SHAPE RECOGNITION USING IMAGE PROCESSING

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by

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By doing this project, I can say that the system in the future will be base on vision system. This is a new discovery for me and that's why I would like to learn all about vision system during my studies in the University Malaysia Perlis (UniMAP).

APPROVAL AND DECLARATION SHEET

This project report titled Shape Recognition Using Image Processing was prepared and submitted by Henry Hamdan (031080120) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Computer And Communication Engineering) in Universiti Malaysia Perlis (UniMAP).

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PENGENALPASTI BENTUK MENERUSI SISTEM PENGLIHATAN

ABSTRAK

Sistem Pengenalpasti Bentuk Menerusi Sistem Penglihatan adalah satu program yang digunakan sebagai alat bantu keperluan industri. Suatu penjejak akan cuba mendapatkan bentuk yang tepat untuk difahami oleh mesin. Walaubagaimanapun, terdapat beberapa cara untuk mengenal pasti model-model bentuk yang disediakan. Kawasan pengaturcaraan adalah bermula secara spesifik daripada perolehan imej sehingga pemprosesan imej. Sistem pangkalan data bergantung kepada Penguraian Nilai Tunggal (SVD) dimana keseluruhan piksel dalam imej itu ditentukan dengan suatu nilai tertentu. Oleh yang demikian, projek ini digunakan untuk menghasilkan masukan untuk pangkalan data dan juga bagaimana untuk menentukan bentuk hasil daripada hasil pemprosesan imej. Projek ini akan menggunakan perisian MATLAB dan juga Microsoft EXCEL untuk memaparkan pangkalan data yang diletakkan kemudian dalam program rangkaian neural untuk hasil keluaran. Walaubagaimanapun sistem ini sebenarnya memerlukan sistem pangkalan data yang baik. Kamera akan mengumpul kesemua imej dari dalam rumah dengan menggunakan model bentuk tersebut pada waktu siang. Hasil yang didapati adalah tidak seperti yang dijangkakan dimana adalah lebih baik jika cahaya matahari, pantulan cahaya dan bayang-bayang yang tidak diperlukan dapat di singkirkan. Imej masa nyata tidak akan menyingkirkan keseluruhan rintangan dalam imej secara automatik. Perhatikan bahawa semua nilai pangkalan data dalam bab Metodologi adalah dalam bentuk piksel. Ini adalah termasuk rintangan-rintangan yang telah dinyatakan di mana ia tidak boleh disingkirkan walaupun menggunakan penapisan dan penambahbaikan yang menggunakan Penguraian Rupa. Penyelidikan dilakukan ke atas semua penjelmaan sistem dan diuji hasilnya adalah yang akan keperluan kemudian. Dua demonstrasi terhadap pelaksanaan senibina dalam

perisian MATLAB adalah dibekalkan – posisi suatu objek dijejak berpandukan ciri-ciri bentuk objek tersebut sekaligus masalah ketika situasi kilat, cuaca dan pemantulan cahaya dapat diselesaikan.

ABSTRACT

A Shape Recognition through Vision is a program that use for supporting industrial needs. A tracker will try to get an accurate shape for being understood by the machine. However, there are several ways to recognize the shape model prepared. The programming area specifically starts from image acquisition until image processing. The system database actually depends on the Singular Value Decomposition (SVD) where the entire pixel in the image is identified with a certain value. Therefore, this report contains a whole explanation on the program used to produce the input for the database and also how to identify the shape due to the image processing. This program will require a MATLAB program and also Microsoft excel to display the database that later on will be put inside the neural network program for output. However, the systems actually need a good database. A camera collected all the images from indoor by using the shape model during daytime. The outcome is not as expected where it is much better if only the sunlight, reflection and the unwanted shadow in the image can be removed. Real time image will not automatically remove the entire obstacle in the image. Notice that the database in Methodology chapter is all the pixel value. This is also including the obstacle that mentioned which cannot be remove even with filtering and enhancing all using Feature Extraction. Research started on all the system transform and test if the result will be the one that needed. Two demonstrations of the architecture's implementation in MATLAB are provided - the position of an object is tracked by using the object's shape properties and lighting condition, weather and reflection problem is solved.

