
Blitz

Automating Interaction in Visualization

Problem overview and approach

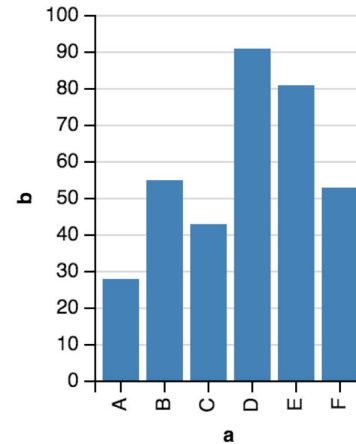
- Most interactive visualizations on the web require custom coding and significant development effort. **How can we automate the process of interaction design and algorithmically generate well-designed interactive visualizations?**
- Basic idea: **Extend APT**. Data types can now be “interactive” or “static” in addition to quantitative, ordinal, nominal, etc. Use a decision tree to decide which interaction paradigm(s) to apply, given the properties of the dataset.



Related Work

Vega-Lite- "interaction techniques using a concise, composable, high-level syntax"

```
{
  "data": {
    "values": [
      {"a": "A", "b": 28}, {"a": "B", "b": 55}, {"a": "C", "b": 43},
      {"a": "D", "b": 91}, {"a": "E", "b": 81}, {"a": "F", "b": 53}
    ]
  },
  "mark": "bar",
  "encoding": {
    "x": {"field": "a", "type": "ordinal"},
    "y": {"field": "b", "type": "quantitative"}
  }
}
```



Blitz aims to automate interaction, taking a simplistic approach.

It leverages Vega-lite's APT implementation to generate visualizations with little user input.

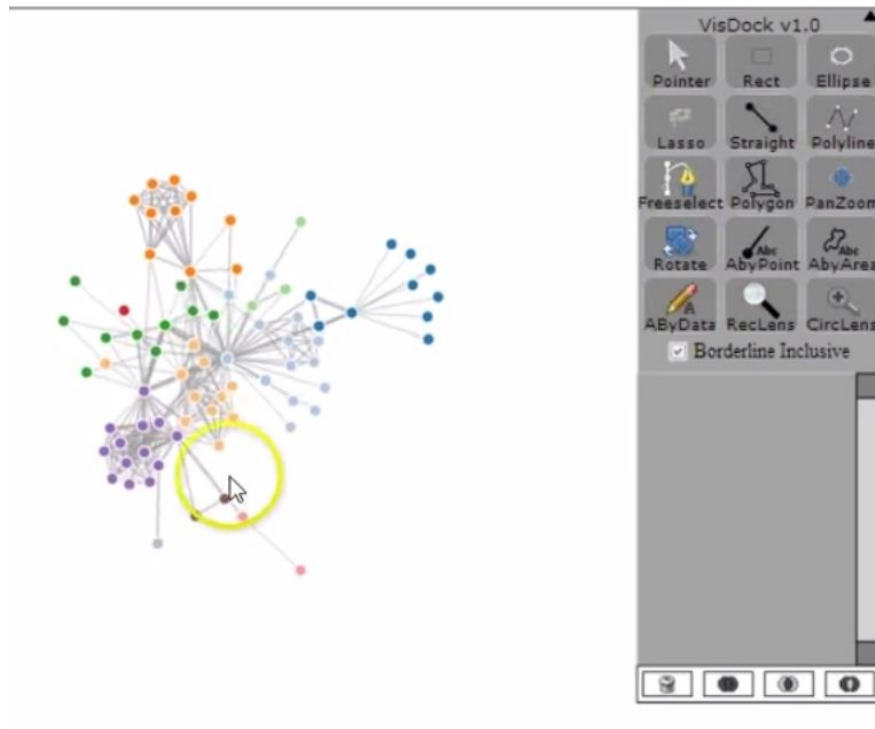
Related Work

VisDock- cross-cutting interaction tool that can be integrated into any visualization.

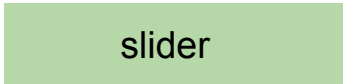
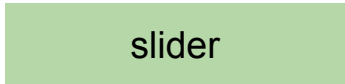
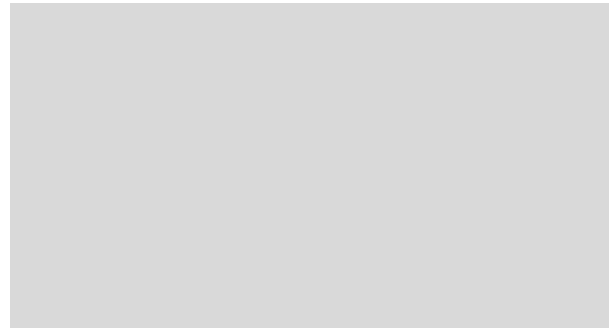
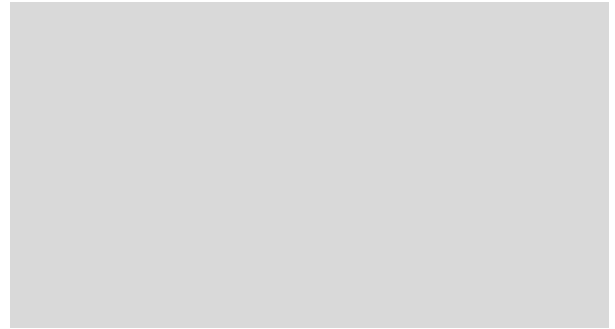
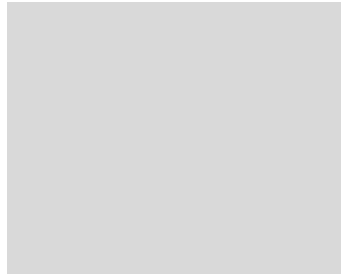
Currently only navigation & annotation.

Blitz contributes a mapping from data types to interaction paradigms -- both actions and UI elements.

More focus on dynamic query filters.



Our Vision: Multi-linked, Interactive Views + Widgets



Current Progress

- Fleshing out rules, mapping from a data types to interaction paradigms
 - Built groundwork for a web app that will put our ideas to practice
 - Leveraging Vega-Lite to generate the D3 vis. =>focus on interaction design
 - Three-page flow:
 - 1. Upload your data (JSON/CSV support via PapaParse)
 - 2. Tag your data
 - 3. Review the auto-generated visualization
 - Filter-interaction mostly completed
-

[Demo]

Remaining milestones

- Implement linked-visualizations on top of Vega-Lite
- Implement hover interaction
- Implement summary statistics based on filters

Feedback

- Thoughts on our demo?
- What interactions and visualizations do you see essential to support?
- A question on query relaxation