

## Introduction

Information is a very important thing from time to time. Lighting is needed by humans to support their daily activities. With the development of the times and the increasing number of infrastructure being built, of course, it will not be separated from lighting or lighting, one of which is the public area. Such as parks, mosques, tourist attractions, and others that require a lot of lighting to support the activities to be carried out in the area. One of the important issues is lighting in rural tourism objects, which still do not have access to adequate electricity and are still relatively new. In addition, access to these attractions does not yet have lighting because they still do not have a power source and have not been considered properly by the local government.

One of the concepts of IoT, namely smart lighting, emerged as a solution to overcome problems in the lighting sector. However, the current smart lighting still requires a direct power source from the government (PLN). So we need a smart lighting technology that can produce its own power source to reduce the electricity costs that must be incurred. In 2017, research was carried out on the Design and Construction of LDR Modified PJU Lamp Installations Based on Piezoelectric Materials on Speed bumps. This study utilizes a piezoelectric sensor as the main power source for lighting public street lights (PJU) and uses an LDR sensor as a light sensor to detect ambient conditions. The system built in this study utilizes motorized vehicles as the main source for suppressing sensors. The system built is a speed bump by placing a piezoelectric sensor under the speed bump, which will generate an electric field and will be stored in the batter[1] In 2015, research was conducted on energy saving by implementing an intelligent system for Public Street Lighting (PJU) using the Mamdani fuzzy optimization algorithm, which is applied to the determination of the optimization value of the light intensity on the PJU lamp and the determination of the flame of the lamp[2].

This study has differences from the two previous studies. Namely, this study utilizing the kinetic energy of the visitor's footsteps and utilizing the Mamdani fuzzy logic algorithm as a regulator of light intensity. The device to be built is in the form of an IoT device that will be integrated into rural tourism places that can produce electrical energy by using the number of tourists in the form of pressure from the weight of each tourist who presses the piezoelectric sensor, which will then generate an electric field and will be used for lighting lights in the area. The tourist destination. In addition to using a piezoelectric sensor, this study will use the Mamdani fuzzy logic algorithm, which functions to determine the intensity of the light emitted by the lamp.

This study aims to build a tool or device that can manage and optimize the energy expended by building an IoT device using a piezoelectric sensor as the main ingredient to generate an electric field that will generate electrical energy for lighting or lighting in a crowded area of visitors and using a fuzzy algorithm. Mamdani logic is a determinant of the intensity of the light obtained from the light sensor on the IoT device.