TABLE OF CONTENTS

		Page
ACKNOWLEDGMENT		ii
APPROVAL AND DECLARATION SHEET		iii
ABSTRAK		iv
ABSTRACT		vi
TABLE OF CONTENTS		vii
LIST OF TABLES		xi
LIST OF FIGURES		xii
CHAPTER 1 INTRODUCTION		
1.1	Historical Background	1
1.2	Objective	2
1.3	Scope of the project	2
1.4	Problem Statement	2
1.5	Outline Report	3
CHAPTER 2 LITERATURE REVIEW		
2.1	General Description	4
	2.1.1 The Camera Positioning	4
	2.1.2 The Camera Specification	5
	2.1.3 The Model of Shape	6
2.2	Research Of Various Method	6

2.2.1 Autonomous Land Vehicle in A Neural Network (ALVINN) 7
2.2.2 The Image processing using Canny edge Detector 7
2.3 Problem Identification 8
2.4 MATLAB for Image Processing 9
2.4.1 The Advantages of MATLAB 9
2.4.1.1 Recording of the processing used 9
2.4.1.2 Access to Implementation Details 10
2.4.1.3 Numerical Accuracy 10
2.4.1.4 Advanced Algorithm 11
2.5 MATLAB vs. Others Software 12
2.6 Neural Network 12

CHAPTER 3 METHODOLOGY

3.1 Flow Chart of Project 14
3.2 Commands 15
3.2.1 Image Acquisition 16
3.2.1.1 Image Acquisition (‘imread’) 16
3.2.1.2 Resizing Image (‘imresize’) 17
3.2.2: Image Storing 18
3.2.2.1 Joint Photographic Experts Group (JPEG) 18
3.2.2.2 Graphics Interchange Format (GIF) 19
3.2.2.3 Microsoft Windows Bitmap (Bitmap) 19
3.2.2.4 Tagged Image File Format. (TIFF) 20
3.2.2.5 Portable Network Graphic (PNG) 20
3.3 Conversion Image (‘rgb2gray’; ’im2bw’) 21
3.3.1 Indexed Image 21
3.3.2: Image Intensity 22
3.4 Filtering Binary Image 22
3.4.1 Linear filtering 23
3.4.2 Filtering Using ‘imfilter’ 23

3.4.3 Median Filters 23
3.4.4 Gaussian Filters 24
3.4.5 Adaptive Filtering 24
3.5 Edging 25
3.6 Feature Extraction 26

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Read Image 28
4.1.1 Camera Image Captured 29
4.2 Image Resizing 29
4.3 Image Conversion 30
4.4 Filtering Binary Image 33
4.5 Edge Image 34
4.5.1 The detection criterion 35
4.5.2 The Localization Criterion 35
4.5.3 The One Response 35
4.6 Database 36

CHAPTER 5 CONCLUSION

5.1 Summary 38
5.2 Recommendation for Future Project 38
5.2.1 Good Studio 38
5.2.2 Device Setup 39
5.2.3 Digital instead of Web camera 39
5.3 Commercialization Potential 40
5.4 Project Management 40
5.5 Overall 41

REFERENCES 42

APPENDICES 44

Appendix A 45

Appendix B 51

LIST OF TABLES

Tables No.		**Page**
2.1	The Specification of the Prototype Camera	5
4.1	Comparison of RGB and Grayscale Image	31

LIST OF FIGURES

Figures No.		Page
2.1	Sample of the procedure on how to capture the images	4
2.2	Sample of the models	6
2.3	Neural Network block diagram	13
3.1	Flow Chart	14
3.2	Read Image command	16
3.3	Resizing Command	17
3.4	Conversion Command	21
3.5	Filtering Binary Images	25
3.6	Edge processing program	26
3.7	Feature Extraction Program	27
4.1	Image with resolution 1200x1600	28
4.2	Resized image to 80-by-60	30
4.3	Grayscale image with resolution of 80-by-60	30
4.4	Binary Image with resolution of 80-by-60	31
4.5	Filtered with resolution 80-by-60	33
4.6	Canny Edge Image	35
4.7	Executions for SVD	36