

**OBJECT ANALYSIS MOVEMENT USING CANNY EDGE DETECTION
(OAMCEDS)**

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OBJECT ANALYSIS MOVEMENT USING CANNY EDGE DETECTION
(OAMCEDS)

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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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.

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DEDICATION

Bismillahirrahmanirrahim

First of all, I would like to thank Allah the Almighty because of his award 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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ABSTRACT

Object Analysis Movement using Canny Edge Detection System (OAMCEDS) is a system that develops in order to improve the use of closed circuit television (CCTV). OAMCEDS will integrate with current CCTV added with feature extraction and edge detection function to detect the object movement. The problem of this project are how to differentiate between static and non-static movement, how to get standardize movement result and how to determine object behavior. Methodology that uses to implement OAMCEDS is Database Life Cycle (DBLC) while software that use are MySQL and Matlab. The result that gets from this project is Canny Edge Detection technique is suitable to use in condition where the images has noise. OAMCEDS can be implemented in shopping mall, library or museum as long as there has a CCTV.

ABSTRAK

Object Analysis Movement using Canny Edge Detection System (OAMCEDS) ialah sistem yang akan dibangunkan untuk meningkatkan kegunaan litar televisyen litar tertutup (CCTV). OAMCEDS akan berintegrasi dengan CCTV sedia ada ditambahkan dengan fungsi pengekstrakan ciri-ciri objek dan pengesanan sisi objek untuk mengesan pergerakan objek. Masalah yang timbul dalam projek ini ialah bagaimana untuk membezakan pergerakan statik dan tidak statik, bagaimana untuk mendapatkan keputusan pergerakan yang selaras dan bagaimana untuk menentukan sifat objek. Metodologi yang akan digunakan untuk melaksanakan OAMCEDS ialah Database Life Cycle (DBLC) manakala perisian yang akan digunakan ialah MySQL dan Matlab. Keputusan yang diperolehi daripada hasil projek ini ialah teknik Canny Edge Detection sesuai digunakan dalam kondisi dimana gambar-gambar ini mempunyai noise. OAMCEDS boleh dilaksanakan di pusat membeli belah, perpustakaan dan muzium selagi disitu mempunyai CCTV.

TABLE OF CONTENTS

| CHAPTER | SUBJECT | PAGE |
|-----------|------------------------------|------|
| | DECLARATION | i |
| | DEDICATION | ii |
| | ACKNOWLEDGEMENTS | iii |
| | ABSTRACT | iv |
| | ABSTRAK | v |
| | TABLE OF CONTENTS | vi |
| | LIST OF TABLES | xi |
| | LIST OF FIGURES | xiii |
| | LIST OF ATTACHEMENTS | xv |
| | LIST OF ABBREVIATIONS | xvi |
| | | |
| CHAPTER I | INTRODUCTION | PAGE |
| | 1.1 Project Background | 1 |
| | 1.2 Problem Statement | 3 |
| | 1.3 Objective | 3 |
| | 1.4 Scope | 4 |
| | 1.5 Project significance | 4 |
| | 1.6 Expected output | 5 |
| | 1.7 Conclusion | 7 |

| | | |
|--------------------|--|----|
| CHAPTER II | LITERATURE REVIEW AND PROJECT METHODOLOGY | |
| 2.1 | Introduction | 8 |
| 2.2 | Facts and findings | 9 |
| 2.2.1 | Domain | 9 |
| 2.2.2 | Existing system | 10 |
| 2.2.2.1 | Case study 1 | 10 |
| 2.2.2.2 | Case study 2 | 14 |
| 2.2.3 | Technique | 16 |
| 2.3 | Project Methodology | 19 |
| 2.3.1 | Database Life Cycle (DBLC) | 20 |
| 2.4 | Project Requirements | 22 |
| 2.4.1 | Software Requirements | 22 |
| 2.4.2 | Hardware Requirements | 23 |
| 2.4.3 | Other Requirements | 23 |
| 2.5 | Project Schedule and Milestones | 23 |
| 2.5.1 | Project Milestone | 24 |
| 2.6 | Conclusion | 26 |
| | | |
| CHAPTER III | ANALYSIS | |
| 3.1 | Introduction | 27 |
| 3.2 | Problem Analysis | 28 |
| 3.2.1 | Manual system | 28 |
| 3.2.2 | Problem statement | 31 |
| 3.3 | Requirement analysis | 32 |
| 3.3.1 | Data Requirement | 32 |
| 3.3.1.1 | Table Frame | 32 |
| 3.3.1.2 | Table Crop | 33 |
| 3.3.1.3 | Table Process | 34 |
| 3.3.1.4 | Table Result | 34 |
| 3.3.2 | Functional Requirement | 35 |
| 3.3.2.1 | Module of Functional Requirement | 35 |

