

# 「校際傑出學術論文授權暨發表會」

## 論文摘要表

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論文名稱	糖尿病臨床症狀決策支援系統
英文論文名稱	A Decision Support System Based on Clinical Symptoms of Diabetes
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學位類別	碩士
校院名稱	國立屏東科技大學
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<p>關鍵詞：資料探勘、關聯法則、自組織映射圖網路、糖尿病</p>	
<p>英文關鍵詞：Data Mining、Association Rule、Self-Organizing Map、Diabetes</p>	
<p>中文摘要</p> <p>近年來台灣十大死因排行榜中，糖尿病為典型的代謝異常慢性疾病，其死亡率攀升最為快速(衛生署)，根據國際糖尿病聯盟(International Diabetes Federation；IDF)統計，全球每年約有三百八十萬人死於糖尿病(Diabetes Mellitus)相關疾病，平均每十秒就有一人死於糖尿病相關疾病且新診斷出二人罹患糖尿病，而台灣之盛行</p>	

率於全亞洲已開發國家排名第五名。本研究利用資料探勘技術挖掘臨床檢驗數據之關聯與變化趨勢，建置乙套「糖尿病臨床症狀決策支援系統」，包括：(1)定期追蹤分析模組－依據臨床檢驗數據將資料有效整合及分析個人歷年檢驗數據，以趨勢圖方式呈現提高資料的完整性與易讀性，有效協助醫師掌控病患生理狀況；(2) 危險因子分析模組－以關聯法則分析臨床診療紀錄並比對危險因子，依據探勘所得知規則歸納潛在併發症與需追蹤項目，避免危險因子超出臨界值以降低疾病發生之機率；(3) 用藥控制分析模組－依據臨床用藥紀錄以關聯演算法找尋相關用藥組合，進一步分析其控制成果，協助醫師透過藥物治療有效控制血糖；(4) 併發症分析模組－以自組織映射圖網路(Self-Organizing Map, SOM)分析技術與 United Kingdom Prospective Diabetes Study(UKPDS)預測模型，評估相關併發症的發生機率，以協助醫師提早監控潛在併發症之相關檢驗項目，以有效降低衍生其他併發症的可能性。本系統期能提供醫師多元且完善的臨床診療資訊，協助醫師精準掌握病患生理變化提升醫療品質；對於糖尿病患者有效控制血糖自我監測，有助於降低相關併發症的發生率。

#### 英文摘要

In recent years, among the top ten causes of death in Taiwan, Diabetes Mellitus is the fastest rise in mortality and also a typical metabolic abnormality of chronic disease. According to the International Diabetes Federation(IDF), each year it is about three hundred and eighty million people die with diabetes-related diseases. On an average, every ten seconds there is one patient die of diabetes-related diseases and 2 new patients who get diabetes-related diseases. The prevalence of Diabetes Mellitus in Taiwan is ranked fifth among the developed countries in Asia. In this research, by using Data Mining technology to analyze the clinical records, the system not only provides physicians diverse and comprehensive information about clinical diagnosis and treatment, but also allows to reduce the incidence of complications and improve the quality of care.

In this research, based on clinical symptoms of the diabetes, it has designed and

implemented a Decision Support System which includes (1) Long Term Analysis Module—to analyze and integrate previous and current personal clinical data to obtain the trend graph. The module improves the integrity and accessibility of the data ; (2) Risk Factor Analysis Module—by using the association rule to analyze and compare risk factors to find out the potential complications of the disease and the factor inspects that need to be tracked. This will reduce possibility of the risk factors exceeded the standard range ; (3) Drug Control Analysis Module—by using the association rule to figure out the efficient drug combinations and provide further analyses of clinical treatment records that helps physicians effectively control patient’s blood sugar through the drug treatment ; (4) Complications Analysis Module—by using Self-Organizing Map and United Kingdom Prospective Diabetes Study (UKPDS) prediction model to calculate future incidence of other complications, which helps physicians focus on the relate inspects in order to reduce the possibility of other derived complications.