

## **ABSTRACT**

The Internet of Things is a structure where objects are given exclusive identities that can relocate data through a network to interact from source to destination. IoT can be used for electronic automation such as exhaust fans. At present, the installation of several exhaust fans in one indoor room cannot do smoke suction with fan rotating speed at each exhaust fan according to the spread of smoke concentrations because the exhaust fans sold on the market only have a constant fan rotational speed. To overcome this problem, a fuzzy logic based exhaust fan controller system is created based on the distribution of smoke data. Smoke is detected in the form of smoke containing carbon monoxide (CO) gas, a compound derived from burning wood charcoal. To regulate fan speed using averaging value from fuzzy logic output based on related and adjacent controllers, the distributed fuzzy logic controller method uses average consensus. Heatmap is used to monitor the spread of smoke concentration. Based on the tests carried out with the design designed to produce each controller after performing a fuzzy process can communicate with adjacent controllers and relate to do the average consensus and produce an averaging value of fan speed on each exhaust fan. Averaging value that is forwarded to the dimmer AC can adjust the fan speed according to the value given.

**Keywords:** internet of things, average consensus, fuzzy logic, CO, distributed, exhaust fan