universität wien

VIS: OPTICS$_{vis}$
Milestone 4

Group 11

28. Januar 2018

Fakultät für Informatik

Agenda

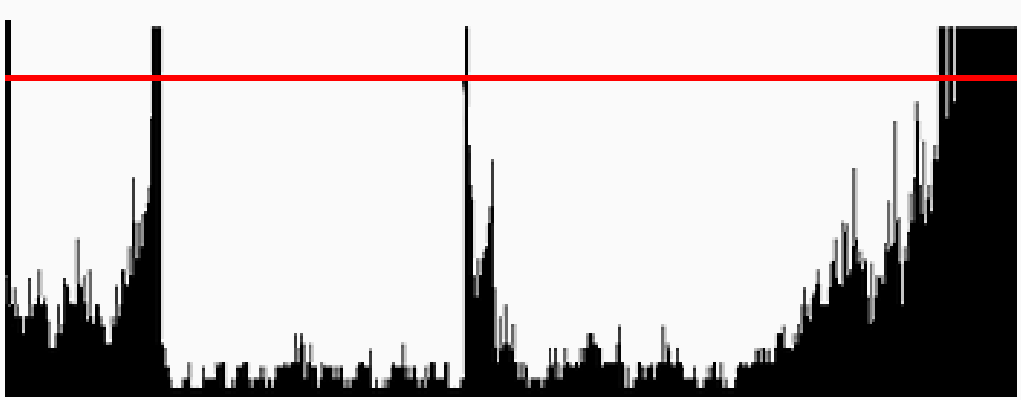
1. Project definition
   - Motivation
   - Users and Tasks
2. Approach
3. Demo
4. Results
5. Analysis

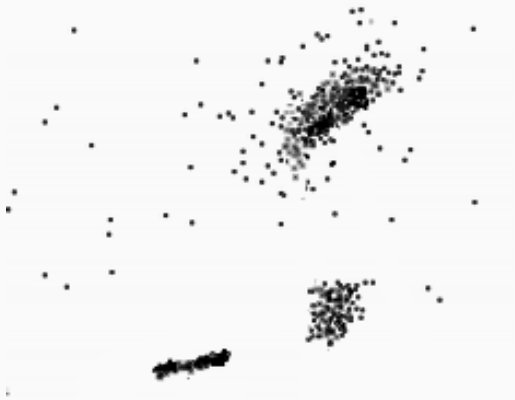
Project definition

Project motivation

- OPTICS: density based clustering
  - algorithm jumps between points in some order
  - records jump distances
- output somewhat hard to read
  - point order
  - a list of numbers
- staple visualization method: the bar chart

$\rightarrow$ more thorough and interactive visualization: OPTICSvis





Users

- Teaching personnel
  - for educational purposes
- Researchers
  - exploration
  - testing before practical usage
- Anyone
  - exploration

