ABSTRACT

Smart Home is a home that has a smart environmental system. The room lighting system is one of the important factors in the performance of a building. The working principle of a lamp in a room generally uses an on-off system, which only see the dark conditions of a room. This can cause discomfort and inefficiency in electrical energy. Indoor lighting can be controlled automatically, so the lighting conditions in a room can be controlled regardless of the outside light. In this research, the control principle of the automation system used is fuzzy control. In this case the fuzzy inference system used is the Sugeno Method. The composition of the rules uses AND and IF-THEN operators, the defuzzification process uses the COG (Center of Gravity) method. The controlling element in this control system is the microcontroller with input from set points and light sensors (LDR). Information from the controller will be sent to the plan in the system, and the plan are AC Light Dimmer and Lamp. This system tested on a prototype. The result of the test is this system best performance at 200 lux, at that point when a system tested without a light disturbance, system response are 8 second for rise time, 12 second to reach steady state, 5.5% for overshoot and steady state error is 0.33%. And the system response when given a light disturbance are system take 9.5 second to return to steady state and price of the error is 0.30%.

Keywords: Fuzzy Logic, Microcontroller, Illumination