

**BEHAVIOURAL ACADEMIC SELF ESTEEM DEPLOYMENT
AND ANALYSIS USING FUZZY EXPERT SYSTEM**

AFZANIZAM BIN ALIAS

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**BEHAVIOURAL ACADEMIC SELF ESTEEM DEPLOYMENT
AND ANALYSIS USING FUZZY EXPERT SYSTEM**

A thesis submitted to the Graduate School in partial fulfillment of the requirements
for the degree Master of Science (Intelligent System)
Universiti Utara Malaysia

By:
Afzanizam bin Alias

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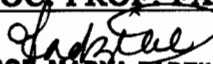
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ABSTRAK

Peranan ahli psikologi dan kaunselor memang tidak dapat dinafikan lagi dari dahulu hingga kini dalam arus pendidikan negara sama ada dalam peringkat sekolah atau pengajian tinggi. Pelbagai usaha dilakukan dari masa kesemasa dalam menjana potensi pelajar, sahsiah dan sendiri dan yang utama dalam perkembangan akademik. Terdapat pelbagai ujian psikologi antaranya Ujian Kendiri, Ujian Personaliti, Tingkahlaku Kendiri terhadap Akademik (TKA) dan lain-lain lagi. Secara totalnya, di Malaysia penggunaan ujian berkenaan dijalankan secara manual dan memakan masa untuk setiap analisa keadaan ini menyebabkan pelajar kurang memberi sambutan. Tesis akan membentangkan penggunaan Logik Kabur dan Sistem Pakar dalam domain kaunseling dengan memilih ujian psikologi Tingkahlaku Kendiri terhadap Akademik (TKA) sebagai platform utama. Lima modul TKA yang terdiri adripada Inisiatif Pelajar bagi TKA faktor pertama, Perhatian Sosial bagi TKA faktor kedua, Kejayaan/Kegagalan bagi TKA faktor ketiga, Daya Tarikan Sosial bagi TKA faktor keempat, dan Keyakinan Diri bagi TKA faktor kelima diterapkan. Ujian TKA, meliputi enam belas soalan dan dipecahkan mengikut faktor. Sistem ini dibangunkan dengan menggunakan pendekatan struktur berhirarki menggunakan bahasa aplikasi berasaskan web iaitu Halaman Pelayan Aktif Microsoft (ASP) iaitu tapak pelayan penulisan web. Input yang dimasukkan ke dalam sistem akan dikaburkan dan di proses melalui Memori Kesatuan Kabur (FAM) yang dibangunkan untuk mengendalikan syarat-syarat kabur berdasarkan kepada kelima-lima faktor kajian kes ke atas TKA. Teknik 'defuzzification' yang dikenali sebagai pusat bagi kawasan digunakan untuk membuat anggaran kepada faktor TKA dan menentukan tahap-tahap sendiri terhadap akademik seseorang pelajar sama ada ia berada pada tahap rendah sendiri, pertengahan sendiri atau tinggi sendiri. Tambahan pula, penasihat yang menggunakan Logik Kabur dan Sistem Pakar menyediakan penerangan dan juga menerangkan bagaimana sesuatu diagnosis bagi sesuatu kes dicapai. Prototaip berkenaan berjaya diuji dan satu analisis dijalankan ke atas responden Kolej Komuniti Bandar Darulaman. Analisa ke atas responden berkenaan menunjukkan korelasi yang tinggi (0.403) perhubungan diantara Inisiatif Pelajar dan Keyakinan Diri. Keadaan ini menunjukkan rata-rata responden mempunyai inisiatif tinggi tidak mempunyai masalah keyakinan untuk melakukan aktiviti secara kumpulan dan mudah menyuarakan pendapat.

ABSTRACT

The characteristic of psychologist and counsellor can't be denied in the national education term even in school or the high institutions of education. There are a lot of strategies had done in increasing students potential, personality and academic. There are several psychology test such as Aptitude Test, Personality, Behavioural Academic Self Esteem (BASE) and others. Totally in Malaysia, the usage of the test manually and takes a long time for the analysis. That why students were not attracted or interest in doing the test. This thesis will present the Fuzzy System in counselling domain by selecting BASE test. The system comprises of five modules, namely Student Initiative of BASE Factor 1, Social Attention of BASE Factor 2, Success / Failure of BASE Factor 3, Social Attraction of BASE Factor 4, and Self-Confidence of BASE Factor 5. The system was constructed using hierarchical structural approach. The system was developed using web-based application language that is Microsoft's Active Server Pages (ASP) the server-side web scripting. The system comprises of five modules, namely Student Initiative of BASE Factor 1, Social Attention of BASE Factor 2, Success / Failure of BASE Factor 3, Social Attraction of BASE Factor 4, and Self-Confidence of BASE Factor 5. BASE test consists of sixteen items, categorized into the five main BASE factors. The input to the system was first fuzzified and Fuzzy Associative Memory (FAM) table were constructed to handle the fuzzy rules of the five factors of BASE case study. The defuzzification technique is used to estimate the BASE factor and determine the levels of academic self-esteem such as low self-esteem, moderate self-esteem, and high self-esteem. In addition, fuzzy expert advisory provides explanation and also explain how a diagnosis is reached for a particular case. The results showed that the fuzzy expert prototype system presented in this paper provided a reliable and accurate outcome after several test cases have been performed. An analysis to Bandar Darulaman Community College respondent shows that high correlation relationship (0.403) between Student Initiative and Self Confidence. This indicates that, respondent who have initiative have self confidence in communication or group activity and can give an idea.