| | |
|--|----|
| 3.3.2.2 Context Diagram of Functional Requirement | 36 |
| 3.3.3 Non- Functional Requirement | 37 |
| 3.3.4 Others Requirement | 37 |
| 3.3.4.1 Software requirement | 38 |
| 3.3.4.2 Hardware requirement | 39 |
| 3.3.4.3 Network requirement | 39 |
| 3.3 Conclusion | 39 |
| | |
| CHAPTER IV DESIGN | |
| 4.1 Introduction | 40 |
| 4.2 High-Level Design | 41 |
| 4.2.1 System Architecture | 41 |
| 4.2.2 User Interface | 42 |
| 4.2.2.1 Navigation Design | 42 |
| 4.2.2.2 Input Design | 44 |
| 4.2.2.3 Output Design | 44 |
| 4.2.3 Conceptual and Logical Database Design | 46 |
| 4.2.3.1 Conceptual Database Design | 46 |
| 4.2.3.2 Logical Database Design | 48 |
| 4.2.3.3 DBMS Selection | 49 |
| 4.3 System Architecture | 51 |
| 4.3.1 Software Design | 51 |
| 4.3.2 Physical database design(schema level-DDL/DCL) | 52 |
| 4.3.2.1 Table Frame | 53 |
| 4.3.2.2 Table Crop | 54 |
| 4.3.2.3 Table Result | 54 |
| 4.3.2.4 Table Process | 55 |
| 4.4 Conclusion | 55 |

| | | |
|-------------------|---|----|
| Chapter V | Implementation | |
| 5.1 | Introduction | 56 |
| 5.2 | Software Development Environment Setup | 57 |
| 5.2.1 | Environment Setup | 58 |
| 5.3 | Database Implementation | 59 |
| 5.3.1 | Data Loading | 59 |
| 5.3.2 | Samples of Database Access | 60 |
| 5.3.2.1 | Search Process | 60 |
| 5.3.2.2 | Analysis (Daily Report) | 61 |
| 5.3.2.3 | Analysis (Counting movement of daily report) | 63 |
| 5.4 | Software Configuration Management | 64 |
| 5.4.1 | Configuration Environment Setup | 64 |
| 5.4.1.1 | Software that use in configuration | 65 |
| 5.4.1.2 | Configuration of MySQL | 65 |
| 5.4.1.3 | Configuration between Matlab and MySQL | 67 |
| 5.4.2 | Version Control Procedure | 69 |
| 5.5 | Implementation Status | 70 |
| 5.6 | Conclusion | 71 |
| | | |
| Chapter VI | Testing | |
| 6.1 | Introduction | 72 |
| 6.2 | Test Plan | 73 |
| 6.2.1 | Test Organization | 73 |
| 6.2.2 | Test Environment | 74 |
| 6.2.3 | Test Schedule | 75 |
| 6.3 | Test Strategy | 76 |
| 6.3.1 | Classes of tests | 77 |
| 6.4 | Test Design | 78 |
| 6.4.1 | Test Description | 78 |

| | |
|--|----|
| 6.4.1.1 Test Case: User-Login in Login Module | 78 |
| 6.4.1.2 Test Case: Record Information Module | 78 |
| 6.4.1.3 Test Case: View Process Information in Queries Information Module | 79 |
| 6.4.1.4 Test Case: Report Module | 80 |
| 6.4.1.5 Test Case: Analysis Movement Based on Edge Detection Module | 80 |
| 6.4.2 Test Data | 81 |
| 6.5 Test Result and Analysis | 82 |
| 6.6 Conclusion | 83 |

