

Use of Artificial Intelligence in Power Station

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Abstract: Artificial intelligence is the science of exhibiting intelligence by machine currently achievable by humans. Power system has grown tremendously over a few decades. As the size and complexity of the power system consisting of generators, transmission lines, power transformers, distribution transformers etc. Increases, the possibility of inviting faults also increases. The acquisition of data, the processing of those data for use by the operator, and control of remote devices are the fundamental building blocks of all modern utility control systems. Manual calculations, technical analysis and conclusions initially adopted the power system design, operation and control. As the power system grows it becomes more complex due to the technical advancements and dynamic requirements.

Keywords: Artificial intelligence, Expert system, Artificial neural network, Fuzzy logic, Power station.

I. INTRODUCTION

There are three types of major power plants known for the massive electricity generation: i) Thermal power plants, ii) Hydroelectric power plants, iii) Nuclear power plants.

One may expect that the mobile sensing will play an increasingly important role in the monitoring of power system. Artificial intelligence is known to be the intelligence exhibited by machines and software, for example, robots and computer programs.

An expert system obtains the knowledge of a human expert in a narrow specified domain into a machine implementable form. Expert systems are unable to learn or adopt to new problems or situations. Expert systems are also called as knowledge based systems or rule based systems. Expert systems are computer programs which have proficiency and competence in a particular field.

Artificial neural networks are biologically inspired systems which convert a set of inputs into a set of outputs by a network of neurons, where each neuron produces one output as a function of inputs. A fundamental neuron can be considered as a processor which makes a simple non linear operation of it's inputs producing a single output. They are classified by their architecture : number of layers and topology : connectivity pattern, feed forward or recurrent.

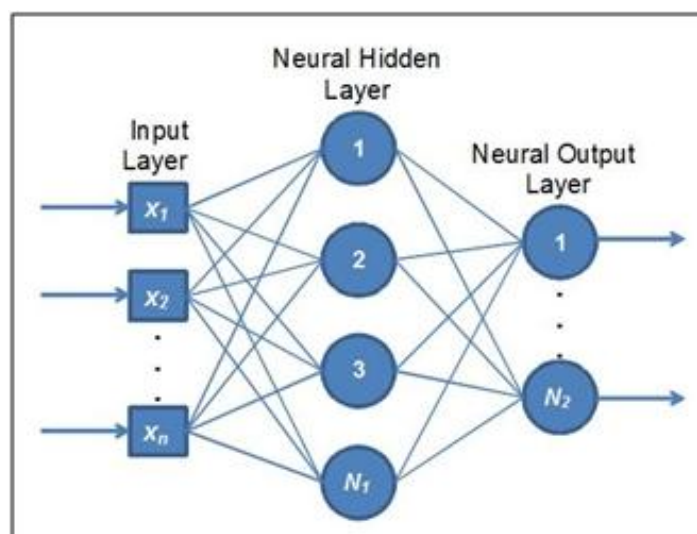


Fig. 1 : Artificial neural system