AN APPLICATION OF ARTIFICIAL NEURAL NETWORK (ANN) FOR AIR POLLUTANT INDEX (API) IN MALAYSIA

INSTITUTE of RESEARCH, DEVELOPMENT and COMMERCIALISATION (IRDC)
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BY :

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MARCH 2006

UNIVERSITI TEKNOLOGI MARA
FAKULTI KEJURUTERAAN ELEKTRIK
40450 Shah Alam, Selangor Darul Ehsan

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...tua Program...
...a Muda
...aan Elektrik
: 03-55435003

...Elektrik (Elektronik)
: 03-55435104

...Elektrik (Kuasa)
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...Elektrik (Peralatan)
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Tarikh : 26hb Jun 2004
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Puan

TAJUK PROJEK: 'AN APPLICATION OF ARTIFICIAL NEURAL NETWORK (ANN) FOR AIR POLLUTANT INDEX (API) IN MALAYSIA'

Dengan hormatnya perkara di atas adalah dirujuk.

Sukacita dimaklumkan bahawa Jawatankuasa Penyelidikan, Pembangunan dan Pengkomersilan di peringkat Fakulti telah membuat keputusan:

i. Bersetuju meluluskan cadangan penyelidikan yang dikemukakan oleh puan serta Pn Rozita Jailani dan Pn Ruhizan Liza Ahmad Shauri.

ii. Tempoh projek penyelidikan ini ialah 12 bulan, iaitu mulai 1 **hb Julai 2004** hingga **30 hb Jun 2005.**

iii. Kos yang diluluskan ialah sebanyak **RM19,300.00** sahaja.

iv. Penggunaan geran yang diluluskan hanya akan diproses setelah perjanjian ditandatangani.

v. Semua pembelian peralatan yang kosnya melebihi RM500.00 satu item perlu menggunakan Pesanan jabatan Universiti Teknologi MARA (LO). Pihak puan juga dikehendaki mematuhi peraturan penerimaan peralatan. Panduan penerimaan peralatan baru dan pengurusannya dilampirkan bersama.

vi. Kertaskerja boleh dibentangkan di seminar setelah **75% deraf awal laporan akhir projek** dihantar ke Institut Penyelidikan, Pembangunan dan Pengkomersilan (IRDC) untuk semakan. Walau bagaimana pun, puan perlu membuat permohonan kepada IRDC.

Date : 27 March 2006

Project File No. : 10501

Y. Bhg. Prof. Dr. Azni Zain Ahmed
Penolong Naib Cancelor (Penyelidikan)
Institute of Research, Development and Commercialization (IRDC)
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Sir,

FINAL REPORT OF RESEARCH PROJECT "AN APPLICATION OF ARTIFICIAL NEURAL NETWORK (ANN) FOR AIR POLLUTANT INDEX (API) IN MALAYSIA"

Referring to the above subject, please find enclosed 2 (two) copies of final report on the investigation of "AN APPLICATION OF ARTIFICIAL NEURAL NETWORK (ANN) FOR AIR POLLUTANT INDEX (API) IN MALAYSIA".

Thank you.

Yours sincerely,

MAHANIJAH BINTI HJ. MD KAMAL
Project Leader

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ABSTRACT

This research investigates the effectiveness of Artificial Neural Network (ANN) model in predicting the Air Pollutant Index (API) for air quality monitoring in Malaysia. The network was trained with reference to five major parameters for determination of the API and Air Quality Index (AQI) in Malaysia. The pollutants included in Malaysia's API are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and suspended particulate matter less than 10 micron in size (PM_{10}). The data collected comprises of data for the previous six months, beginning from July 2004. The API plays an important role in evaluating the air quality. The ANN model simplifies and speeds up the computation of the API, as compared to the current existing method. By optimizing the calculation, a significant saving in terms of money and time can be achieved. ANN model with Back Propagation Neural Network (BPNN) are considered and adopted to model the API.