

**FUZZY EXPERT SYSTEM FOR DECISION MAKING  
IN MYOCARDIAL INFARCTION**

A project submitted to the Graduate School in partial fulfillment  
of the requirements for the degree  
Master of Science (Intelligent Knowledge Based System)  
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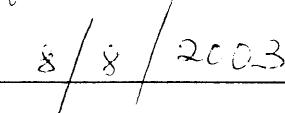
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## *ABSTRACT (MALA Y)*

*Sistem pembuutan pemutusan teluh diperkenalkan dalam pelbagai bidang dun pada masa kini, dunia pengkomputeran sedang memfokuskan terhadap pembungunan sistem berdasarkan pengetahuan. Sistem berdasarkan pengetahuan adalah salah satu cabang dalam bidang Kepinturun Buutun (AI) yang memuatkan pengetahuan manusia ke dalam sesebuah sistem hasil diripuduh proses perolehan pengetahuan. Sistem gabungan Kepinturun Buutun yang terdiri diripuduh beberapa teknik AI telah menunjukkan keputusan yang memberangsangkan dalam menjalankan diagnosis. Namun setakut ini hanya beberapa sistem sahaja yang menggunakan pendekutun sedemikian di dalam diagnosis perubutun. Kajian ini mencadangkan teknik gabungan Kepinturun Buutun untuk digunakan dalam sistem yang dikenali sebagai FEMInS. Sistem ini menggabungkan teknologi logik kabur dan sistem pakar yang boleh membantu doktor bukan pakar untuk membuat peramalan dan diagnosis serungun penyakit juntung berdusurkun tundu-tundu uwai penyakit berkenaan. Oleh kerana iogik kabur boleh digunakan untuk membuat ramalan dan sistem pukur pula dapat memberikan penerungun dan penjelasan, kombinasi kedua-dua bidang ini sesuai untuk pembungunan sistem perubutun. Ini disebabkan bidang ini biasanya perlu menungani masalah ketidakpastian dan memberikan penjelasan tentang kenapa sesuatu keputusan itu dibuat kepada pesakit. Pembangunan FEMInS telah menunjukkan bahawa iogik kabur boleh menangani ketidakpastian dengan lebih baik diripuduh sistem pakar biasu. Ini adalah berdasarkan fakta bahwa iogik kabur menggunakan beberapa label dan nilai keyakinan untuk mencapai pemutusan yang dibuat.*

## *ABSTRACT (ENGLISH)*

*Decision support system has been introduced in many domains and currently, the computing world is focusing on decision support system with knowledge-based. Knowledge-based system is one of the branches in artificial intelligence (AI), which incorporates human knowledge into the system as a result of knowledge acquisition process. Hybrid AI system, which is composed of multiple AI methods, has shown quite remarkable results in diagnosis and so far only a few of such approach has been done in medical diagnosis. This study proposes the hybrid AI techniques to be used in the system known as FEMInS. This system integrates fuzzy logic technology with expert system, which helps the general medical practitioner to predict as well as diagnosing heart attack based on early symptoms. Since fuzzy logic can be used for prediction, and expert system can provide explanation and reasoning, the combination of both fields is suitable for medical domain system, which generally needs to cater the problems of uncertainty and provide the explanation of the results to the user. FEMInS development has demonstrated that fuzzy logic can handle uncertainty better than expert system. This is due to the fact that fuzzy logic uses multi label and multi confidence value to reach the conclusion.*

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# CHAPTER 1

## INTRODUCTION

This section briefly presents the background, problem statements, goal or objective, project significance and project scope. The main idea of the study is to combine expert system and fuzzy logic to form a hybrid intelligent system that is able to diagnose myocardial infarction cases.

### 1.1 Background

In most developing countries, insufficient of medical specialist has increased the rate of death of patients suffered from various diseases (McEwin, 1997). Current practice for medical treatment required patients to consult specialist for further diagnosis and treatment. Other medical practitioner may not have enough expertise or experience to deal with certain high-risk diseases. However, the waiting time for treatments normally takes a few days, weeks or even months. By the time the patients see the specialist, the disease may have already spread out to other parts of their body. As most of the high-risk disease could only be cured at the early stage, the patients may have to suffer from the disease for the rest of their life.

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