposed the Jaya-Tree algorithm, which is updated as per the existing random forest algorithm, and it is used to classify the two parameters named as the 'Jaya' and 'Apajaya'. The results described that Pima Indian diabetes dataset 2020 (PIS) predicts diabetes and obtained 97% accuracy.

INTRODUCTION

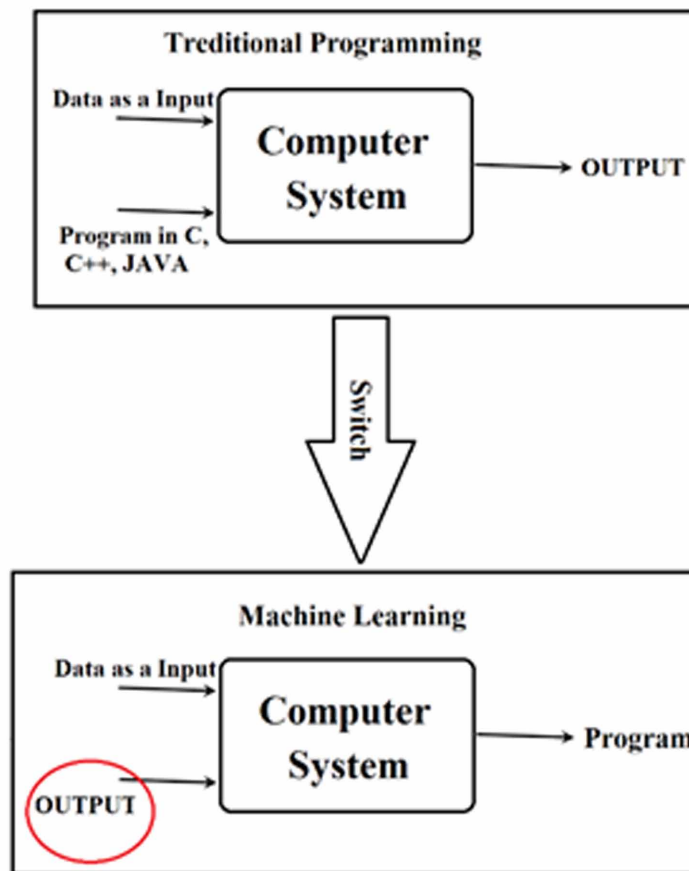
The healthcare industry manufactured the health care products and services to the patients for the treatment and rehabilitation. Diabetes is a disease that affects blood glucose levels or blood sugar levels are too high (Mujumdar, A., & Vaidehi, V., 2019), there can be a lot of factors that can contribute to the risk to detect the diabetes and prevention in the early stage of life (Mercaldo, F., et al., 2017). Genetics of the human body and family history are some of the reasons to get the disease of diabetes (Kavakiotis, I., et al., 2017). Machine learning and deep learning (ML&DL) algorithms build a solution for diabetes,

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ML and DL read the sample datasets, known as “training data”, in order to make predictions, these algorithms are being explicitly programmed (Sai, P.M.S., and Anuradha, G., 2020) using these algorithms can predict diabetes (Soumya, D and Srilatha, B., 2011).

Presently traditional programming shifted to machine learning, as per traditional programming, program and data as the input and produce the output, in Machine Learning dataset and output as the input and produce the program as the output (Mujumdar, A., & Vaidehi, V., 2019). In ML performs the automates analytical model and building the model as shown in Figure 1. It is kind of AI to identify patterns and make decisions without human interactions.

Figure 1. Traditional program switched to machine learning (Mercaldo, F., et al., 2017).



The diabetes prediction problem using machine learning algorithms with respect to economic, technical, legal, and scheduling considerations (Mercaldo, F., et al., 2017). Basetty Mallikarjuna, et al., (2020b) used deep neural networks and implemented a novel approach for gait identification. ML and DL focuses on the development of computer programs reads the dataset as input. Machine learning is divided in supervised learning and unsupervised learning (Papatheodorou, K., et al 2015). Basetty, M.,

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