INTISARI

Tingginya kebutuhan sistem keamanan menyebabkan tingginya topik penelitian tentang metode yang digunakan dalam sistem keamanan. Hasil metode penelitian untuk mengembangkan perancangan sistem berbasis teknologi *image processing*. Pada penelitian ini menganalisis metode pendeteksi objek bergerak menggunakan citra video dengan membandingkan antara dua metode yaitu *frame differencing* dan *background subtraction*. Tujuan dari penelitian ini yaitu merancang sistem pendeteksian objek bergerak, kemudian menentukan metode yang lebih handal dari segi keberhasilan mendeteksi objek. Pada penelitian ini citra video yang digunakan dalam pengujian merupakan hasil rekaman di Universitas Muhammadiyah Yogyakarta, berlokasi di Gedung D dan Gedung Ar Fachrudin B dengan pengambilan video didalam ruangan. Citra video direkam menggunakan kamera jenis *Logitech webcam* C922 pro Hd 1080 P dalam format avi. Penelitian ini menggunakan 2 jenis pengujian yaitu pengujian kualitatif dan pengujian kuatitatif. Pengujian kualitatif dari hasil metode dalam mendeteksi objek bergerak dan pengujian kuantitatif dari hasil nilai FPS. Hasil dari pengujian kulitatif yaitu sistem metode *background subtraction* berhasil mendeteksi 23 objek bergerak dengan renta performa baik, 6 objek bergerak renta performa cukup, 1 objek bergerak tidak berhasil terdeteksi, dan terdapat 1 kali *noise*. Sedangkan Sistem metode *frame differencing* berhasil mendeteksi 28 objek bergerak dengan renta *performa* baik, 2 objek bergerak tidak berhasil terdeteksi, dan terdapat 2 kali noise. Hasil pengujian kuantitatif sistem *metode background subtraction* memiliki nilai FPS rata-rata sebesar 117 FPS dengan nilai maksimal 180 FPS. Sedangkan sistem metode *frame differencing* memiliki nilai FPS rata-rata sebesar 110 FPS dengan nilai maksimal 112 FPS. Dari segi keberhasilan metode *frame differencing* lebih akurat dalam mendeteksi objek. Sedangkan dari segi komputasi metode *background subtraction* lebih cepat *dalam mendeteksi objek*.

Kata Kunci : *image processing*, **deteksi gerak**, *background subtraction*, *frame differencing, frame rate*

ABSTRACT

High demand for security system is become a trending topic of research about a used method in security system. The research methods generate to develop software design based on image processing technology. In this research, analyzing moving object detection methods using video images by comparing two methods, these are frame differencing and background subtraction. The purpose of this research is to design a moving object detection system and then determine a more reliable method of successfully detecting objects. In this research, using recording the video image taken at Muhammadiyah University of Yogyakarta, located in Building D and AR Fachrudin B Building with indoor video shooting. Video images have recorded using a Logitech webcam type C922 pro HD 1080 P webcam in avi format. This research uses two types of test, these are qualitative testing and quantitative test. The qualitative testing from result method of object motion detection and the quantitative testing from result of FPS values. Results of the qualitative test are background subtraction method that has succeeded in detecting 23 moving objects with a good performance, 6 moving objects with medium performance, 1 moving object cannot be detected successfully, and there is 1 noise. When the system using the frame differencing method, the system can detect 28 moving objects with good performance, 2 moving cannot detect, and there was 2 noise. The quantitative system test results of the frame differencing method have an average FPS value of 117 FPS with a maximum value of 180 FPS. While the frame differencing method system has an average FPS supply of 110 FPS with a maximum value of 112 FPS. Based on the success condition, the frame differencing method is more accurate in detecting objects. While based on computing, the background subtraction method is faster in detecting objects.

Keywords : image processing, object detection, background subtraction, frame differencing, frame rate