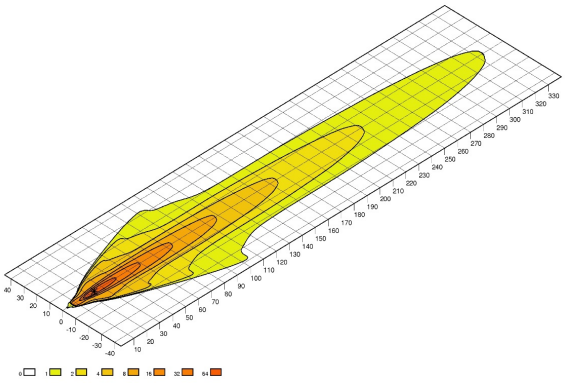
Bachelor / Master's Thesis

Realistic Radiation Patterns for Visible Light based Vehicular Communication

Recently, Visible Light Communication (VLC) has emerged as a candidate access technology for vehicular networking. One way of investigating Vehicular Visible Light Communications is using simulation studies. The advantage of simulations is that they are feasible to conduct in large scale and can cover a wide range of scenarios. The same does not apply to other methods of investigation, such as field operation tests, which are more realistic but often limited to a small number of nodes and scenarios. However, in order to conduct simulations we need valid simulation models.



Goals of the thesis

In this thesis we aim to improve the VLC model of the Veins vehicular networking simulator with radiation patterns of headlights and taillights from a real database. In a first step, the radiation patterns of light modules from Hella's database should be analyzed in order to identify similarities or differences between different modules. Then, the models from the database should be integrated to Veins to investigate the implications of using different light modules on the Vehicular VLC channel.

- Analyze and compare the headlight and taillight radiation patterns from the Hella database.
- Convert the obtained radiation patterns to a format suitable for Veins (considering photo-diode's characteristics).
- Verify the models with measurements

Acknowledgment

This thesis is conducted in collaboration with the L-Lab

LAB LIGHT | HUMAN | MACHINE

Keywords

C++, Parsing, Vehicular Visible Light Communication, PHY, Veins

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