

PENGEMBANGAN MODUL PRAKTIKUM ROBOTIKA UNTUK PENGENALAN POLA RUANG DENGAN METODE *EDGE DETECTION*

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Abstract: This research aim to 1) developing system of pattern recognition by using image processing for reduce mistake of analog and digital electronics circuit; 2) giving contribution in science and technological development, specially in computer informatics system, that is in analyze of pattern recognition method by using web camera. This research step must to do are picture has taken then minimized and imposed by image processing covering grayscale process, noise reduce, threshold and edge detection. Output from this process become to input for pattern recognition process what processed using by chain code method. Result from that process then processed to determine command for turn left, turn right or straight on and also to detect of fire in image. On this step is done the examination to get data. Conclusion of this research are 1) system development of robot by using web camera as censor of hardware and also software conducted by research and development, with web camera main circuit, CPU, minimum microcontroller system and motor drive; 2) system still can make correct decision at strong range of light between 10 lux up to 7000 lux; 3) from result of testing, the difference between performance of system and manually measurement got average 1,71%; 4) robot can detect flame in various place and time test; 5) robot can move straight on match with mapping planned and going back to home base, though don't always walk precisely in middle position.

Kata kunci: robot, *edge detection*

Fakta bahwa hampir seluruh sistem di dunia ini secara fitrah telah menerapkan sistem kontrol untuk mengatur keseimbangan besaran tertentu. Misalkan dalam sistem biologis manusia, untuk mengatur keseimbangan alam dan sebagainya. Termasuk sistem yang dibuat oleh manusia banyak yang memerlukan sistem kontrol. Sistem kontrol diperlukan untuk menjaga suatu besaran-besaran atau nilai-nilai tertentu agar senantiasa sesuai dengan yang diinginkan, mengatur perilaku suatu sistem agar mengikuti kaidah yang diinginkan, dan menjaga keseimbangan suatu sistem tertentu. Contoh aplikasi sistem kontrol yaitu pada kecepatan putar motor dalam pemutar kaset atau disk, pengaturan suhu ruangan, pengaturan tegangan dalam sistem catu daya, menjaga keseimbangan navigasi (*steering*) dalam suatu wahana gerak. Bentuk sistem kontrol ada dua, yaitu sistem kontrol analog dan sistem kontrol digital. Sistem kontrol digital yang banyak dikembangkan saat ini adalah yang berbasis kecerdasan buatan (kontrol cerdas).