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“Video Mining for Observing Human Activities”

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UNIVERSITI TEKNOLOGI PETRONAS

Video Mining for Observing Human Activities

By

Altahir Abdalla Altahir Mohammed

A THESIS

SUBMITTED TO THE POSTGRADUATE STUDIES PROGRAMME

AS A REQUIREMENT FOR

THE DEGREE OF MASTERS OF SCIENCE

IN ELECTRICAL AND ELECTRONICS ENGINEERING

BANDAR SERI ISKANDAR,

PERAK

DECEMBER, 2008

DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTP or other institutions.

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ACKNOWLEDGEMENT

First and foremost, I would like to thank Allah the Almighty for the innumerable gifts that He has granted me, for guiding me along in completing this work and for giving me an opportunity to undergo higher education.

I would like to express my total appreciation to the people for their support and for guiding me along in completing this thesis. Very special thanks to my supervisor, Dr. Vijanth Sagayan Asirvadam for his invaluable time and guidance on this thesis throughout the two years.

I would like to express my utmost appreciation to my dearest mother, brothers and sisters for their encouragement throughout my whole educational life. I could have not completed my degree without continuous and immeasurable support.

Finally, I would like to thank all my friends for their help and friendship, who were supportive and patient towards me for the last two years.

ABSTRACT

With the advance in video technology, video cameras have become an integral part of daily life. They are installed in parking lots, traffic intersections, airports, banks, etc. Usually a human operator watches them to catch events of interest in the scene, but this is a tedious and time consuming process requiring constant attention, and leads to inadequate surveillance capability. Therefore, there is an urgent need for automated systems for analysis of surveillance video streams.

This thesis presents a novel operational computer vision framework for visual knowledge extraction from human motion. The system captures a video of a scene and classifies those moving objects which are characteristically human. Then perform analyzing and mining operations based on full frame based analysis and inter frame based analysis to interpret the current activity. Moreover, based on selective criteria from full frame board and inter frame board the system evaluate the current activity to assist the security officers to catch the events of interest moreover, creating multi storing scheme for reducing the storage capacity in 24 hours surveillances system.

ABSTRAK

Dengan berkembangnya teknologi rakaman video menyebabkan unit kamera video (unit perakam video) menjadi peralatan yang sering digunakan secara menyeluruh dan menjadi intipati hidupan seharian. Unit perakam video dimaksudkan adalah tujuan pengawasan yang sering di pasang di tempat letak kereta, simpang jalan yang sesak, lapangan terbang, institusi kewangan dan tempat tempat yang lain.

Sering kali seorang pengawal yang mengawasi keadaan yang mungkin merunsingkan dengan menonton beberapa unit tayangan harus sedar selalu dan merupakan satu kerja yang meletihkan yang mungkin merosotkan process pengawasan sama sekali. Berikutan itu, satu sistem berkomputer untuk menganalisa pita pita rakaman bagi membantu sistem pengawasan harus diketengahkan. Isitah komputer digunakan yang berlainan dengan istilah automasi kerana sistem berkomputer memerlukan pertolongan pengawal (manusia) pada akhirnya untuk menyenangkan sistem operasi pengawasan.

Penulisan kajian (thesis) ini membentangkan satu cara yang baru dalam pengoperasian sistem berkomputer pengawasan yang cuba mencungkil pengetahuan (atau ciri ciri dalaman) yang diketarakan oleh objek objek yang bergerak dalam fokus camera dimana keutamaan diberikan kepada pergerakan manusia. Sistem berkomputer ini akan mengambil rakaman dan membuat penganalisaan mendalam keseluruhan rakaman atau rakaman yang berselang bagi menterjemahkan aktiviti aktiviti objek yang bergerak. Dengan menggunakan cara sebegini, system berkonputer yang dikaji dalam kajian ini dapat menolong unit pengawal untuk mengfokuskan kepada aktiviti yang menarik perhatian (atau merunsingkan). Kajian ini juga menunjukkan sistem ini dapat menolong mengurangkan storan bagi penyimpanan data data rakaman video sistem pengawasan.

Kajian ini juga membentangkan beberapa simulasi keadaan dengan menggunakan pita rakaman untuk membuktikan sistem yang diperkenalkan ini beroperasi dengan betul dalam menolong sistem pengawasan harian.

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