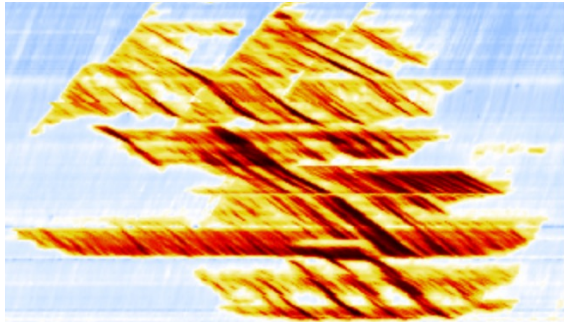


Augmenting congestion search engine with contextual data using natural language processing



Weg: A9, A2, A4, A10, A8, A7

Datum: 2019-11-11

74 km | 295 mins | 206 filegolven

VVU: 14291.6 veh*hr

Problem description

Identifying and classifying traffic and congestion patterns are essential parts of modern traffic management underpinned by the emerging intelligent transport systems. In research, education, and in practice, spatiotemporal contour maps of speed, density, and flow provide an intuitive means to identify, study, explain and illustrate (longitudinal) traffic flow phenomena based on either real traffic data or data from traffic simulation models. However, searching through raw traffic data to generate these spatiotemporal patterns is cumbersome. Therefore, we created a new intelligent database named COSI, where you can make queries into a

large-scale traffic database using high-level features such as congestion duration, extent, etc. This database can be enriched further using other resources to understand the origin or cause behind the congestion. One such resource that can be used to add contextual information to these congestion patterns is SocialGlass (developed in the IDE department). The objective of this thesis is to associate traffic data from COSI with contextual information from SocialGlass through Natural Language Processing (NLP) to obtain a more holistic view of the traffic congestion pattern.

COSI database contains information about congestion patterns for the whole of the Netherlands. Its applications range from monitoring, evaluation, and diagnostic purposes for traffic management and planning. Thus, the student gets an opportunity to work on a unique dataset on an emerging topic between two different fields.

Assignment

- Review state-of-the-art in congestion pattern classification and fast search indexing
- Scrap online news sources and NDW incident databases to create incident dictionary
- Use NLP to connect congestion pattern with incidents through the dictionary
- Add indexing using the defined dictionary to COSI

Candidate

- Should have coding skills in Python
- Should be comfortable with working with data

Research group

Transport & Planning department + NDW

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