

Comparing two different traffic simulation environments for simulating urban bicycle highway traffic – the case of SUMO and PTV VISSIM

Master's Thesis of Md Tariq Aziz

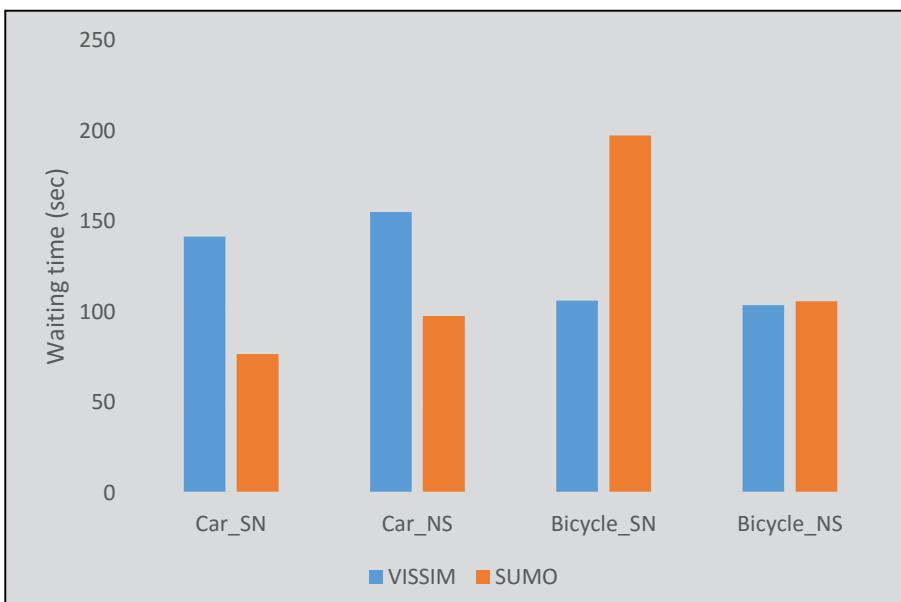
Mentoring:

Dr. rer. nat. Andreas Keler

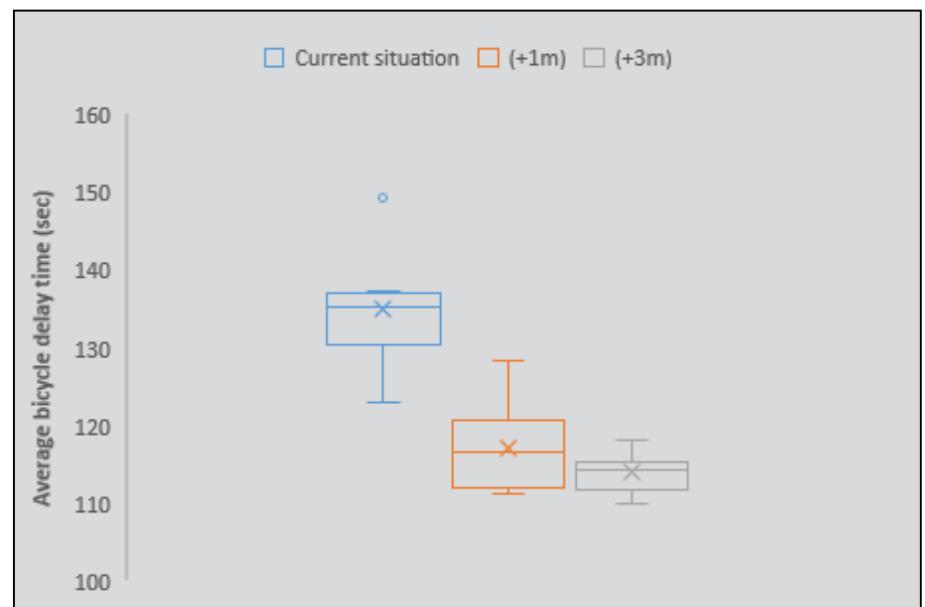
M.Sc. Georgios Grigoropoulos



In this thesis, the present state of the study area designed in PTV VISSIM for analyzing the proposed improvement. Two different variation of bicycle highway considered in this analysis by widening cycle lane width two times and analyze the results. Afterward, attempt for comparison two simulation tools have taken. Simulation model of the study area in SUMO already present from previous study and provided by the chair of traffic engineering control (TUM). So, simulation model of the study area in VISSIM was made based SUMO network to make both model consistent each other. Then, comparison analysis carried out based network editability and two measure of effectiveness such as vehicle waiting time and number of stops. Both simulation was done based on evening peak hour scenario by focusing mainly major stream flow.



The objective of this study is to investigate the effect of improving bicycle infrastructure design by widening the width of bicycle lane in Munich (Leopoldstrasse- Ludwigstrasse) as well as make a comparison between two widely popular microscopic traffic flow simulation environments- the case of SUMO and PTV VISSIM.



The results of this research show improvement on the quality of bicycle highways with proposed variation. Bicycle delay time and number of stops reduced up to 21% in both direction of major stream. Similarly, travel time also reduced up to 6%. So, it is clearly indicated that widening bicycle lane made a positive impact on bicycle traffic condition. At the end, the result from comparison analysis of both simulation tools showed a statistically significant different outcome under 95% confidence interval.