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## Interactive Prototyping

### Objectives

The main objective of this phase is to implement an interactive prototype of an information visualization system. You need to draw on the methods, knowledge, and design principles from lectures, and sometimes reading materials.

In addition, we ask you to pay attention to the dataset, its transformation to meaningful patterns using AI and machine learning (the AI system or algorithm itself can be borrowed), and how these patterns are visualized.

### Some questions to consider before tackling the building process

#### Design review:

Think about what was discussed during the design review meeting and carefully integrate the feedback regarding your product statement.

#### Difference between two examples:

<https://www.youtube.com/watch?v=5PL0TmQhItY>

<https://www.youtube.com/watch?v=wvsE8jm1GzE>

The first video gives a tutorial of how word embedding works with the help of graphical illustrations (minute 6:42 for example).

The second video explains how AI works with the help of an information visualization system.

The task in this design brief is to build an information visualization system similar to the one used in the second video.

#### Data handling and how to make use of tools:

Where do you get your data? How to load them into existing tools before visualizing the patterns? Make sure you take a look at an accompanying document in moodle about these topics.

### Team work

As indicated in the syllabus, most work expected in this course is based on individual achievements. We'd make an exception if you really need other members to complement your skills (AI for example). In this case, please write to us and propose the division of work. We'd handle this situation case by case as some changes to the grading rubric also need to be made, e.g., the data will be more substantial, the transformation more iterative and non-trivial, and the final visualization code more sophisticated.

### Submission in Moodle:

The final report (in PDF) will include a link to your prototype, descriptions of your design rationale justifying the design choices you made relative to all items defined in the grading rubric (3 pages max). In addition, please also provide three different screenshots of your prototype in the report for our record keeping (3 pages max). Please submit this report to Moodle on the due date.

## Grading rubric

<p><b>Quality and quantity of data</b></p> <p>The dataset is real and is reasonably big (&gt;500 data points). It's easy for users to relate to this dataset. Provide brief justifications as to why you chose this dataset. Bonus points (5 pts) given to more original datasets.</p> <p>(&gt;500 data points) is a guideline. The real issue is related to the next rubric: how does the AI/ML transform the data points to patterns? In some domains it takes less data points to find meaningful patterns. In others, it takes more. It's also related to Visual Hierarchy. If you have less data points, your display space may look very empty.</p>	5
<p><b>Transformation</b></p> <p>The data you are visualizing has been processed with AI/machine learning so as to show meaningful patterns. Provide brief explanations which algorithm/method you used, why, and how these patterns may make sense to a lay person.</p>	10
<p><b>Color scheme</b></p> <p>Carefully develop your color scheme, including its background color. Provide brief justifications to your final choice.</p>	5
<p><b>InfoViz system</b></p> <p>The InfoViz model (whether it is a 3D space, a treemap, a graphical fisheye) is well chosen. It is novel. The implemented prototype is completely interactive (e.g., with rotation, clicking, zoom in/zoom out). It offers an overall view of the dataset, the patterns that the AI/ML has generated, as well the possibility to inspect each data point in detail. It is ready for user testing. The overall visual design follows a well-conceived visual hierarchy.</p> <p>Provide brief justification for why you chose the InfoViz model as you did, and what is the basic principle you have followed for designing the visual hierarchy.</p> <p>Bonus points (5pts) given to original InfoViz system.</p>	15
<p><b>Extra credit</b></p> <p>Maximum 5 credits per person when team work is not involved.</p> <p>The best way to think about bonus credits:</p> <p>Bonus credits are designed to encourage students to think more creatively and diversely, and demonstrate their ability and interest for a particular area in design. It's at the teachers' discretion to give the bonus based on their evaluation and assessment of the overall class performance. For example, to determine if a dataset is original, we need to know what is average or common.</p> <p>Bonus credits are also designed to give some students a chance to catch up on their credits especially with respect to design brief I.</p>	
Total Grade	35