



Data Visualization and Visual Analytics

Syllabus

Spring, 2015

Basic information

- **Instructor**

- 莊榮宏 jhchuang@cs.nctu.edu.tw 工三館 525 5731829

- **TA**

- 官彥廷 fly19920820.cs99@gmail.com 工三館 512 x54787

- **Focus**

- **Date visualization**

- **Visual analytics**

- **Web pages**

- **cggmwww.csie.nctu.edu.tw for course materials**

- **e3 for discussion**

What is vis and visual analytics?

- **Visualization provide visual representations of datasets designed to help people carry out tasks more effectively**
 - **Use vis tool to explore data to find questions for automatic methods**
 - **Use vis to explore data, find questions, and answer the questions**
 - **Use vis for the designers of a purely computational solution, to help them refine, debug, or extend that system's algorithms or understand how the algorithms are affected by the changes of parameters**

Course outline

- **Overview**
- **What is vis and why do it?**
- **What: Data abstraction**
- **Why: Task abstraction**
- **Analysis: For levels for validation**
- **Marks and channels**
- **Rules of thumb**
- **Arrange tables**
- **Arrange spatial data**
- **Arrange networks and trees**

Course outline

- **Map color and other channels**
- **Manipulate view**
- **Facet into multiple views**
- **Reduce items and attributes**
- **Embed: Focus+Context**

Grading

- **Participation**
 - **No bonus (if there is one) will be given at end if missing more than 3 classes.**
- **Paper study (40%)**
 - **Study reports (25%)**
 - **Presentation (15%)**
- **Term project (60%)**
 - **Written proposal + presentation (20%)**
 - **Due on the first class of the midterm week**
 - **Written report + Final demo + presentation (40%)**
- **Late Policy: 5% off each day**

Text/reference books

- **Visualization Analysis and Design, by Tamara Munzner, AK Peters Visualization Series, December 3, 2015**
 - **Provides a unifying theoretical framework to guide thinking**
 - **Help designers entertain a broad consideration space by systematically considering many alternatives and help to rule out some parts of the space that are possibly mismatches with human capabilities or the intended task.**

Text/reference books

- **Interactive Data Visualization: Foundations, Techniques, and Applications, by M. Ward, G. Grinstein, D. Keim, AK Peters, 2010**
 - Works from the bottom up with algorithms as the base
- **數據可視化，陳為等，電子工業出版社，2013**
 - Works from the bottom up with algorithms as the base