

**TALENT CLASSIFICATION
USING SUPPORT VECTOR MACHINE TECHNIQUE**



**RESEARCH MANAGEMENT INSTITUTE (RMI)
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA**

BY :

**HAMIDAH JANTAN
NORAZMAH MAT YUSOF
MOHD HANAPI ABDUL LATIF**

OCTOBER 2014

ACKNOWLEDGEMENT

Special appreciations and thanks to all the peoples involved directly and indirectly in order to complete this research.

Including :

Prof. Madya Dr. Abdol Samad Bin Nawi
(Rector of UiTM Terengganu Campus)

Prof. Madya Dr. Azemi Che Hamid
(Deputy Rector (Academic Affair))

Prof. Madya Dr. Mazidah Binti Puteh
(Deputy Rector (Research, Industrial Networking & Alumni))

and

All the peoples for their cooperation and support in making this research.

PROPOSED EXECUTIVE SUMMARY

Database or data warehouse is rich with hidden information that can be used to provide intelligent decision using data mining technique. Data mining is a widely used approach for knowledge discovery in machine learning. Besides, classification and prediction are among the popular tasks in machine learning especially for information elicitation. There are many areas adapted this approach such as in finance, medical, marketing, stock, telecommunication, manufacturing, health care, education, customer relationship and etc. However, the used of this approach has not attracted much attention in Human Resource (HR) field. Databases in HR can provide a rich resource for knowledge discovery especially for HR intelligent decision system development. Soft computing technique is used for information processing by employing methods, which are capable to deal with imprecision and uncertainty issues. By implementing soft computing techniques in data mining especially in HR field can enhance the knowledge discovery process for intelligent decision system. Support Vector Machine (SVM) is among the popular learning algorithm for classification in soft computing techniques. Due to that reason, this study attempts to use SVM algorithm on employee's performance databases for talent classification. The objective of this study is to suggest the potential classification model for talent forecasting throughout some experiments using SVM learning algorithm. In the experimental phase, we use employee's performance data from selected organization to develop talent classification model which can be used to handle some tasks in talent management. At the end, the aim of this study is to develop a prototype system using proposed classification model for talent forecasting.

Managing talent is among the challenges of HR professionals, especially to ensure the right person for the right job at the right time. Besides, identifying existing talent in an organization is among the top talent management challenge. This task requires a lot of managerial decisions, which are sometimes quite uncertain and difficult. HR decisions depend on various factors such as human experience,

TABLE OF CONTENTS

REPORT SUBMISSION LETTER	ii
OFFER LETTER	iii
ACKNOWLEDGEMENT	iv
ENHANCED RESEARCH TITLE AND OBJECTIVES	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	viii
PROPOSED EXECUTIVE SUMMARY	x
ENHANCED EXECUTIVE SUMMARY	xii
CHAPTER 1 : INTRODUCTION	1
1.1 Research Background	1
1.2 Problem Statement	2
CHAPTER 2 : LITERATURE REVIEW	4
2.1 Knowledge Discovery in Database	4
2.2 Classification in Data Mining	5
2.3 SVM Technique for Classification	7
2.3.1 An Overview of SVM Algorithm	7
2.3.2 SVM Step by Step Process	9
2.4 Talent Classification in HRM	11
2.4.1 Talent Criteria	12
2.4.2 Talent Evaluation	12
CHAPTER 3 : METHODOLOGY	14
3.1 Project Development Methodology	14
3.2 Gathering Information	17
3.2.1 Knowledge Acquisition	17
3.2.2 Data Description	17
3.3 Data Preparation	18

3.3.1	Data Preprocessing	18
3.3.2	Data Scaling	19
3.4	Model Development	20
3.4.1	Experiment Setup	20
3.4.2	SVM Classification Process	21
3.5	Result Analysis	24
CHAPTER 4 : RESULTS AND DISCUSSIONS		26
4.1	Data Representation	26
4.1.1	SVM Data Format	28
4.1.2	Scaling Data	29
4.2	SVM Talent Classification Model	30
4.2.1	SVM Proposed Model	30
4.2.2	Model Analysis	32
4.2.3	Model Representation	32
4.2.4	Knowledge Representation	33
4.2.5	Model Evaluation	34
CHAPTER 5 : CONCLUSION AND RECOMMENDATION		37
5.1	Contribution	37
5.2	Limitation of Study	38
5.3	Future Work	39
REFERENCES/BIBLIOGRAPHY		40
RESEARCH OUTCOMES		45
Appendix A : Published Papers		46