

CAP-5738 Data Visualization

Catalog Description

Advanced topics class covering data visualization principles, techniques, and algorithms. Students are familiarized with the scientific research workflow by proposing, implementing, and presenting a project with strong collaborative, interdisciplinary, and visual components.

Prerequisites

SCIS Graduate Standing

Type

Elective for MSCS, MSIT, and Ph.D. students.

Objectives

In this class students will be familiarized with Information Visualization principles, techniques, and algorithms. They will implement a few fundamental visualization techniques. They will read and discuss seminal and state of the art research papers on the subject. Finally, students will experience the research pipeline in its entirety by participating in a simulated funding process and implementing a collaborative visualization project. Specifically, students will meet potential collaborators, decide on projects that are likely to yield valuable research contributions, write short project proposals, review each other's proposals and decide collectively which proposals are worth “funding”, implement the project, write a short paper documenting the results, and present that paper.

Topics

Principles of visual encoding

Multidimensional data visualization

Tree and Graph visualization

Visualizing text and document collections

Geospatial and temporal visualization

Interactivity in visual analysis systems

3D or scientific visualization

Evaluating visualization efficiency

Principles of visual reasoning

An introduction to research funding mechanisms and interdisciplinary projects

Textbook

1. The Visual Display of Quantitative Information (2nd Edition). E. Tufte. Graphics Press, 2001. ISBN 9780961392147
2. Visualization Analysis and Design: Abstractions, Principles, and Methods. T. Munzner. (pre-publication draft available online: <http://www.cs.ubc.ca/~tmm/courses/533-11/book/>)

Last Update

Radu Jianu 7/5/2013