

Introduction

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What is Data Visualization

Data visualization is a high bandwidth connection between data on a computer system and a human brain, facilitated by visual communication

- Data acquisition
- Data processing
- Data display
- Human perception
- Human memory
- Human cognition



Data Visualization Example

- Students applying for graduate study in CS at UIUC
- Students select three faculty members they might want to work with
- Faculty presented with a list of three faculty student selects as a potential advisor

Please select up to three faculty members you would be interested in working with as your graduate thesis advisor...

Faculty #1

▲

E. Gunter

I. Gupta

J. Han

S. Har-Peled

J. Hart

J. Hockenmeyer



Faculty #2



J. Han

S. Har-Peled

J. Hart

J. Hockenmeyer

Derek Hoiem

S. Jacobson



Faculty #3



J. Torrellas

M. Viswanathan

T. Warnow

T. Xie

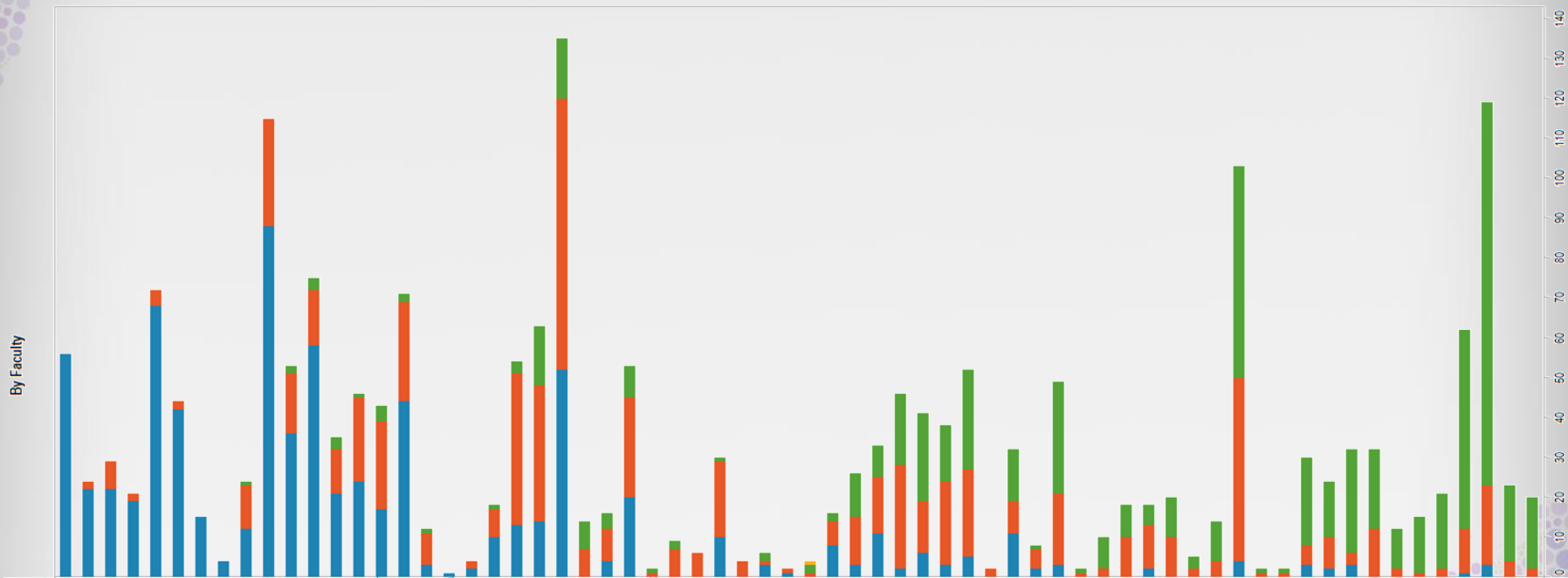
C. Zhai

C. Zilles



Faculty Interest: 1. J. Han, 2. J. Hart, 3. C. Zhai

Data Visualization Example



Data Visualization Example

- Students selecting advisors in alphabetical order
- Given three sorted pull-down menus of the same option, easiest to pick first option in first menu
- Faculty misunderstood selection order as ranking order

Please select up to three faculty members you would be interested in working with as your graduate thesis advisor...

Faculty #1	Faculty #2	Faculty #3
▲ E. Gunter I. Gupta J. Han S. Har-Peled J. Hart J. Hockenmeyer ▼	▲ J. Han S. Har-Peled J. Hart J. Hockenmeyer Derek Hoiem S. Jacobson ▼	▲ J. Torrellas M. Viswanathan T. Warnow T. Xie C. Zhai C. Zilles ▼

Faculty Interest: **1.** J. Han, **2.** J. Hart, **3.** C. Zhai

Data Visualization Syllabus

- **Week 1:** Understanding how the computer displays data *and* how the user perceives and processes it
- **Week 2:** Different kinds of charts, which chart to use for which kind of data, and how to design charts effectively
- **Week 3:** How to layout and display relational data
- **Week 4:** How to build a visualization dashboard that connects to the appropriate data and provides the user with the vital information needed to make the right decision

Antisyllabus

- Abstract data visualization, as opposed to specific tools used for visualization of scientific/medical/business data
- Examples of a few design principles, as opposed to a full course on visual design for presentation
- Introductions to topics, without low-level technical details
- Pointers to tools, not tutorial on how to use those tools
- Programming allowed, but not required

Thanks

- Eric Shaffer, UIUC
- Karrie Karahalios, UIUC
- Michael Gleicher, U. Wisconsin
- Donna Cox, NCSA
- Pat Hanrahan, Stanford