CHAPTER VII PROJECT CONCLUSION

| | |
|---|----|
| 7.1 Observation on Weakness and Strenghts | 84 |
| 7.1.1 Strengths | 84 |
| 7.1.2 Weekness | 86 |
| 7.2 Propositions for Improvement | 86 |
| 7.3 Contribution | 87 |
| 7.4 Conclusion | 87 |

LIST OF TABLES

| Table | Title | Page |
|--------------|--|-------------|
| 1.1 | Module of Object Analysis Movement using Canny Edge Detection System (OAMCEDS) | 6 |
| 2.1 | Comparison Advantages and disadvantage Canny and Sobel technique | 17 |
| 2.2 | Software Requirements | 22 |
| 2.3 | Hardware for Notebook | 23 |
| 2.4 | Other Hardware Requirements. | 23 |
| 2.5 | Project Milestone | 24 |
| 3.1 | Problem Statement of Manual System | 31 |
| 3.2 | Table Frame in database | 32 |
| 3.3 | Table Crop in database | 33 |
| 3.4 | Table Process in database | 34 |
| 3.5 | Table Result in database | 34 |
| 3.6 | Module of Functional Requirement | 35 |
| 3.7 | Nonfunctional requirement of OAMCEDS | 37 |
| 3.8 | Software Requirement of OAMCEDS | 38 |
| 3.9 | Hardware for Notebook | 39 |
| 3.10 | Other Hardware Requirements. | 39 |
| 4.1 | Input design of OAMCEDS. | 44 |
| 4.2 | Functionality of database | 50 |
| 5.1 | Environment Setup of OAMCEDS | 58 |
| 5.2 | Server Configuration of OAMCEDS | 58 |
| 5.3 | Database Environment Setup of OAMCEDS | 58 |
| 5.4 | Computer Environment Setup of OAMCEDS | 59 |
| 5.5 | OAMCEDS Version Description | 69 |

| Table | Title | Page |
|--------------|--|-------------|
| 5.6 | Implementation Status | 70 |
| 6.1 | Test Organization in OAMCEDDS testing. | 74 |
| 6.2 | Test Environment Specification | 74 |
| 6.3 | Test schedule for OAMCEDDS | 75 |
| 6.4 | Test Classes in OAMCEDDS | 77 |
| 6.5 | Test Cases, Description and Expected Result for User Login | 78 |
| 6.6 | Test Cases, Description and Expected Result for Record Frame Information | 79 |
| 6.7 | Test Cases, Description and Expected Result for Queries Information Module | 79 |
| 6.8 | Test Cases, Description and Expected Result for Report Module | 80 |
| 6.9 | Test Cases, Description and Expected Result for Edge Detection Module | 80 |
| 6.10 | Test Data for User Login (Test Case ID : OAMCEDDS -1001) | 81 |
| 6.11 | Test Data for Record Frame Information (Test Case ID: OAMCEDDS -2001) | 81 |
| 6.12 | Test Data for Search Information (Test Case ID : OAMCEDDS - 3001) | 82 |
| 6.13 | Test Data for Daily Report (Test Case ID : OAMCEDDS -4001) | 82 |
| 6.14 | Test Data for Delete Process (Test Case ID : OAMCEDDS - 5001) | 82 |
| 6.15 | Test Result and Analysis | 82 |
| 7.1 | Strength of OAMCEDDS | 85 |
| 7.2 | Weakness of OAMCEDDS | 86 |
| 7.3 | Propositions for Improvement | 86 |
| 7.4 | Contribution of the OAMCEDDS. | 87 |

LIST OF FIGURES

| Figure | Title | Page |
|---------------|--|-------------|
| 2.1 | CBMIR framework | 11 |
| 2.2 | Sample Image for Finding Gradient | 12 |
| 2.3 | Sample Image for Thresholding and Hysteresis | 12 |
| 2.4 | Sample Edge Detected Brain Image | 13 |
| 2.4(a) | Brain Image (Input Image) | 13 |
| 2.4(b) | Edge Detected Brain Image (Output Image) | 13 |
| 2.5 | Sample Snapshot of the CBMIR Model Using Shape Feature | 13 |
| 2.6 | Sample action of interest in 4 different camera views in the 2008 TRECVID surveillance event detection dataset | 14 |
| 2.7 | The block diagram of the proposed human action detection approach | 15 |
| 2.8 | Sample MEHIs for the actions: <i>CellToEar</i> , <i>ObjectPut</i> , and <i>Pointing</i> | 15 |
| 2.9(a) | Canny Edge detection | 16 |
| 2.9(b) | Sobel Edge detection | 16 |
| 2.10 | The Database Life Cycle (DBLC) | 20 |
| 3.1 | CCTV on monitoring object | 28 |
| 3.2 | Flow chart of capturing information | 29 |
| 3.3 | Flow chart of making analysis | 30 |

