Course Assignments
for

Advanced Information Visualization and Applications
4DV806 – Autumn 2021

Assignment 2

Deadline for this assignment is Dec 6, 2021 at 23:59.

Task 1 *Conceptual Design*

For this assignment you have to *design* a visualization tool for a multivariate data set, which you will later implement in Assignment 3 with a custom implementation.

You are also allowed to use your own data set instead of the one described below, but it should have at least several thousand items/entries (data sets consisting of several types/tables are welcome) and the number of attributes should be at least 4–5. Data sets with special properties such as temporal, geospatial, or relational are especially welcome. We recommend you to contact the teaching assistant first if you plan to use your own data.

We provide a medium-size data set which constitutes a small portion of the IGRA data set (`https://www.ncdc.noaa.gov/data-access/weather-balloon/integrated-global-radiosonde-archive`). You are allowed to modify the format of the provided data set or to extend it, if you wish. You can download it from Moodle or via the following URL:
`https://cs.lnu.se/isovis/courses/fall21/4dv806/assignments/temperature-europe.zip`

The file *temperature-monthly-europe.csv* contains monthly average temperature records (based on daily observations registered around 12:00 UTC) from a number of stations in Europe for various time ranges. The records refer to country and station codes defined in the files *country-codes-europe.csv* and *station-codes-europe.csv*, respectively.

You have to make a conceptual design, which means that **you are not supposed to implement the visualization at this point**, since you have to get approval if your conceptual design meets the requirements. Simply draw a visualization and illustrate interaction ideas on paper (you can use software tools for drawing if you wish). Before you begin to create your visualization, think about the data set and what would people like to do with it. Note that the data set involves both temporal and geospatial aspects, and it is related to the climate domain. What would one want to know, how can he/she find specific information, what other tasks would one like to perform with the data? Does it make sense to filter out uninteresting parts or attributes? Your visualization should help users in performing these tasks. Therefore, you should select what would be the most convenient visualization and interaction techniques to support those tasks.

To provide you with inspiration about the tasks and opportunities related to temporal temperature data, we suggest reading the paper by Kerren et al. from `https://cs.lnu.se/isovis/pubs/docs/kerren-sigrad14.pdf`. Related work also includes papers by Ladstädter et al. (`https://doi.org/10.1175/2009JTECHA1374.1`), Tominski et al. (`https://doi.org/10.1109/IV.2011.12`), and Williams et al. (`https://doi.org/10.1109/MC.2013.119`), for instance (you should be able to access these via LNU OneSearch at `https://ub.lnu.se/rd/os_en`).

Submit a report (3–8 pages, A4, 12pt) with detailed mockup images of your visualization and an explanation about it. You should explain how the user is able to perform various tasks such as browsing, highlighting, comparison of entries, etc. Additionally, we would like to have your opinion about the advantages and disadvantages of your design. Also, prepare a presentation (5–10 minutes). You will have to present your solution after the deadline.

Please prepare a ZIP archive with your report (PDF) and upload it to Moodle by the given deadline! If you have questions, you can contact Angelos Chatzimparmpas via email (angelos.chatzimparmpas@lnu.se) or use the Moodle discussion forum. You will have to present your work on Dec 7, 15:15–17:00, online via Zoom.
Please note: any kind of plagiarism is not acceptable!