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"Video Mining for Observing Human Activities"

Submitted by

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For the fulfilment of the requirements for the degree of
Masters of Science in Electrical and Electronics Engineering

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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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Name : _ Altahir Abdalla Altahir Mohammed

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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 digunapakai secara menyeluruh dan memjadi 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 untul 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 membentankan 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 keselurahan rakaman atau rakaman yang berselang bagi menterjemahkan aktiviti aktiviti objek yang bergerak. Dengan mengunakan 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 menunjukan sistem ini dapat menolong mengurangkan storan bagi penyimpanan data data rakaman video sistem pengawasan.

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

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