Data Visualization

INTRODUCTION

Lecturer: Tea Tušar

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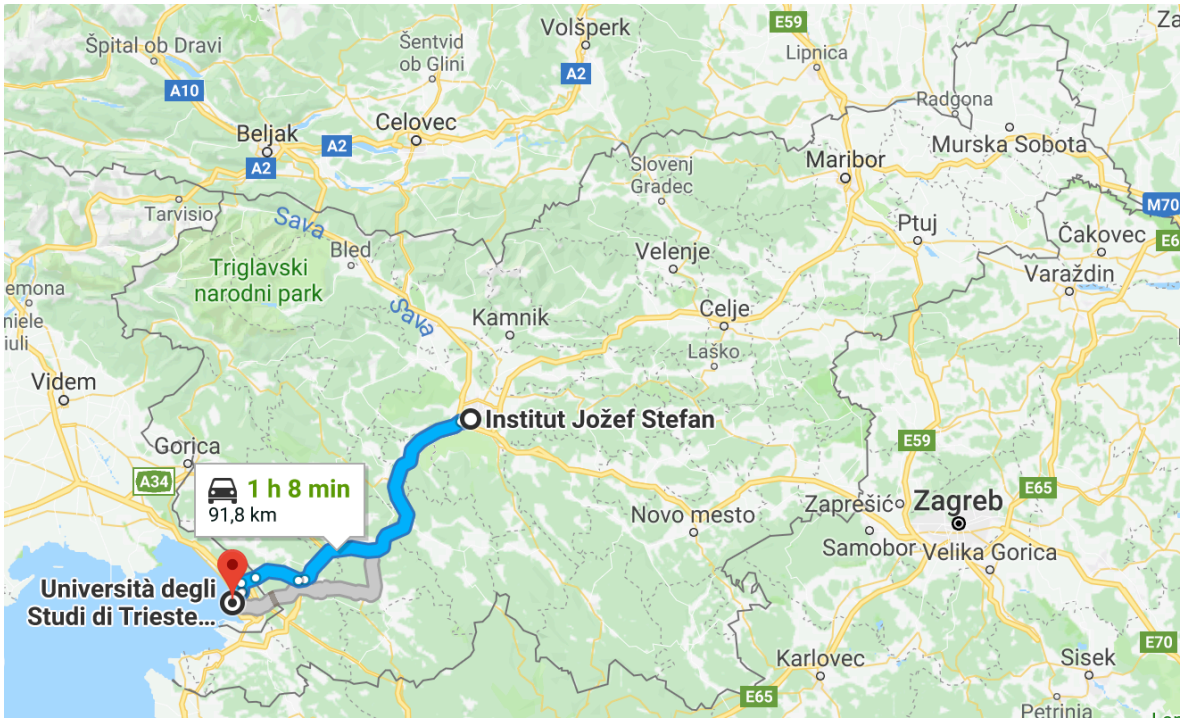
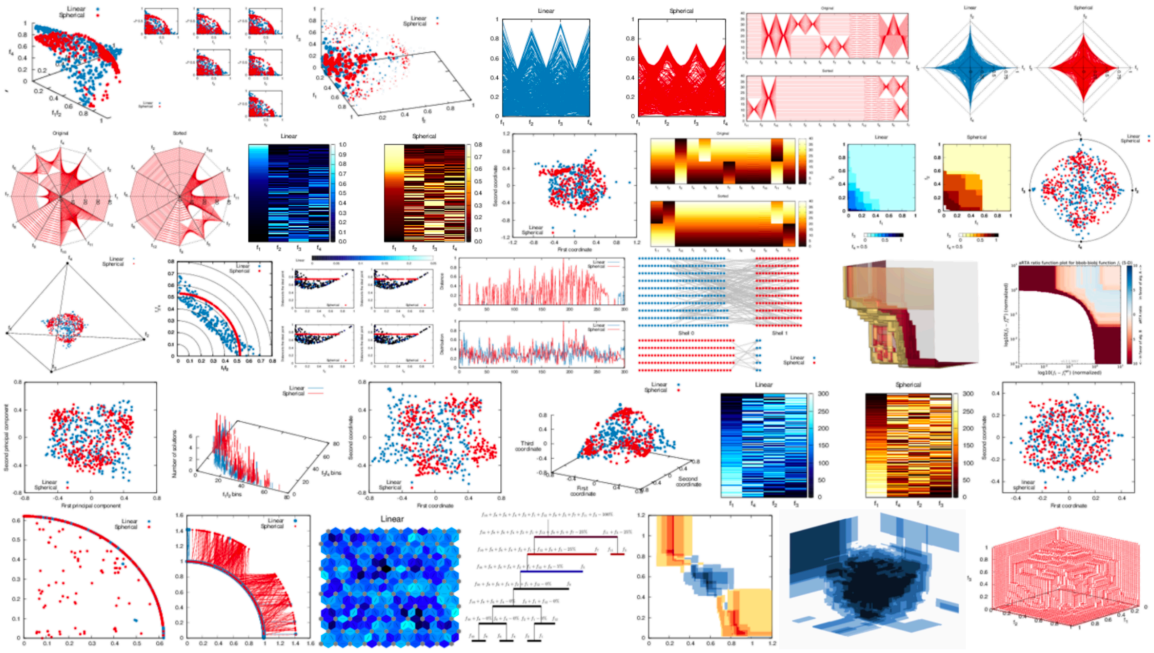


