**INFORMATION VISUALIZATION**

* GOALS  
  Teach the students to represent a data set visually using tools or programming an ad-hoc solution.
* Introduce good practices and inspiring background.
* Know the current state of the art of technology to perform this task.
* Train students to be prepared in the design, implementation and evaluation of interactive visualizations or static infographics.

CONTENTS

1. Introduction: Information Visualization Introduction: What is Visualization? Background. Information Display. Data and Information, Types of Data, examples. InfoVis & SciViz. Information Visualization vs. Scientific Visualization: What each discipline looks for. Differences and similarities.
2. Background: Historical background (Charles Joseph Minard, William Playfair, John Snow, Florence Nightingale, Harry Beck, etc.)
3. Data: Fundamental data. Data types (nominal, ordinal, quantitative). Domain and range dimension. Measurement scales (Nominal, Ordinal, Interval & Ratio)
4. Stages: Stages in data visualization according to Ben Fry and the stages in Data Science. Display pipes.
5. Interactions: Possible interactions to convert a static graph into a visualization.
6. Exploratory Data Analysis: Techniques for data exploration. John W. Tukey. Exploratory Data Analysis. Techniques and tools.
7. Data Cleansing: Data cleansing, data wrangling
8. Mapping: Mapping of data into visual elements. Decomposing and analyzing visualizations.
9. Color: Use of color, palettes, thematic cartography, choropleth maps. Optical illusions. Problems perceiving color.
10. Perception: Graphic perception.
11. Excellence & ChartJunk: Graphic excellence and principles of Edward Tufte. https://www.perceptualedge.com/articles/visual\_business\_intelligence/the\_chartjunk\_debate.pdf
12. Visualization Gallery: Examples from the NYTimes, The Guardian and LN Data. A Tour through the Visualization Zoo. A survey of powerful visualization techniques, from the obvious to the obscure.