

## **Abstract**

Today the use of the embedded systems are increasingly widespread. This is because embedded devices more flexible and has a specific function. One application of embedded system is a system of tracking humans in surveillance cameras for security purposes. This device is intended to replace the function of a computer (PC, notebook, netbook), which is often used for human tracking system using a camera and some software that can certainly reduce the flexibility of the security system. These embedded devices only use a microcontroller chip that has a much lower specification desktop computers and two pyroelectric sensor array is arranged to detect infrared radiation from human-generated body heat.

Embedded devices are realized in this study uses fuzzy logic algorithms. There are three stages on fuzzy logic algorithms, namely fuzzyfication, inference, and defuzzyfication. Fuzzyfication phase change crisp input into the fuzzy input in the form of linguistic semantic value is determined based on membership functions. In the inference process using the method of Takagi-Sugeno and defuzzyfication the weighted average method.

In this study conducted a few experiments on the device. Fuzzy logic algorithm goes well, the maximum output tolerance demonstrated by the implementation of the simulation output of  $\pm 1^\circ$ . The value of the best accuracy can be achieved by the system is equal to 86% with a precision of 87%. The maximum speed that process can be achieved by a system of 12 processes per second for the travel angle servo motor by  $1^\circ$  until  $6^\circ$  and the minimum speed of 1 process per second to take the servo motor angle of  $121^\circ$  until  $126^\circ$ .

**Keywords :** Embedded system, microcontroller, pyroelectric, fuzzy logic