Hu INVARIANT MOMENT FOR STATIC AND NON STATIC MOVEMENT (HIMM)

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Hu INVARIANT MOMENT FOR STATIC AND NON STATIC MOVEMENT

(HIMM)

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This report is submitted in partial fulfillment of the requirement for the Bachelor of Computer Science (Database Management)

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2011

DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : _____ Date: 8/7/2011
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DEDICATION

Bismillahirrahmanirrahim…

First of all, I would like to thanks Allah the Almighty because of his award ness and willing I can complete my project. I also would like to thank to my supervisor, Madam Hidayah binti Rahmalan for giving me help, support, guidance and encouragement to complete my project.

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To my fellow classmate, for ups and down throughout the wonderful 3 years together.

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ABSTRACT

Hu Invariant Moment for static and non-static Movement (HIMM) System is the system which will implemented in the shopping mall, library and museum. This system is purposely built to reduce electric power and to analyze object behavior. This system implement with the existing closed circuit television (CCTV) added with image processing using Hu moment invariant function. Beside that these systems give a better security to the data stored in the system. This system will be implemented using Oracle 10g as a Database Management System and Matlab. This system will gives result of status of the object movement to the user, which the results is gathered from computational process using Hu Invariant Moment analysis.

ABSTRAK

Hu Invariant Moment for static and non-static Movement (HIMM) System adalah sebuah sistem yang akan diimplimentasikan di dalam pasaraya, perpustakaan dan musium. Sistem ini bertujuan untuk mengurangkan tenaga elektrik dan untuk menganalisa pergerakan suatu objek. Sistem ini diimplimentasikan dengan menggunakan television litar tertutup sedia ada dengan penambahan funsi pemprosesan imej menggunakan teknik Hu Invariant Moment. Selain itu sistem ini memberikan lebih keselamatan untuk data yang disimpan di dalam sistem. Sistem ini akan dibina menggunakan system pengurusan pengkalan data Oracle 10g dan Matlab. Sistem ini akan memberikan keputusan kepada pengguna mengenai status pergerakan objek, yang mana keputusan itu diperoleh daripada prosess pengiraan menggunakan Hu Invariant Moment.

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LIST OF ABBREVIATIONS

ASSERT	The Automatic Search and Selection Engine with Retrieval Tools
CCTV	Closed Circuit Television
DCL	Data Control Language
DDL	Data Definition Langguage
DBLC	Database Life Cycle
DBMS	Database Management System
HIMM	Hu Invariant Moment for static and non-static Movement
IS	Information System
PBR	Pathology Bearing Regions
SDLC	Software Development Life Cycle

LIST OF ATTACHMENTS

CHAPTER I

INTRODUCTION

1.1 Project Background

Hu's (1962) moment invariants are used in pattern recognition to provide a scale, orientation and position invariant characterization of the shape of a given object. In practical situation, object may undergo other types of deformation, most commonly skew and perspective distortions.

Thus, by considering the ability of this technique to determine the characterization of certain object, this project will then, testing the ability of this technique to determine object movement.

1.2 Problem Statement

1.2.1 The current system is currently use manual man observation technique to determine object movement by man observation ability.

Man observation is sometime vulnerable to mistakes due to psychological and environmental factors for example busy workload, argument with other worker can affect man's observation ability.

1.2.2 The current system does not using computer based data storage and still using the file system data storing technique.

Movement detection based on Hu moment invariant is currently not the first option for user to use.

1.2.3 The data querying of current system consume more time since it involve too many hard copied files and more man power is needed to search single file.

To many hard copied files takes weeks to month to be processed and the data gathered was really general and not specific enough to be digested into new information.

1.3 Objectives

Regarding on the problem explained before, the main goal of using Hu Invariant technique on object movement are then being determined. The objectives of the system are:

1.3.1 To use automate computer based system on determining object movement in a video.

However this system is not intended to fully replace man power observation ability on determining object movement in a video. This system will help the observer to make precise judgment on determining static or non-static movement in a video.

1.3.2 To replace the current file system data storage into computer based data storage.

The current file system data storage is hard to maintain since lots of hard copies need to be manage. Thus the conversion of data storage from file system into computerizes system will help to reduce long term paper cost, and make backup and recovery of data more convenient, faster and easier.

1.3.3 To reduce time consumed and man power needed to query abundance of data.

The process of querying data is important to produce good report. But the manual file system is taking to much precious working hours and many man power needed to dig and extract selected data from abundance of files and papers. Thus, this system will used only stored digitized data to produce report in the nick of time and reduce man power consumed.

1.4 Scope

The scope of the project is focuses to the module, target user and target area that use this system.

1.4.1 Module

1.4.1.1 Login module

This module uses for the user that want to access the system by insert the username and password. There are the administrator and the registered observer.

1.4.1.2 Record and storage Information Module

This module will record and store selected frame and calculated data into digital format. Three type of storage involved is the oracle 10g database as default calculated data's details storage, OpenOffice.Org 2.2.0 Base database as secondary mirror database, and window XP folder system to store .jpg frame's files.

1.4.1.3 Hu Invariant Image procesing module.

This module will process selected frame using Hu's Moment invariant calculation and trigger the insertion of calculated data to be stored into database by triggering the Record and storage Information Module. If the data is successfully inserted into database, then this module will trigger Query Information Modules to be executed. This module will display graph of calculated result to the user.

1.4.1.4 Queries Information Module

This module will queries the result from database to the user. There are two types of data to be queried, that is the calculated data for general observer and daily transaction report for administrative user.

1.4.1.5 Classification Module

This module is a module that receive data from Hu Invariant Image processing module and classify the movement of the object to be static or non-static.

1.4.1.6 Backup and Recovery Module

This module allow user to save the data that have been inserted, and through the backup button, it will backup all the data whether it is an image, a frame or video. In addition, the data will be recovered by the recover button.

1.4.2 Target User

There are only two users for using and access this system. The authorized user is administrator and the minor user is observer.

1.4.2.1 Administrator.

The administrator can access and query the report. It have the power to control dynamic report, database backup and recovery and data migration functions.

1.4.2.2 General Observer or security guard.

The general observer only can record the data and the ability to access report is limited to only accessing calculated result.

1.4.3 Target Area

This system more focuses at the area where using a Closed Circuit Television (henceforth, CCTV) to process the image and video especially at the escalator and can be used to analyzed the existing video too.

1.5 Project significance

Significance of this project to have a system for computerizes of Hu Invariant. This system hope will be help the security guard or any security department to detect a movement in a video through the image processing. It is because, the system can access anywhere and anytime. For the observer, this system will help this user to observe whether the object is moving or static by detect the object behavior based on the sequence of frame and using the technique that can calculate the matrix of moving picture. This system will then help big organization, such as, the hypermarkets security departments, to increase their awareness of crowd movement.

1.6 Expected output

The system will include the Moment invariance module that will process the image using Hu Moment invariance technique. This shall include the Table of data details of calculated result, the graph from the calculated results, and the classification of object movement. Then the user can view reports that that was previously saved in database and make a backup or recovery of the data in database.

1.7 Conclusion

This chapter is about the basic thing of the Hu Invariant Moment. It covers about the problem that is currently faced by user when using manual system, thus, the importance and objective of this project has been covered regards to problems faced. For project scope, this chapter then specifies the target user, area, significance of the technique and last but not least, is about, the expected output for this Hu Invariant Moment for static and non-static Movement (HIMM) System project. Chapter II will discuss on the Literature Review and the project methodology.