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Bachelor's Thesis in Informatics
Database Technology

Topic: Scalable exploratory analyses of feed data

The Swiss Feed Database keeps track of the concentration of nutrients in feed samples and is being used as a reference point to decide official national feeding regulations for ruminants and pigs. PostgreSQL is used as a database system to organize, update and retrieve the information about feeds and nutrients. The goal of this Bachelor's thesis is to analyze the costs of online analytical queries and to optimize the performance of the Swiss Feed Database for exploratory data analyses.

1. Break down and analyze the performance of exploratory feed database queries. The focus is on a comprehensive architecture-dependent understanding and evaluation of the performance that identifies and quantifies the main limiting factors as the database and result sizes grow.
2. Design and implement scalable scatterplots that are able to efficiently retrieve and render any number of observations. Adapt the functionality of scatterplots so that it is well-aligned with the number of displayed observations. Evaluate your solution for scatterplots constructed for data managed by a database systems.
3. Use your initial analysis of feed database queries to design and implement scalable map and table displays that seamlessly adjusts the displayed information and functionality (e.g., markers, region statistics, sample density, nutrient concentration, sorting) during exploratory data analyses. Evaluate your solution in the context of the Swiss feed database.
4. Write the thesis and present your solution in a DBTG meeting.

Supervisor: Michael Böhlen

Starting date: 14.9.2020

Ending date: 14.3.2021

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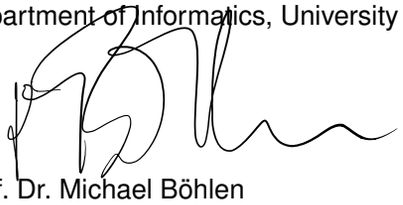

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