M259 Visualizing Information

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Lecture: Tues 11:00-1:00
Technical/Lab: Thurs 11:00-1:00

Estudio, Arts old gym 479-1211

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Course Focus

"*Visualizations Shape Information*"

- A lecture and lab course to explore the visual organization of information

- To represent concepts visually that may not exist in the world itself

- Advance graphical skills in translating abstract data into visualization

Goals & Outcomes

- Acquire skills (methods and techniques) of the syntax of visual language

- To become aware of the transformative nature of visual language and its syntax

Modules:

- Develop an understanding of the data

- How to access the data for what is needed

- how to organize, do statistical aggregates, and visualize

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Processes

- **Data mining:** consists in the extracting of patterns from data through queries

- **Data aggregation:** is the process of summarizing found data for purposes such as statistical analysis.

- **Visual representation:** A complex practice involving the creation of content through a skillful command of form, space, balance, scale, dimensions, tone, color, texture, direction, motion, line, text, and dot

  A process which is partially perceptual, partially conventional, and symbolic.

Student Projects

- **2D Frequency Map:** A linear visual representation of activities revealing how often certain data have been active and by how much

- **2D Spatial TreeMap:** Display hierarchical (tree-structured) data as a set of nested rectangles. Easily reveals patterns, efficient use of space

- **3D Spatialization:** Volumetric representation allows for 3 or more variables

- **Or Time-Based Animation:** Change over time

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Specific Dataset:

- The circulation of checked-out items (books, movies, cds, misc) from the Rem Koolhaas designed Seattle Public Library

- Data received every hour since August 2005

- Average day: Between 12000 to 36000 transactions

- Over x0,000,000 transactions since August 2005

- Delivered in XML format:
  http://tango.mat.ucsb.edu/spl/data/

Transaction Details:

- **Time/Date stamp**: When it was checked-out, and when it was returned

- **ItemType**: Is it a book, a cd, a VHS tape, a sheet music, a DVD, etc.

- **Barcode**: there may be multiple copies of a book and each has a specific barcode

- **Title**: Each item has a specific title

- **CallNumber**: Dewey decimal classification system organized by subject with extensions for deeper classification

- **Subject**: Keywords (one or more)

Languages & Software:

- Java based Processing language with OpenGL, and integrating MYSQL queries

- Data delivered in XML, but transferred to MYSQL. For specialized needs, XML can be accessed and will require parsing

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What can be done with the data:

- **Develop skills:** in visual language, data processing, sorting techniques, etc.

- **Cultural Information**: Search for patterns and trends (What occurred between 2006-2010?)

- **Map changes:** in music tastes, films, etc.

- **Semantic Analysis**: Through word frequency analysis to show how often, authors, global warming, etc are mentioned

- **ItemTypes**: Do books, cds, films, change over time? What are trends in audio FICTION novels?

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Course Website

- http://www.mat.ucsb.edu/~g.legrady/ academic/courses/11w259/11w259.html

- Google search access: Overview legrady