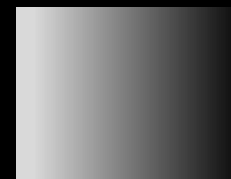# ASSIGNMENT 3

Interaction | dynamic visualization | facetted views

ASSIGNMENT 3 : DUE 06/04/2020

In this assignment your task will be to design and implement a <u>novel</u> visualization; i.e. EITHER (a) the data has not yet been visualized OR (b) data has not been visualized in the way that you visualize it.

1. **You may choose any dataset. Several options will be posted on the blackboard for convenience but you may choose your own.**

   No specific limits. There may be better opportunity to score highly with complex datasets but try to balance this with feasibility.

2. **You may choose any generalized* visualization tool.**

   * : Essentially you will score poorly if you were to use, say, a third-party solution where the choice of encoding have been <u>specifically</u> created to visualize something closely matching your dataset and task (e.g. an off-the-shelf MRI Visualization tool). Avoid this.

3. **Your visualization should fit into at least one of the following broad categories:**

   ¤ TYPE A: Explanatory Visualisation (user centric): should include the "Present" category of task. Should convey insight to the audience that may already be known to the author

   ¤ TYPE B: Exploratory Visualization (analyst centric): should include one of Discover, Derive or Search category of tasks e.g. a decision support tool, should seek to reveal some non-trivial insight about the data (it may be the case that the visualization disproves a hypothesis)

4. **Your visualization must feature <u>at least one</u> of the following technical elements:**

   ¤ Multiple coordinated views (simultaneous views; may be static or dynamic)

   ¤ Animated view (some element of a changing view; may be linear i.e. without any input from user)

   ¤ Interactive manipulation of the view (some form of navigation by user)

CHOICE OF DATA SET

You are free to choose an interesting data set. Some suggestions provided on blackboard.

The complexity of data might be defined in terms of different criteria

- Volume: Large items, high-dimensional, many items, overall size
- Variety: Multi-variate, heterogenous, non-uniformly distributed
- Structure: complex relationship between elements
- Complexity of visualization required for the specific task

Thus there is no explicit bottom limit to how complex the data-set should be.

- As a rough approximate try to use Minard's Data set (Assignment 1.2) as a baseline. Try to find something at least as complex as this in some way.

HOWEVER, the higher the complexity the more likely that the novelty of your visualization will be high. As part of this assignment you need to define what is complex/notable about the data you've chosen.

DELIVERABLES

1. **Visualization artefact (i.e. presentation to the audience of the data):**

   1. This could be a link to your interactive visualization if online; a locally executable binary (you must provide instructions on how to run it); a video if the visualization is animated but non-interactive; or a high resolution image/PDF if it is static

   2. You should also submit a Zip file of the project source files that could be run by me.

   3. Link to the data (or attach the actual data if it is within 5Mb).

2. **Technical paper (detailing the design and implementation process).**

   1. This should be in the format of a 2-page abstract, not including references (you also won't be penalized for overflowing into a third page)

   2. The paper should describe the data, task, and approach. Discuss the novelty of the visualization and reflect on the result highlighting and strengths and weaknesses (we will discuss analysis of visualizations in a later lecture).

   3. Specific template for paper is provided on blackboard. You may simply replicate these as best as you can according to the sample PDF that describes the spec. (Main constraint is not to excessively shrink text to fit in more detail).

3. **A presentation video of exactly 2 minutes outlining the technical contributions of the paper (use captions or voice over).**

   ⌗ Please note that these may be made anonymously viewable to students in the class (and future classes) to view anonymously. Do not include your name or title of the paper in the video. You may opt-out of distribution (on the submission form).

4. **A high resolution image (min 1024 x 1024 pixels) of the visualization to be used as a thumbnail overview**

NB. If your artefact is a video, you should submit two videos: one is the artefact, the other the presentation video (there is no limit on the length of the artefact video)

MARKING SCHEME

This project is worth 40% of the module. The percentages below represent how the project is further broken down out of 100.

40/100 for meeting the baseline requirements : all deliverables submitted on time, artefact successfully visualizes the data, the paper and video together sufficiently describes the data, task and idioms employed.

