

Master thesis

Simulation of light scattering by spray water from vehicles



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In the road to autonomous driving cars the effect of the environment over the performance of different sensors needs to be studied. Traditional methods fail because some situations are very difficult/ expensive to reproduce with the required precision. The purpose of this thesis is the simulation of one of those situations.

The objective is to create a Matlab model which allows the calculation of the reflection coefficient from the spray water from a certain vehicle (Car, Truck, Motorcycle, etc.). Scattering models like MIE will be used. Factors like wind speed, water film on the street and vehicle speed need to be also included in the model.

Your task could include:

- 1) Find a model which balance precision and processing time.
- 2) Implement the model in Matlab.
- 3) Partially validate the model using simple experiments.

Could this be interesting for you?

You are studying engineering or natural/computer science?

You have basic Matlab knowledge?

You like doing research, scientific computing and data analysis, and our topic seems to fit your studies? **Please don't hesitate to contact us!**

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¹ <https://w-dog.net/wallpaper/ford-fiesta-wrc-rally-rally-sports-race-car-front-spray-water-speed-light-hood/id/215200/>