ABSTRACT

One of the essential development goal from robotic science is to create robots with higher autonomous capability on their respective application fields. This could be achieved by engineering applied censors and various methods. On this research the robot designed to have an autonomous object tracking and navigation capabilities. Applied with a camera as a media input and image processing program on processing unit, the system produce detected object coordinate and able to sends them to navigation controller over serial communication. System on this research will only focused on object tracking and integration with navigation system capabilities—while system navigation and balancing control capabilities will be done by fellow researchs that will produces an autonomous object following balancing robot. Moving object tracking system on this research able to process video input with Hough transform theory on image processing programming. Real-time object location data extracted from the video is the output of this system, then interpreted to a coordinate, devilered to navigation system for further processing and decision making. With the help from Median filtering on preprocessing, the accuracy of the system reaches up to 82%. Most of the errors that occurs is lost tracking. Median filtering also slowens down the Hough transform process up to 45.74%, but helps the system accuracy level up to 29.12%. Showing that Hough transform performance is really depends on the characteristics of the given input.

Keywords: object tracking, Hough transform, computer vision