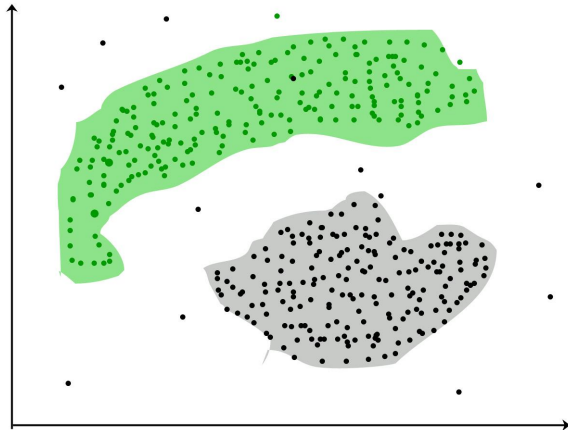


Bachelor or Master Thesis: Clustering of Traffic Scenarios



Description

Automated vehicles are tested in simulation with traffic scenarios of previously recorded data, e.g. <https://commonroad.in.tum.de/scenarios/>. This demands a large number of scenarios with different situations. To automatically label and structure these scenarios, a clustering technique (similar to [1]) should be developed in this thesis. The goal is to classify arbitrary traffic scenarios with respect to features like relative positions or velocities of vehicles, lane-change behavior, criticality of the scenario, etc.

Your tasks include:

- getting familiar with clustering techniques and LTL logic and select an algorithm
- define features for labeling traffic scenarios
- program the clustering algorithm in Python
- apply algorithm to highway scenarios
- possibly extend method to intersections

You should have:

- good programming skills (preferably in Python or a similar language)
- first experience with motion planning, clustering, learning, or search algorithms
- motivation to work independently

If you are interested, contact me and we can discuss the topic in more detail.

Literatur

- [1] F. Kruber, J. Wurst, and M. Botsch, "An unsupervised random forest clustering technique for automatic traffic scenario categorization," 2018 21st International Conference on Intelligent Transportation Systems (ITSC), pp. 2811–2818, 2018. [Online]. Available: <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=8569682>



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Generation of Test Scenarios
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Research area:
Automated vehicles, Clustering

Programming language:
Python

Required skills:
Python

Language:
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