1. Introduction

Pedestrian is a person who performs activities on foot as a means of transportation with a certain distance. Pedestrian ways are often called the sidewalk. It is an infrastructure used by the pedestrian as a connector of the centre of urban activity [1]. Crowds in the city make the sidewalk overcrowded, thus making pedestrians become uncomfortable and can slow them down to arrive at their destination. Congestion on the sidewalk often occurs mainly on weekends or during holidays and before feast days. An increasing population that is not comparable to infrastructure too can cause overcrowded on the sidewalk.

Problems such as pedestrian density can be described with numerical models; one of them is the macroscopic model. Partial differential equations construct this model is used to modelling traffic flow that occurs on the road, which involves parameters such as velocity, density and traffic flow. The macroscopic models are also often referred to as the LWR models [2, 3]. In previous study [4], The LWR model applied then model discretization using the finite volume method to simulate traffic flow via fluid dynamics model for a single road with a traffic light.

Several other numerical methods used as references [5, 6, 7]. In this research, the Lax-Wendroff scheme used to help discretize models, as in [6], only in this research, this is used to pedestrian flows modelling. This method is the second on the time and space approximation scheme [6, 8].

The aim in this study is to measure the performance of the model and analyze the results of pedestrian flow modeling using macroscopic models with the Lax-Wendroff scheme. The pedestrian flows modelling using the LWR model will be elaborated. Mathematically this model is described as scalar hyperbolic conservation laws, can be rewritten as a transport equation. In the transport equation, there is a velocity variable, that is depicted as velocity function [6]. Velocity function is obtained from the observation data approach, using a linear method. Observation data consisted of pedestrian velocity-density relations, which is obtained from direct observation on the sidewalk of Braga Street, Bandung, Indonesia. The Author conduct experiment to analyze the impact of the density of pedestrian flows. The frequency has an influence on the estimated distance to be travelled.

This study organized as follows: In Section 2, numerical models and schemes for pedestrian flow modelling presented. In Section 3, explain about numerical approaches and model. Furthermore, the conclusion is present in Section 4.