Background

- B.Sc. in Applied Mathematics
- M.Sc. In Computer Science
- Ph.D. in Information and Communication Technologies
- Ph.D. dissertation: Visualizing Solution Sets in Multiobjective Optimization



Contact

By email

- tea.tusar@ijs.si
- Subject: [DataVisualization] …

In person

- Before or after class

About the course

Objective

- To develop a strong foundation on data visualization

Syllabus

- Foundations: defining data visualization, the purposes of data visualization and the three principles of good visualization design
- Human visual perception: preattentive processing, color perception and color specification
- Examples of (un)trustworthy and (in)accessible visualizations
- Designing a visualization: steps of visualization design, basic charts, visualizing multivariate data, uncertainty and missing data, visual order, interactivity, storytelling and tools
- Creating visualizations in Python

Prerequisites (not mandatory for completing the course)

- Basic knowledge of Python and scientific Python

Schedule

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Nov 4	Nov 5	Nov 6	Nov 7	Nov 8	Nov 9	Nov 10
		15h - 18h Lectures 1-3	8h - 11h Lectures 4-6			
Nov 11	Nov 12	Nov 13	Nov 14	Nov 15	Nov 16	Nov 17
		15h - 18h Lectures 7-9	8h - 11h Lectures 10-12			
Nov 18	Nov 19	Nov 20	Nov 21	Nov 22	Nov 23	Nov 24
		15h - 18h Lectures 13-15	8h - 11h Lectures 16-18			
Nov 25	Nov 26	Nov 27	Nov 28	Nov 29	Nov 30	Dec 1
		15h - 18h Lectures 19-21				
Dec 2	Dec 3	Dec 4	Dec 5	Dec 6	Dec 7	Dec 8
Dec 9	Dec 10	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15
				Assignments due date		
Dec 16	Dec 17	Dec 18	Dec 19	Dec 20	Dec 21	Dec 22
		15h - 18h Presentations				

Exam (in project form)

Design visualizations on some topic (either provided or yours)

- Prepare visualizations by December 13 (hard deadline)
- Present visualizations on December 18
- Be prepared to answer questions about your visualization

