

Boosting the Development of OpenDRIVE through Integration Into Standardised GIS Frameworks

Abstract

In the development and evaluation of advanced driver assistant and automation systems road description formats like the XML-based OpenDRIVE [ODR] evolved as de-facto standards for geometrical and logical representation of complex road networks. The increasing demand for generation of OpenDRIVE based on real-world scenarios [AIM] requires an easy integration of OpenDRIVE in GIS (Geographic Information System) applications for combination with additional georeferenced data, for example with road infrastructure, aerial imagery or GPS traces. Prior research revealed that the few available OpenDRIVE tools and editors are mostly commercial and offer insufficient support for common geodata or even none at all [ORO].

An extension of the well-established and modular open source library GDAL (Geospatial Data Abstraction Library) [GDAL] has been proposed before, offering the possibility to use *standardised* GIS tools ad hoc in analysis, processing and *visualisation* of OpenDRIVE. Based on that approach, this paper will dive deeper into the prospects of converting OpenDRIVE's mathematical geometry representation into OGC Simple Features [OGC] by showing additional examples of resulting GIS applications, of which one will be the authoring/publishing of a standardised web map service based on OpenDRIVE data. Closing the gap between the domains of driving simulation and GIS is the first step in stimulating promising development of scenario generation and synthesis of reality-based road networks for simulation applications and automated driving.

Bibliography

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