Strategies for the auralization of simulated urban traffic

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ABSTRACT

Traffic simulation is a fundamental part of the infrastructural planning process of urban areas. Although the major goal of such simulations is to analyze traffic flow and identify e.g. bottlenecks in road junctions the complex motion data of cars, trucks, busses, trams, trains, bicycles and pedestrians etc. can also be used to auralize the urban soundscape. In contrast to current commercial noise simulation tools that provide time-averaged sound level metrics in form of tables and noise maps, the auralization creates event-driven acoustic environments based on the superposition of individual sources and their characteristic sound. For this purpose, strategies must be applied to accelerate the acoustic rendering process, i.e. to maintain an acceptable processing time without perceivable quality impairment. This is especially important when the sound propagation simulation includes the built environment and provides early reflections off facades and sound diffraction at buildings.