A System for Query, Analysis and Visualization of Multi-dimensional Relational Databases

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News
• Three copies of physical book available in Reading Room (CiCIS/CS 262)
• Signup sheet: mark last column with new probabilities
  • add yourself at if and if you weren’t here last time
• Wishlist: 38 registered so 2 slots open: 2 on wishlist
• Questions/comments are due at 1:30pm today
• Guest lecture from Robert Kosara on Tableau at 2:20
  • my section only 20 minutes

VAD Ch 5: Marks and Channels
Channels: Expressiveness Space and Microscopic Funds

Encoding visually with marks and channels
• analyze idiom structure
– in combination of marks and channels

Accuracy: Fundamental Theory

Accuracy: Visual experiments

Discriminability: How many usable steps?
• must be sufficient for number of attribute levels to show
  • linewidth: few bins

Separability vs. Integrality

2 groups each
Integral area
4 groups total:
Integral area

Table Algebra: Interactive Interface

Polaris Stolte, Tang, and Hanrahan

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[Fig 3b. Example of Table Algebra: Interactive Interface]

[Fig 3a. Example of Table Algebra: Interactive Interface]
### Terminology I: Now and Upcoming
- **Marks and Channels**
  - retinal variables/properties: mixed channels
  - channel: mark
- **Data Abstraction**
  - column or field attribute
  - nominal categorical
  - ordinal: ordered
  - quantitative: quantitative
  - row or record item
  - dimension / independent: ordinal
  - key attribute
  - all ordinal fields treated as dimensions in Polaris
  - measure / dependent: value attribute
  - all quantitative fields treated as measures in Polaris

### Terminology II: Upcoming
- **Data Abstraction**
  - deriving data
- **Map Color and Other Channels**
  - hue
  - value: saturation
  - brightness constance
- **Manipulate View**
  - brushing
  - brushing linking highlighting
  - reduce items and Attributes
  - aggregation, filtering

### Further reading: Articles
- Crowdsourcing Graphical Perception: Using Mechanical Turk to Assess Visualization Design....

### Further reading: Books
- Data Abstraction: deriving data
- Map Color and Other Channels: hue
- Manipulate View: brushing
- Reduce Items and Attributes: aggregation, filtering

### Next Time
- to read
  - VAD Ch. 1: What's Vis, and Why Do It? (review, mostly covered in first class)
  - VAD Ch. 2: Data Abstraction (new materials)

### Polaris: Pre and post
- influences
  - Mackinlay's APT paper/system (1986)
  - Cleveland's Visualizing Data book (1993)

### Tableau use in this course
- very useful for analysis projects
- possible sandbox for experimentation when starting programming projects
- you can request free student license, good for one year

- Chapter 5: Marks and Channels...