Artificial Intelligence in Pharmacological Science: A Note on Highly Specific Branch of Science

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Abstract: *Artificial Intelligence (AI) means computational power to mimic the cognitive power of a human brain. Recent times lots of interest and utilization of an AI is happening across the globe & across the industries. Pharmacology usually uses drug leads and compounds either extracted from nature or synthesized in vitro, to find newer drugs for diseases. AI will definitely help in discovering of drugs as high-throughput screening techniques can use AI and can help in saving lots of time, resources & manpower (scientists). The present paper is an effort to put across idea of how, when, and where an artificial intelligence can be used in order to speedily discover new drugs & treatments for diseases. Artificial Intelligence (AI) can use the network of small computational units, in together called as ANN (Artificial Neural Networks). These networks can mimic the power of human brain and can carry out research at very high & astronomical speeds. Hence, this paper will put across the intelligence hidden in AI & its importance to the field of Pharmacology.*

Keywords: Artificial Intelligence, Pharmacology, Artificial Neural Networks, Research, Drug discovery

1. Introduction

Pharmacology is a science of drugs and **_Artificial Intelligence (AI)_** is science of how computers can closely mimic the intelligence of a human brain. The present paper has been written in order to put across the viewpoint from authors point of view regarding the advantages, the Artificial Intelligence (AI) holds for pharmacological science.

Drug research has had been tedious and time consuming task for centuries. Ever since computers came into the real working world, its power has always been utilized and improved in order to help us. Currently lots of research's and experiments are happening across the world, using AI. [1]

AI no doubt is one of the breakthrough discoveries and inventions in the history of mankind. Lots of Industries, basically engineering and Technical industries, are using the power of AI to benefit their respective fields.

Pharmacology and AI do have close relationships as drug research isn't an easy cup of tea. It requires huge planning of resources, time, and manpower. As mentioned earlier, that pharmacology is science of drugs and its research. AI can duly help in this regards, as with the use of ANN (Artificial Neural Networks), the research to find out new compounds are very high speed can be conducted, and it can help in saving lots of dollars, time, and manpower.

An artificial neural network is mainly a series of smaller computational units arranged in different layers, mainly, inner layer, outer layer, and the hidden layer. Each computational unit can mimic the cognitive thinking and analyzing ability of human brain.

Figure 1, gives a rough layout of how basically Artificial Neural Networks look like.
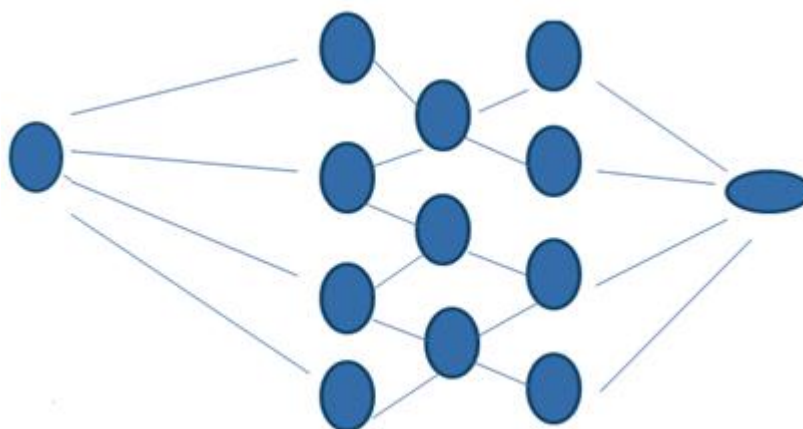

Figure: 1

As shown in figure 1, the each layer has small and small computational units, and each layer passes the calculated information to the other layer. The other layer again analyzes the data, and then forwards to the next layer.

Finally, the calculated information is given to the outer layer, and to the readouts, for us to see the results of variables being given to any kind of ANN.

Pharmacological science can be carried out at highly astronomical speeds, and thus it will help the future pharmacologists, in using the power of computers to find the targets being given to each scientists or the researcher.

Drug leads like lacs of lead compounds can be used in order to find out the single molecule which has effect and efficiently and can mimic the behavior of humans. AI can use its power for complete AMET studies, where ADMET describes as, Absorption, Metabolism, Excretion, & toxicological studies.[2]

Hence, put forward the paper will help in drawing attention of Artificial Intelligence in pharmacology.

2. Conflict of Interest

There doesn't remain any kind of conflict of Interest while publishing this Manuscript.

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