

Traffic Simulation Notes

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March 1, 2015

Intro

In order to accurately study a real-life system, it is often necessary to first model this system by abstracting some information. Once this model has been made, one can build a simulation to make several observation of the model. Finally one analyses the information collected from the simulation in order to make inferences and suggestions [2]. A traffic simulation can be classified in several ways - microscopic, mesoscopic and macroscopic simulations. Another distinction of a traffic simulator is discrete or continuous. In a discrete system the variables change at set intervals of time whereas in a continuous system the variables change continuously with time.

Macroscopic traffic simulations are large traffic simulation capable of showing the effect of small changes on vast and complex networks. Whereas a microscopic traffic simulation is used to model individual movement of cars in smaller sections of a network such as one specific intersection. These models will study parameters such as velocity and acceleration making them more suitable for study the effect of a change such as a new ramp. [2]. Macroscopic and mesoscopic models are similar in their approaches as they capture traffic dynamics in lesser detail. This results in a faster and easier simulator which is more suitable for larger networks . On the other hand, microscope are applied to smaller areas as it better represents vehicle and driver-behaviour [1].

References

- [1] Wilco Burghout, Haris N Koutsopoulos, and Ingmar Andreasson. Hybrid mesoscopic-microscopic traffic simulation. *Transportation Research Record: Journal of the Transportation Research Board*, 1934(1):218–255, 2005.
- [2] John A Sokolowski and Catherine M Banks. *Principles of modeling and simulation: A multidisciplinary approach*. John Wiley & Sons, 2011.