More details later on

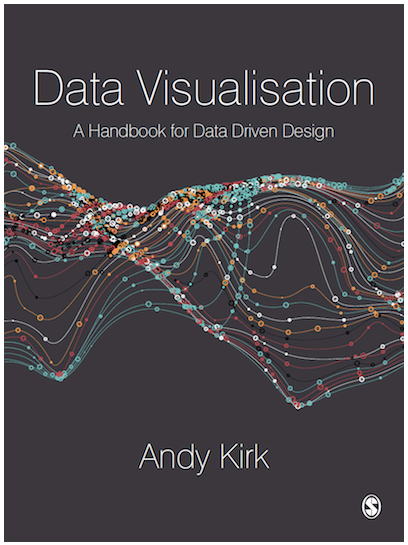
Course materials

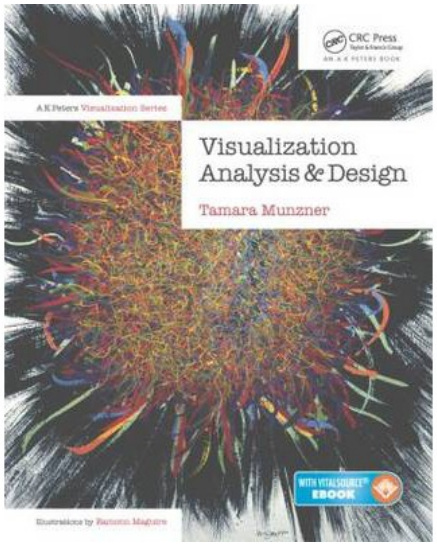
Available on Moodle

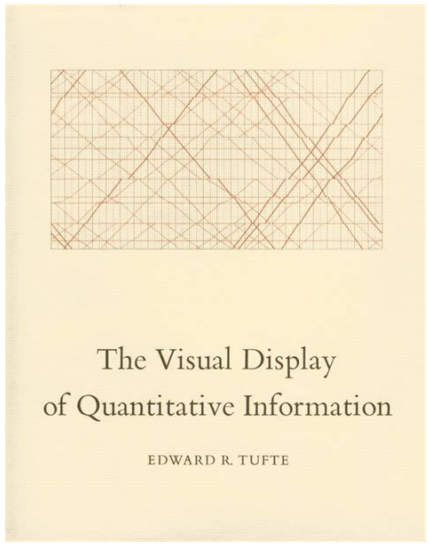
- Links to numerous sources of data (already available)
- Slides with lots of links (after lectures)
- Python code and data (when relevant)

Books

- Andy Kirk. Data Visualization: A Handbook for Data Driven Design. SAGE Publications, London, 2016.
- Tamara Munzner. Visualization Analysis & Design. A K Peters Visualization Series, CRC Press, Boca Raton, 2014.
- Edward R. Tufte. The Visual Display of Quantitative Information. Graphics Press, Cheshire, 2015.







Online resources

Blogs with tips and tutorials (in alphabetical order)

- Chartable: https://blog.datawrapper.de
- Eager eyes: https://eagereyes.org
- FlowingData: https://flowingdata.com
- Information is beautiful: https://informationisbeautiful.net
- PolicyViz: https://policyviz.com
- Randal S. Olson: http://www.randalolson.com/blog/
- Storytelling with data: https://www.storytellingwithdata.com/
- The functional art: http://www.thefunctionalart.com
- Telling stories with data: http://www.chadskelton.com
- Vis4.net: https://www.vis4.net/blog/
- Visualizing data: http://www.visualisingdata.com

Podcasts

http://datastori.es

By Enrico Bertini and Moritz Stefaner
Since February 2012
148 episodes
~45 min / episode

https://www.storytellingwithdata.com/podcast/

By Cole Nussbaumer Knaflic
Since November 2017
23 episodes
~45 min / episode

https://policyviz.com/podcast/

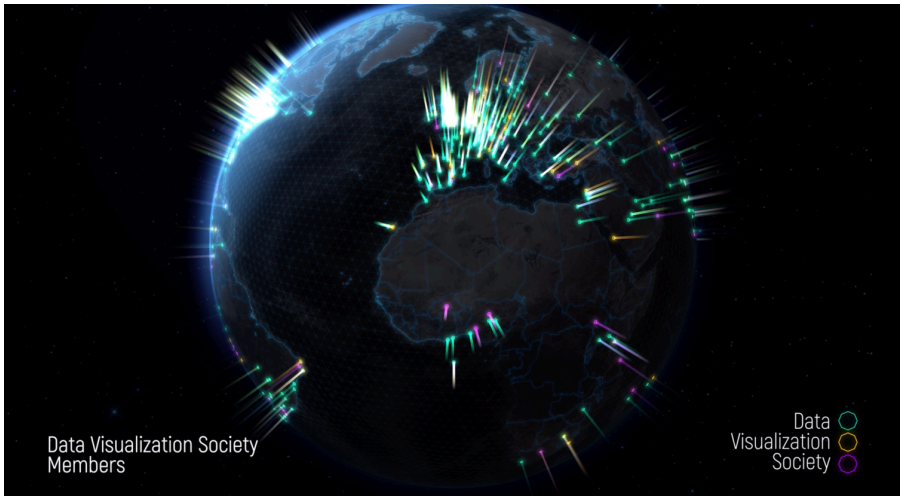
By Jonathan Schwabish

Since April 2015
160 episodes
~30 min / episode

Data Visualization Society

- Several 1000 members
- Website: https://www.datavisualizationsociety.com
- Newsletter, Slack channel, resources, jobs, …
- Medium journal Nightingale: https://medium.com/nightingale

DATA VISUALIZATION SOCIETY



https://www.datavisualizationsociety.com/member-data-challenge/2019/3/28/dvs-global-members

Disclaimer

Most examples are US- and UK-centric