| Figure | Title | Page |
|---------------|---|-------------|
| 3.4 | Context Diagram of OAMCEDS | 36 |
| 4.1 | Component View of event-driven video transmission | 42 |
| 4.2 | Navigation Design of OAMCEDS | 43 |
| 4.3 | Interface of Main Menu | 45 |
| 4.4 | Interface of Daily Report | 46 |
| 4.5 | Entity Realationship Diagram OAMCEDS | 47 |
| 4.6 | Normalization in 3F of OAMCEDS | 49 |
| 4.7 | DFD level 0 | 52 |
| 5.1 | Environment Setup for OAMCEDS | 57 |
| 5.2 | Query Interface (Search Process using ID) | 60 |
| 5.3 | Result Of Query (Search process using ID) | 61 |
| 5.4 | Query Interface(Analysis Daily Report) | 61 |
| 5.5 | Result Of Query (Analysis Daily Report –Have data) | 62 |
| 5.6 | Result Of Query (Analysis Daily Report –No data) | 62 |
| 5.7 | Query Interface (Counting movement of daily report) | 63 |
| 5.8 | Result Of Query (Counting movement of daily report) | 64 |
| 5.9 | Configuration Wizard | 65 |
| 5.10 | Assign port number | 66 |
| 5.11 | Security Settings | 66 |
| 5.12 | End of Installation MySQL Server | 67 |
| 5.13 | Create new file | 67 |
| 5.14 | Test Connection | 68 |
| 5.15 | Insert username and password. | 68 |
| 5.16 | Connection successfull. | 69 |

LIST OF ATTACHMENTS

| ATTACHMENT | TITLE | PAGE |
|-------------------|-----------------|-------------|
| Attachment A | Gantt Chart | 91 |
| Attachment B | User Interface | 93 |
| Attachment C | Data Definition | 96 |

LIST OF ABBREVIATIONS

| | |
|---------|--|
| OAMCEDS | Object Analysis Movement using Canny Edge Detection System |
| 3NF | Third Normal Form |
| SDLC | Software Development Life Cycle |
| DFD | Data Flow Diagram |
| CCTV | Closed Circuit Televisyen |
| DDL | Data Definition Language |
| DCL | Data Control Language |

CHAPTER I

INTRODUCTION

1.1 Project Background

In this chapter, the overview of the object movement, and edge detection using the canny edge detection technique will be described. Object movement is an object place changes of the point to another point that can see through different medium such as; eyes, Closed Circuit Television (CCTV), and computer vision. Based on 3 medium above, the movement of an object will detect and analysis. By using the eyes, the observer only can view the movement without know about edge, size and detail of the objects. Based on sophisticated technology CCTV now expands from traffic monitoring, disaster monitoring and public security to private security, marketing and customer management adding intelligent function using computer vision to resolved the weekness of eyes medium on detection and anlysis the movement.

Edge detection is a fundamental tool used in most image processing applications to obtain information from the frames. (Hong Shan Neoh, nd). It is significantly reduce the amount of data in image, and allows project separation and shape detection. It is important to filter out useless information by removing or reducing noise, while a properties structural property in image was preserved. (Raman Maini & Dr. Himanshu Aggarwal)

Canny edge detection is new approach to edge detection, which has gained popularity over the years, especially in the field of computer vision. (Joakim Lindblad, 2007). It is a one of the technique use in edge detection to improve criteria current method of edge detection that was developed by John F. Canny in 1986. This technique uses a multi-stage algorithm to detect a wide range of edges in images. Even though it is quite old, it has become one of the standard edge detection methods and it is still used in research. The canny edge detection algorithm use 5 step to process image which are smoothing, finding gradient, non maximum suppression, double thresholding and edge tracking by hysteresis.