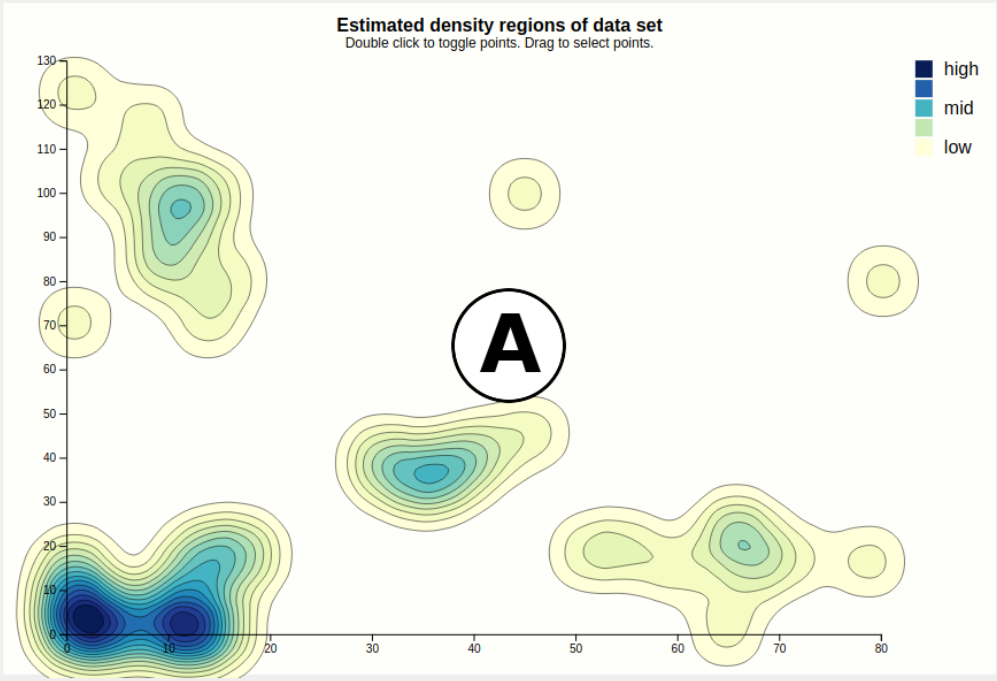
Tasks

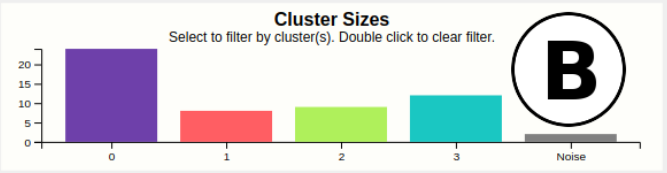
- Exploration
  - get a feeling for the algorithm, get to know it
- Education
  - learn about the algorithm and how to interpret the output
- Testing
  - give an idea if the algorithm fits the users problem
  - see if result/output is satisfactory and useful

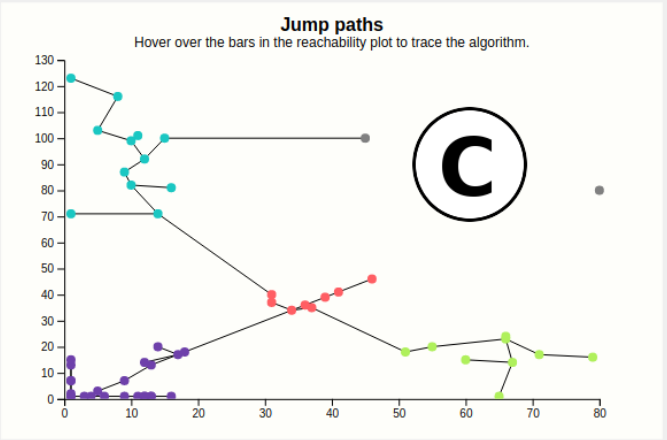
Approach

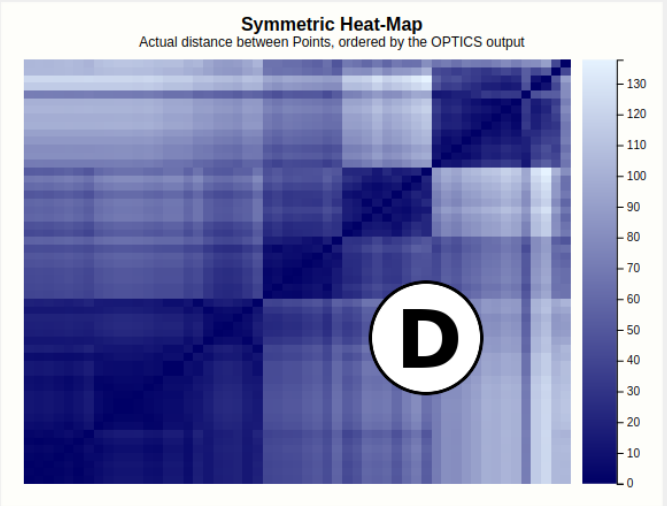
- static views (w/o interactive elements) provide an overview
- interaction can be used to filter or show more details on demand
- OPTICS is density-based: visualize densities
- make reachability chart interactive: draggable cutoff bar
- heat map makes cluster structures easier to see
- allow user to trace the algorithm
- attempt to visualize hierachy

Implementation









Demo

Results

Results

- feedback overall favorable
- secondary cutoff bar was considered superfluous and confusing, removed in final prototype
- performance issues were prominent
- people tended to use the tool in a very superficial way, not very conclusive
- OPTICS basics needed to be taught beforehand

Analysis

Analysis

- strengths
  - \+ quick exploration of different aspects of OPTICS
  - \+ good companion for teaching OPTICS
- weaknesses
  - – some previous knowledge of OPTICS needed
  - – multidimensional support is lacking
  - – performance issues

Thanks for your attention!