NEURAL NETWORK PREDICTION OF SPM ACHIEVEMENT

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By
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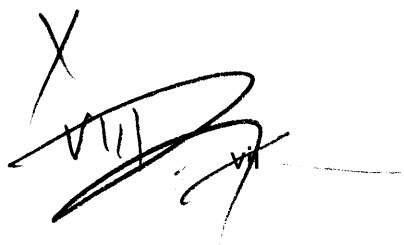

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To my mom and dad.
You have always been a source of inspiration

To Sofea, Hafiz, and Hakim.
Allah blessed me with wonderful kids

And to the memory of my beloved husband,
Mohd Zawawi Mat Nor
25th June 1970 – 19th May 1999

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ABSTRACT (BAHASA MALAYSIA)

Tujuan kajian ini adalah untuk membentuk sebuah model rangkaian neural bagi meramal pencapaian pelajar-pelajar sekolah menengah di Malaysia di dalam peperiksaan SPM. Rangkaian neural yang dibentuk menggunakan perceptron multi aras yang melibatkan algoritma "*backpropagation*" serta tangen sigmoid sebagai fungsi pindahan. Kajian ini bukan sahaja mengambil kira gred yang diperolehi oleh pelajar di dalam matapelajaran teras yang di ambil di dalam SPM tetapi juga mengambil kira jantina mereka. Berdasarkan kepada keputusan yang diperolehi dari model tersebut, prestasi sebenar pelajar boleh diramal. Kajian ini menunjukkan bahawa rangkaian neural boleh dilatih dengan data-data yang berkait dengan pelajar untuk meramal pencapaian mereka di dalam peperiksaan SPM.

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ABSTRACT (ENGLISH)

The purpose of this study is to build a neural network model for prediction of SPM achievement for the students in a Malaysian secondary school. The neural network model uses multi-layer perceptron involving a backpropagation algorithm and the tangent sigmoid as the transfer function. This study does not only consider the students' grades for the core subjects that they take in the SPM but also the student gender. Based on the model results, the real exam performance is to be predicted. This study shows that neural network can be trained with students' data to predict their achievement in the SPM examination.

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Finally, I express my gratitude to the memory of my husband, Mohd Zawawi Mat Nor, whose love and spirit will reside inside me and kids forever

CHAPTER THREE: NEURAL NETWORK FUNDAMENTALS

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Chapter One: Introduction

1.1. The context of the study

Forecasting, at least intelligent forecasting, is predicting future events based on historical data (Blum, 1992). Predicting for the future is a very common problem in human life. Though, it is a very tough task (Angstenberger, 1996). In spite of that, with neural networks – also called artificial neural networks, or ANN – models, effective predictive applications can be developed (Ding *et al*, 1996).

It has been found from many studies that neural network is capable of forecasting and giving better results compared to statistical and traditional analytical methods (Adya *et al*, 1998; Muzaffer *et al*, 1999; Mahmood *et al*, 1999; Aiken, 1999; and Indro *et al*, 1999). In addition, as stated by Law (1998), what makes a neural network superior to traditional statistical methods in forecasting is that a neural network is better able to recognize the high level features, such as the intra-correlation or serial correlation, of a training set.

The contents of the thesis is for internal user only

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