INDIVIDUAL MEDICINE APPLICATION TO SOLVING CANCER USING AI

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Abstract-- Artificial intelligence to Solving Cancer Problems using AI algorithms.. In order to use AI algorithms in solving Individual Medicine problems such as; disease detection or prediction, accurate disease diagnosis, and treatment optimization, the choice of the algorithm influenced by its ability and applicability matters. This paper reviews the application support vector machines (SVM).The fuzzy logic in solving Individual medicine problems, and shows that the obtained results meet expectations. Also, the achievement from the previous studies encourages developers and researchers to use these algorithms in solving Medical and Individual Medicine problems.

I. INTRODUCTION

It is always a surprising problem seeing a drug work for some people and be less effective on others, or causing side effects in another. Another problem is the question of why some people develop some diseases e.g. cancers, while others do not. Genetic make-up and other differential factors such as age; lifestyle could be reasons for these problems. As such, believes medicine should approach each patient's illness as unique, with medication tailored to the person's history and biology. This approach to medical practice is known as Personalized or Precision Medicine. Patients with same diagnostics result must not be treated the same way; they can receive different treatment in order to achieve efficient treatment as illustrated in Fig. 1. Personalized medicine as a branch or extension of Medical Sciences uses practice and medical decisions to deliver customized healthcare service to patients. The major role of personalized medicine as posited by is to predict the possibility of an individual developing a disease, achieve accurate diagnosis, and optimize the best treatment available.

This is accomplished with the help of genetic information, which is used as part of the baseline data in tailoring or customizing medical treatment or administration. But the majority of replicable findings do not pinpoint common genes underlying susceptibility or protection from disease; instead, current understanding centers primarily on rare genetic variants, although a number of common variants have furthered understanding as well. The field of medicine has significantly grown over the years and emphasis is put on considering the possibility of preventing diseases by the use of modern technologies to find out the possibility of person having a disease and giving the person treatments (maybe drugs) to control the occurrence of the foreseen disease. Also with the use of technology, clinical personnel (i.e. doctors & pharmacist) can deliver a very much efficient healthcare service as opposed to traditional techniques [3].

The use of Artificial Intelligence techniques in setting up or building personalized medicine is important in terms of precision and accuracy of disease discovery, treatment, and drug administration. The control of adverse drug reactions and enzymes metabolism which results in some people having issues eliminating drugs from their bodies, hence leading to overdose; while others eliminate the drug from the body before it gets the chance to work [4]. The use of computers in hospitals and clinics to record medical activities or use of electronic health record (EHR) systems nowadays provides medical knowledge and data that can be used as a benchmark to enhance medical service delivery.
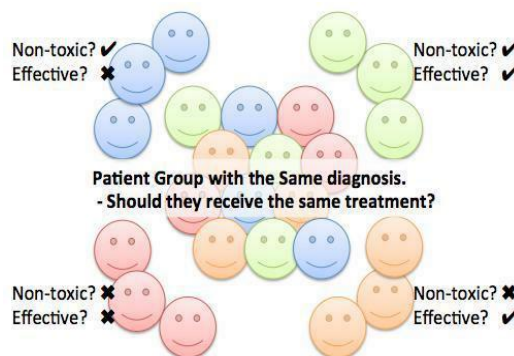

Fig. 1. Diagnosis and treatment of patients group [5].

II. AI ALGORITHMS USED IN INDIVIDUAL MEDICINE

There are number of algorithms from Machine Learning and Artificial Intelligence that are used in the Medical Field, and in specific Personalized Medicine. Some of these algorithms are discussed here.

Support Vector Machines (SVM)

SVM has advantages, and as mentioned by they are: SVM produces accurate result classification result on theoretical basis, even when input data are non-linearly separable. Also, the accuracy result does not rely on the quality of human expertise judgment for choice of the linearization function for non linear input data.

III. PROBLEMS IN INDIVIDUAL MEDICINE

The problems in personalized medicine vary and can be dependent on a disease type or nature. Overall problems from a bigger picture can be looked at from different perspectives as reported by are; government laws and regulations on public medical data and genetic research, healthcare workers attitudes, awareness and education, IT implementation, and financial issues. However, the focus of this paper is on IT implementation problems, and the problems considered as shown in are disease detection or prediction, achievement of accurate diagnosis, and optimal treatment.
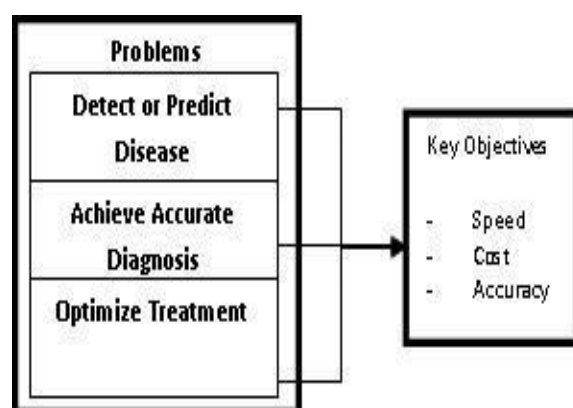

Fig. 2. Disease Detection or Prediction and Optimal Treatment

Fuzzy logic

Case Based Fuzzy Cognitive Map (CBFCM) is an extension of fuzzy cognitive maps that is used for classification and prediction. CBFCM works by Fuzzy logic was used to detect heart disease using 6 input fields (chest pain, blood pressure, cholesterol, blood sugar, maximum heart rate, old peak) and output fields (result, and precautions) with rule base that consist 22 rules. The output detects the presence of heart disease and precautions accordingly. And the observed result was 92% accurate.

IV. CONCLUSION

The implementation of Individual Medicine heavily relies on AI algorithms as discussed in this review. However, it is still in its early stage and levels and faces some challenges; some of which have a direct link to AI were discussed in this report. While other problems such as research and implementation costs, and government regulations are also challenges which are critical to the successful implementation of personalized medicine, but not addressed by the algorithms discussed in this report. However, Personalized Medicine does not only faces challenges; it does pose some challenges as well, such as; changing the medical profession and practice to the extent that some futurist think algorithms and machines could replace most of the jobs doctors do today. Finally, a successful implementation of personalized medicine would save many lives and perfect the medical profession.

REFERENCES

1. W. Karen. (May 2013). GNS aims to help MDs know which treatment will work the best for each patient. The Boston Globe. [Online]. Available: http://www.bostonglobe.com/business/2013/05/12/personalized-medi cine-goal-big-data-scientist/28gTkXjCDj6Zh6KP5tpNBO/story.html
2. B.U. Ozomaro, C.B. Nemeroff, C.Wahlestedt, A. Goal et al., "Personalized medicine and psychiatry: Dream or reality?" Psychiatric Times, pp. 1-6, 2014.
3. G.S.Ginsburg and J.J.McCarthy, "Personalized medicine: Revolutionizing drug discovery and patient care," Trends Biotechnol., vol. 19, no. 12, pp. 491-496, Dec. 2001.