Visualization in Interactive Patent Systems

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Patent Retrieval - Difficulties

- Data size (> 50 million patents)
- Language (technical/legal/“patentese“)
- Temporal (and financial) resources
- Quality of results
Model

Marchionini (1995)
Why Information Visualization?

“...can be processed much more quickly than a comparable page of words” (p. 1)

“Humans use sight as one of their key senses for information understanding.” (p. 3)

“There is a growing need to find mechanisms for communicating information to people in an efficient and effective manner. In virtually any domain, visualization can be, and is becoming, an effective tool to assist in analysis and communication.” (p. 6)

Ward et al. (2010)
Purpose of visualizations

- **Presentation**
  - communication of insights
  - emphasize features

- **Exploration**
  - ascertain the content
  - look for patterns or features
  - no hypotheses

- **Confirmation**
  - look for facts
  - verification of hypotheses

Interaction techniques

- Navigation (position, scale)
- Selection
- Filtering
- Reconfiguring
- Encoding
- Connecting
- Abstracting

Focus + context

Requirements of patent searchers

Query formulation
- Combine and organize search queries
- Query history
- Query expansion
- Query translation
- Weighting of terms

Examine Results
- Filter & manipulate results
- Combine multiple sets
- Sort & categorize results
- Term highlighting
- Navigation in result set
- Metadata access (citations, IPC, patent family,...)

Azzopardi et al. (2010)
Visualizations

Query History

- \( R \) (12 798)
- \( R \) (13 458)
- \( G \) (5 489)
- \( C \) (3 489)
- \( G \) (567)
- \( R \) (661)
- \( G \) (825)

(radius or RF or infrared or IR or ultrasonic or Bluetooth or satellite) AND (switch or relay or break)

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new Term added

new Keyword Group added

new Classification Code added

KISTI workshop, University of Hildesheim
Future plans

- Implementation of ideas (Image Editing Software/D3)
- Focus group with patent searchers
- Iterative refinement of visualizations
- User tests


Thank you for your attention!