CHAPTER 1

INTRODUCTION

1.0 PROJECT BACKGROUND

Development of the mathematical system and improve of science and the technology make the theory and researced are conduct for solution the mathematical problem are founded. So that, the uncertainty can be analysed by different method and ways. Uncertainty can be determine by manual calculation or using several method such as numerical method, analytical method and also using Artificial Neural Network(ANN). Uncertainty analysis is easy when the choosen method is suitable to the problem needed.

Artificial Neural Network(ANN) is method that to approximate the specific function from selected data before proceed to the uncertainty analysis. Neural networks have a large appeal to many researchers due to their great closeness to the structure of the brain, a characteristic not shared by more traditional systems. A neural network consists of four main parts.That all part is firstly, Processing units, weighted interconnections between the various processing units which determine how the activation of one unit leads to input for another unit, optionally, a learning rule that specifies how to adjust the weights for a given input or output pair and lastly An activation rule which acts on the set of input signals at a unit to produce a new output signal, or activation. The analysis of the uncertainty separate to the two concept of study case it is specific know function and unknown function,for the specific known function there have two method of solution which is using analytical method for simple function and using numerical method for complex function.The complex function can be solve and analyse by specific method of numerical method that is using sequential

pertubation method. For this project will propose a new method to estimate the uncertainty which is combination between of Artificial Neural Network approximated function and sequential pertubation method.

1.2 PROBLEM STATEMENT

Increasing of global technology carrying new effect to the people and to the universal.People who involved in a range of activities such as research, design and development or making data editor need interpersonal and management skills as well as student expertise because they like to know how things work and want to make them work faster, quieter and more efficiently. They like the challenge of solving practical problems and finding new and innovative solutions for the problems. Nowadays there are many situations which require us to find and to solve the problem involving uncertainty analysis for the data that have no specific equation and function, but until today there is no specific solution to ease in researching or experimental.

For education purpose such as to analyse uncertainty become quite difficult and complicated. To propose the new method of uncertainty analysis, there must have good proven . The Artificial Neural Network approximated plus the numerical method are choosed to prove the research and at same time to proposed the method that have used to calculate and analyse uncertainty without knowing the specific function of the data.

Furthermore, previous analysis of uncertainty do not have specific method to solve this problem. There is a lot of lackness in those analysis especially uncertainty analysis. Function of data consist of many types and sometimes there are complicated functions and also simple functions. So that the analysis of the experiment must include the value of data which should be at least four input and one output. The data are taken to produce and perform the experiment, should have at least 1000 data for every output and input. The largest experiment data are need to make the analysis of uncertainty, percent of uncertainty error became smaller when the largest data are taken as the analysis. The uncertainty analysis can be produced using MATLAB® software with applied the analytical method and newton approximated method or using Artificial Nueral Network approximated function with sequential pertubation numerical method.

The uncertainty analysis of the experiment data become difficult when the choosen experiment do not have specific function. The specific function are important for the experiment data because it will be as the guide line and comparing item in order to prove the uncertainty analysis. For further understanding and clarity on what uncertainty analysis is all about, a flow chart of uncertainty analysis is provided on the next page.

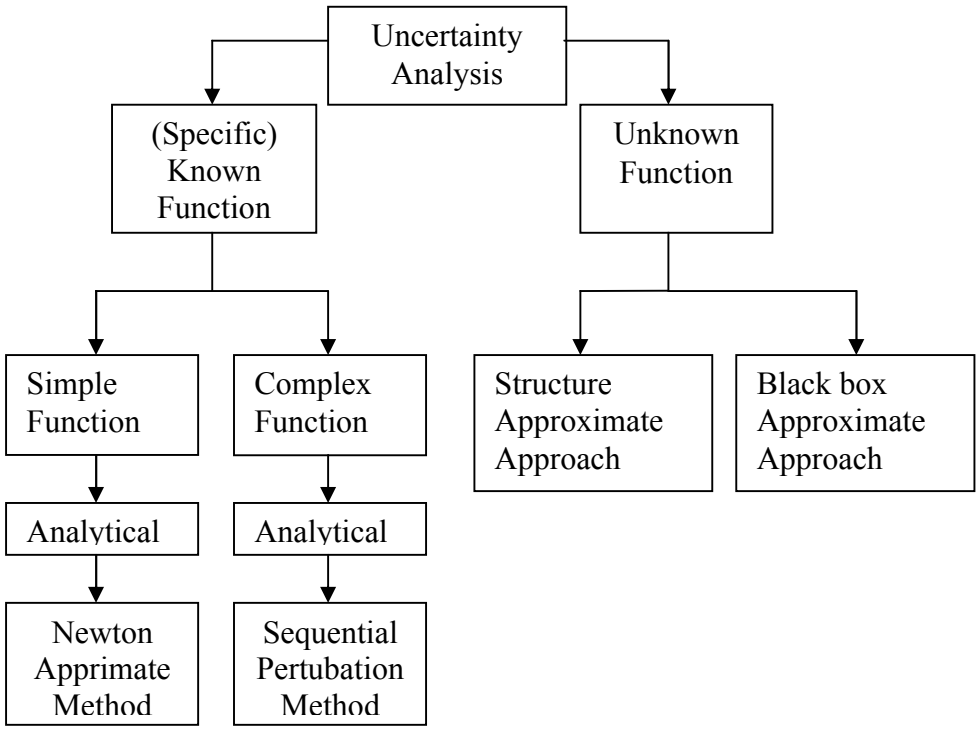

Figure 1.1: Flow chart of uncertainty analysis