

Applying Data Mining Methods to Classify Outpatients' Examination Time

Ping-Shun Chen

Department of Industrial and Systems Engineering
Chung Yuan Christian University
Chung Li 32023, Taiwan
pingshun@cycu.edu.tw

Chin-Hui Lai

Department of Information Management
Chung Yuan Christian University
Chung Li 32023, Taiwan
chlai@cycu.edu.tw

Ying-Tzu Chen

Department of Industrial and Systems Engineering
Chung Yuan Christian University
Chung Li 32023, Taiwan
a22951127@gmail.com

Yu-Ju Lu

Department of Industrial and Systems Engineering
Chung Yuan Christian University
Chung Li 32023, Taiwan
dog28tw@gmail.com

Gary Yu-Hsin Chen

Department of Logistics Management
National Kaohsiung University of Science and Technology
Kaohsiung 82445, Taiwan
garychen@nkust.edu.tw

Abstract

Outpatient appointment scheduling problems require predicting outpatients' treatment or examination time more precisely to reduce patients' waiting time and physicians' idle time. As there are many characteristics of outpatients' examinations, the treatment or examination time of each outpatient is varied and random. Thus, this research applies the data mining method to classify outpatient's examination time of a case image center. The relevant one-year data of outpatients' examination time are collected and preprocessed, such as the outpatients' examination position, the examination time and the number of examination images, the examination performed by radiological technologists, the medical order issued by which department of physicians, etc. This study uses three kinds of classification methods, including decision tree methods (e.g., C4.5, CART, and CHAID), Logistic regression, and artificial neural network to train and verify data. The

results show that CART outperforms other methods and extracts five rules to classify outpatients' examination time.

Keywords

Data mining, classification, decision tree, examination time, outpatient appointment scheduling problem

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Biography / Biographies

Ping-Shun Chen is a full professor in the Department of Industrial and Systems Engineering at Chung Yuan Christian University, Taiwan, ROC. He obtained a PhD degree from the Department of Industrial and Systems Engineering, Texas A&M University, USA. His research area focuses on network programming and applications, supply chain management, healthcare simulation and analysis, and system simulation.

Chin-Hui Lai is an associate professor in the Department of Information Management at Chung Yuan Christian University, Taiwan, ROC. She obtained a PhD degree from the Institute of Information Management, National Chiao Tung University, Taiwan, ROC. Her research area focuses on data mining, big data analysis, text mining, recommender system, social network analysis, and electronic commerce.

Ying-Tzu Chen is a master student in the Department of Industrial and Systems Engineering at Chung Yuan Christian, Taiwan, ROC. Her master thesis focuses on applying data mining methods to construct an outpatient appointment scheduling system.

Yu-Ju Lu is a master student in the Department of Industrial and Systems Engineering at Chung Yuan Christian, Taiwan, ROC. Her master thesis focuses on applying data mining methods to classify patients' ultrasound scan time.

Gary Yu-Hsin Chen is an associate professor in the Department of Logistics Management at National Kaohsiung University of Science and Technology, Taiwan, ROC. His research area focuses on operations research, telecommunications, and software testing and quality assurance.