30/100 for Quality of the ARTEFACT beyond the baseline including but not limited to: Novelty, Complexity, How well it achieves the task of visualizing the data using the idioms employed

30/100 Quality of REPORT AND PRESENTATION VIDEO beyond baseline

- ¤ Paper is well written (clear and concise with minimal errors and suitable references; video is well put together and summarizes the paper and artefact
- ¤ Paper expresses clearly the complexity of data/novelty of the visualization; explains/justifies the design choices made; makes a good attempt at discussing strengths and weaknesses

Late Submissions will incur a 15% penalty for each day late upto a maximum of 4 days. After that all submissions are capped at 40% until April 16th, after which it will no longer be possible to submit anything.

VIDEO EXAMPLES

Vis 2017 : 30 Second Videos [LINK]

- Shorter than required but shows how much detail can be expressed in a short video

- These are technical papers : you are not really expected to provide scientific novelty as they are

VAST Challenge Videos

- Closer to the brief of this project i.e. novel implementation of visualization of some data

- Mostly longer than 2 mins

- A lot detail of also the user process of analyzing the data (not really expected in this assignment)
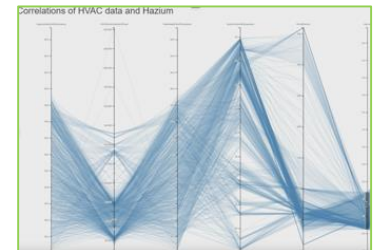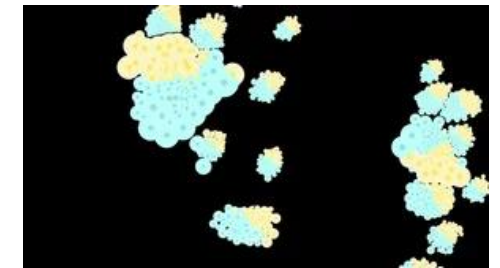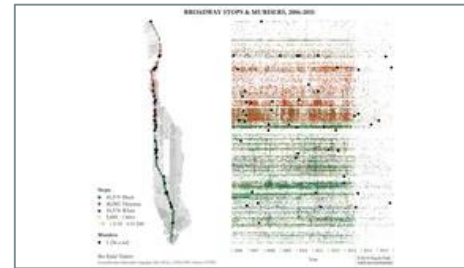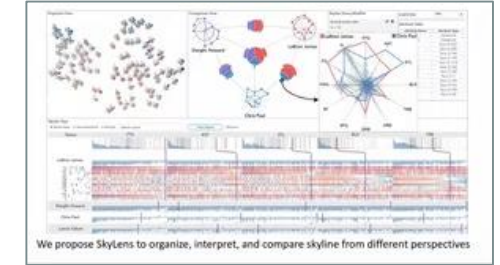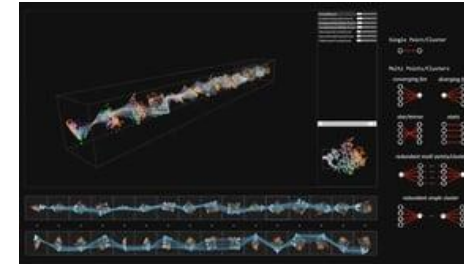
TIPS ON CREATING THE VIDEO [THESE ARE JUST SUGGESTIONS. ALL OPTIONAL]

One of the simplest options is to create a PowerPoint presentation and save this as a video.

- Here's one of many tutorials on the web that show you how to do this (ignore the second half transitions are really not needed)
  - https://helpdeskgeek.com/office-tips/how-to-turn-a-powerpoint-presentation-into-a-video/
- You may just use captions / subtitles to describe the video [voice over not really required]

If you want to video real-time usage of your artefact, you may need to get a screen capture program. Using a free version with watermark is fine. e.g.

- https://www.techsmith.com/download/camtasia/ [mac/windows]
- https://www.bandicam.com/ [windows]
- http://www.fraps.com/download.php [windows]

For more advanced editing, there are loads of free video editing tools out there BUT just keep it functional. I'm not really expecting a fancy video

- iMovie [mac - probably already bundled, if not look in the appstore]
- VirtualDub [windows]
- Windows Movie Maker as part of Windows Essentials Pack (really easy to use. Sadly now discontinued but you can still find downloads on the web and it works in win 10) [windows]