

## **ABSTRACT**

*In the industrial world today, there are still many who use human labor in moving an item from one location to another location. The restaurant industry is one of the industries that use manpower to deliver and bring food. Because of frequent omissions such as the fall of food or drink brought by human labor, the food industry uses trolley as one of the tools to deliver and bring food.*

*But in the use of trolley is still facing obstacles, one of which food or drink that often fall or spill. That's because the food or beverage containers on the trolley do not have flat equilibrium when passing uneven paths. Therefore, this study aims to design smart trolley by using IMU sensor (Inertial Measurement Unit).*

*In designing this smart trolley system required several devices. including using IMU sensors, Arduino Uno, and servo motors. In addition, the algorithm used in designing this system is using fuzzy logic. Fuzzy Logic is generally applied to problems that contain elements of uncertainty developed based on human thinking that has many possibilities. There are three main processes in the implementation of Fuzzy Logic control that is fuzzification, inference system, and defuzzification.*

*Based on the results of the implementation of fuzzy logic control in this study is able to make the position of trolley container has a flat equilibrium. in this experiment, the change in the membership function range and the output changes in the outdefuzzy affect the speed to stable. The time required to stabilize the axis of the roll is 6 seconds, while the pitch axis is 4 seconds.*

*Keywords : Smart Trolley, IMU Sensors, Arduino Uno, Servo Motor, fuzzy logic.*