ABSTRACT

Human-Robot Interaction have their own roles in daily life. At a restaurant automation system needed to deliver orders and interact with customers. Waiter robot acts as an effective automation system for a restaurant and can replace the role of a waiter. To be able to perform human-robot interaction needed vision-based sensor that will be realized by a system of face detection.

The final goal of this research is to apply face detection method Haar Cascade Classifier well on a waiter robot so the robot can detect the presence and absence of the face and be able to interact verbally and non-verbally with the customer. Waiter robot uses an integrated webcam with a laptop and connected with microcontroller using a serial cable. Webcam will acquire images, then processed them on a laptop and be the input data to the microcontroller.

From the experiment that has been done, the face detection system using haar cascade classifier method with of 320×240 pixels frame resolution produce good detection accuracy with an average of computing time on a range of $\pm 60cm$ of 95,253ms. Face detection accuracy rate achieve 100% success in a range of $\pm 30cm$ and $\pm 60cm$ in a state of glowing lights, 100% at a distance of $\pm 30cm$ and $\pm 95\%$ at a distance of 60cm in case the lights went out.

Keywords: Face Detection, Haar Cascade Classifier, Waiter Robot