

Preface

The simulation of road traffic and especially individual vehicular mobility in larger conurbations presents a number of challenges in various areas of research such as physics, engineering, and computer science as well as psychology and sociology. The search for an appropriate and practically usable model for the problems of mode choice, route choice as well as the behavior of drivers when following each other, changing lanes or reacting to junction priorities and traffic lights created a number of complex software packages. Together with the advance of vehicular communication systems the requirements to those simulations and especially to their interfaces increased significantly. This led to a wider use of open source packages such as the Simulation of Urban Mobility (SUMO) suite developed mainly at the Institute of Transportation Systems of the German Aerospace Center.

This volume contains the proceedings of the First SUMO User Conference (SUMO 2013), which was held during May 15–17, 2013 in Berlin-Adlershof, Germany. SUMO is a well-established microscopic traffic simulation suite which has been available since 2001 and provides a wide range of traffic planning and simulation tools. The conference proceedings give a good overview of the applicability and usefulness of simulation tools like SUMO ranging from new methods in traffic control and vehicular communication to the simulation of complete cities. Another aspect of the tool suite, its universal extensibility due to the availability of the source code, is reflected in contributions covering parallelization and workflow improvements to govern microscopic traffic simulation results.

Several articles give short outlines of the general workflow when setting up a simulation with SUMO as well as an overview about the available tools for net and demand generation and for the evaluation of the results. Further features include the simulation of private and public transport modes, person-based trip chains as well as the extension for the implementation of new behavioral models or remote control of the simulation using various programming environments. The conference's aim was bringing together the large international user community and exchanging experience in using SUMO, while presenting results or solutions obtained using the software. This collection should inspire you to try your next project with the SUMO suite as well or to find new applications in your existing environment.

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