



Automobile Manufacturer

Development of driver assistance functions for open parking detection on the basis of sensor data

For a globally acting, innovative automobile manufacturer, comSysto is developing a service for parking detection as a component of the driver assistance functions.

Requirements

- Detection of parking spots based on data from the ultrasound sensors in the vehicles.
- Data are filtered out of several terabytes of log data in the test fleet and aggregated.
- Statistical models were created based on the analyzed data.
- Development of a highly scalable data analysis platform for batch data and streaming data analysis.
- Efficient storage and query of geo-referenced data

Technologies

- Core: Java 8, Spring Boot
- Data analysis: AWS EMR Apache Spark
- Web services: Spring Boot (Web, JDBC), REST, Tomcat, GeoJSON
- Web page: AngularJS, Leaflet, Bootstrap
- Data storage: PostgreSQL with PostGIS, HDFS, Parquet
- Monitoring: Graphite
- Infrastructure: AWS EC2, AWS Cloud Formation, Ansible

Procedures and Methods

- Explorative procedures with rough target objectives
- Quick visualization of the data to evaluate the suitability of the data and the models
- Services are offered via REST web services (micro services).
- GeoJSON standard so that acquired data can also be used easily by other systems.
- Automated configuration and administration of the IT infrastructure, quality assured infrastructure for AWS or internal servers.

Advanced Analytics/Data Science

- Visual and statistical data exploration with data science notebooks
- Data curation such as interpolation if values are missing (e.g. GPS)
- Feature extraction and operationalization of the predictive models for sensor data
- Development of statistical models and machine learning models for the various services
- Discretization of the sensor and geo data for aggregation