Provenance for Interactive Visualizations

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Introduction
Recent research has shown that provenance-enabled data systems can be fast enough for interactive responsiveness.

Deep connections between fine-grained provenance and interaction:
- Can express core visualization interactions
- Extends to general interactive applications

Expressing interactions using provenance enables holistic optimization.

Provenance For Interactive Visualizations

Interactive Selections
- Item selection
- Group selection
- Range selection
- Generalized selections

Logic over Selections
- Tooltips
- Details-On-Demand
- Semantic Zooming

Multi-View Linking
- Linked Brushing
- Crossfilter

Provenance For Interactive Applications

Provenance management systems can provide:
- core functionality across application domains and
- novel functionality to extend the space of interactive applications

Want to Know More?
[VLDB18] Smoke: Fine-Grained Lineage At Interactive Speed
[SIGMOD18] A Deep breath of Data-Intensive Lineage Applications
[HILDA18] Provenance for Interactive Visualizations
[CIDR17] Combining Design and Performance in a DVMS