Based on the explanation regarding on combination of three keyword; object movement, edge detection and canny edge detection, the system based on this scenario will be developing to detect and analysis of object movement under project Object Analysis Movement using Canny Edge Detection System (OAMCEDS). Using the OAMCEDS on object movement system, it will classify whether the status of the object is moving or static. This system also will be able to make image analysis that can differentiate the image, make a feature extraction, can login based on authorized user, backup and recovery data, record the data, queries the information, view the video and splitting the video. Based on the ability of the system can do, it will generate the decision making whether the object is moving or static based on value of movement and status of movement. The value of the movement is based on the calculation when 0 and above can produce result as dynamic status and when 0 and below as static status.

The problem statement of the system, goal and scope on the target user, target area and module will be explained on the next section. After that, the significance of the project significance and expected output also will be discussed. The conclusion of the chapter will summarized all the section on this chapter.

1.2 Problem Statement

Nowadays, CCTV is one of a medium use by some person, organization, and company or government firm to prevent crime, traffic jam, or mob, where it is use in public area, road, home and shopping mall.

In website Brick House Security, it explains what a function of CCTV, it said “CCTV is most commonly used for surveillance. Security cameras are now universally featured in many public and private institutions, from a correctional facility to the convenience store. In prisons, the CCTV can reduce the costs of staffing and operating observation towers and make it possible to maintain a constant watch on all areas of the facility.”

So based on the explanation above, the one of the system related to the CCTV and edge detection should be developing to avoid of some related problems. The system is using Canny Edge Detection which is OAMCEDS is chosen to detect and analysis the movement of an object. Based analysis that has been interpreted on developing OAMCEDS, the problems were found out which are; how to identify the differences between static and non static movement, how to make data more security and authorized access, how to query fast data and reduce time consuming and how to differentiate between movement from subject and background.

1.3 Objective

Regarding on the problem explained before, the main goal of develop Object OAMCEDS will identify.

The objectives of the system are:

- To recognize the differences between static and non static movement.
- To identify the different between movement from subject and background.
- To study the human behavior by detect the differences of movement at every image.

- User authorized of the system.
- To reduce time consuming.
- To make data secure by applying backup and restore.

1.4 Scope

The scope of the project is focuses to the target user, target area and module that use in this OAMCEDDS. The target user in OAMCEDDS is the observer, where they are only can view the picture, video and frame of the video. Here the observer can only view an edge detection of every frame. Besides that, the observer can access fully of the system, which is can insert, delete and search the query of the image or video.

The target area is a place that system was placed where using a Closed Circuit Television (CCTV) used for surveillance in shopping mall, parking area, public area, escalator and others places.

In OAMCEDDS, the module that included have 9 module, which are Login Module, Record Information Module, Queries Information, Edge Detection Module, Feature Extraction Module, Image Analysis ,Classification Module, Backup and Recovery Module and Report Module.

1.5 Project significance

Project significance is focuses on why OAMCEDDS should exist? Based on discussion in Section 1.2 Problem Statements, the suggested system is important for surveillance and security of some area and a situation. For example, escalator in the shopping mall, where OAMCEDDS is important in reducing electricity power. The key word 'electricity power ' is highlighted on when the CCTV focuses on the person or object that move and detect it using the system, the escalator will be move, otherwise

it will be static. So, based on this situation, it can save energy and reduce electricity power based on movement.

One of the strengths of Canny Edge detection technique that will be apply on OAMCEDDS, it is alert on noise condition so this system is important used on detect crime among crowd people especially in public area, where the system can detect and analysis the movement of an object based on edge of the body, step movement and object behavior. Based on that, the suspect of the object will be focused and will count the movement to see the object is involved or not in crime.

In the perspective business of OAMCEDDS, it is develop to sell and help some of firm, individual, institution and others to reduce a criminal statistic among society For the emergency condition such as when a fire alarm occur, OAMCEDDS will detect the object behavior either the human is running, static or slow movement. OAMCEDDS is important where it can be used on road to counting the car especially in traffic jam. The CCTV is placed at traffic light and the observer can analysis how fast the movement occurs to overcome time problem of traffic jam and the parties can take an action.

1.6 Expected output

Based on the module on Table 1.1, the system will produce the sophisticated system that can solve the problem of processing image and video with save the time, cost and energy. Besides that, OAMCEDDS will be able to differentiate within another technique which is the best to detect a movement and edge.