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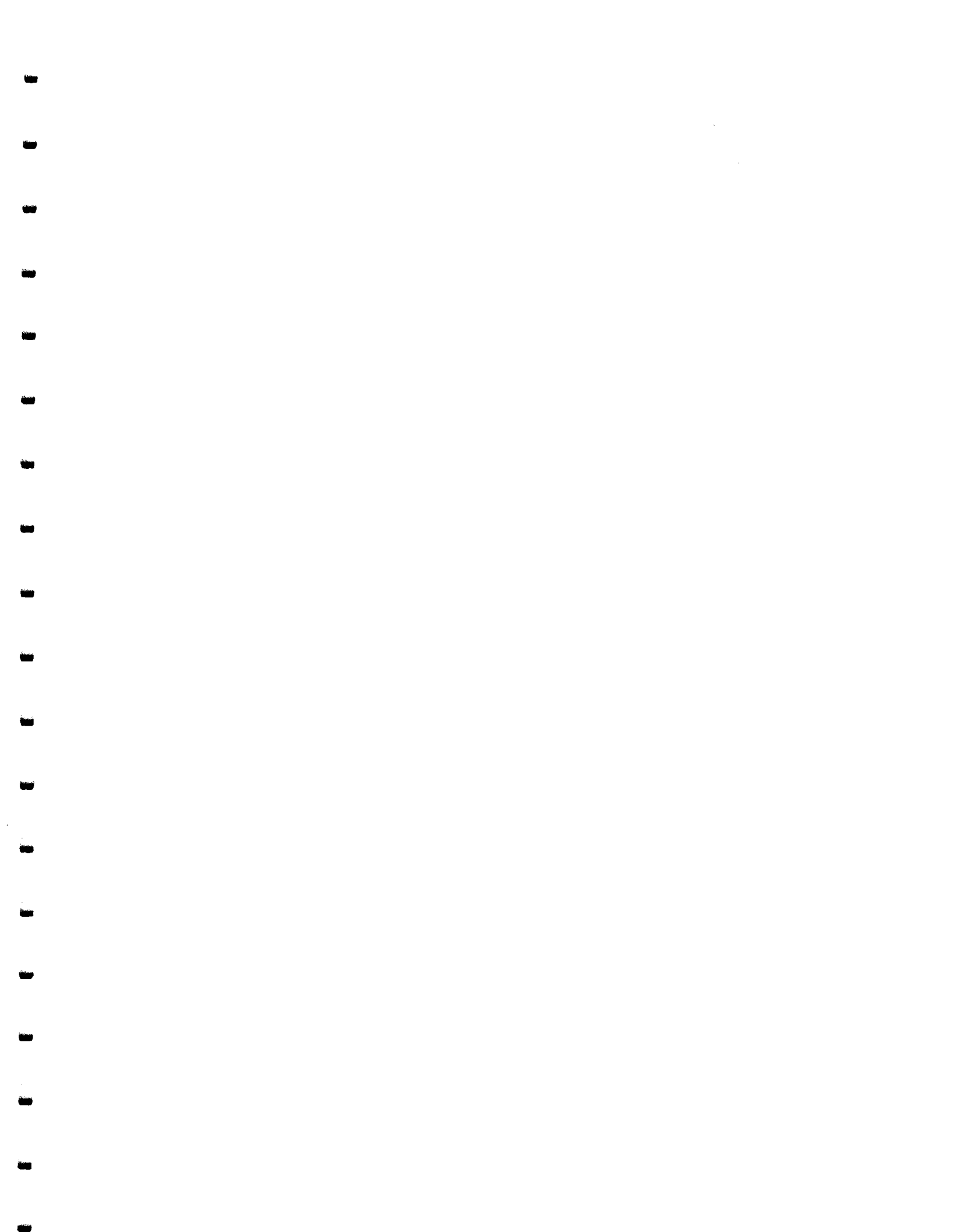
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LIST OF ABBREVIATIONS

ASP	Active Server Pages
BASE	Behavioural Academic Self-Esteem.
COA	Centroid or Center Of Area/Gravity
COS	Center Of Sums
FAM	Fuzzy Associate Memory
MOM	Mean Of Maxima



CHAPTER 1

INTRODUCTION

This section presents the background of the project that focuses on the hybrid approach using fuzzy logic and expert system. The main idea of the study is to develop the prototype system using the integration of both approaches in counselling domain. The section also presents the problem statement, objectives, significance and scopes of the project.

1.1 BACKGROUND

Behavioural Academic Self Esteem (BASE) was founded on Coopersmith's (1967) theory and research. BASE measures children's academic self-esteem by using direct observation of their classroom behaviours. Teachers, parents, or other observers draw on their first-hand experience with a specific child to rate how often the child behaved in particular ways. In addition, this test has been used with children of preschool, elementary, and junior high school, both individually and in groups to identify students level of academic self-esteem, providing a rationale for intervening in the academic lives of students who need motivational stimulation, assessing how programs affect student

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