



Interactive Voronoi Treemap

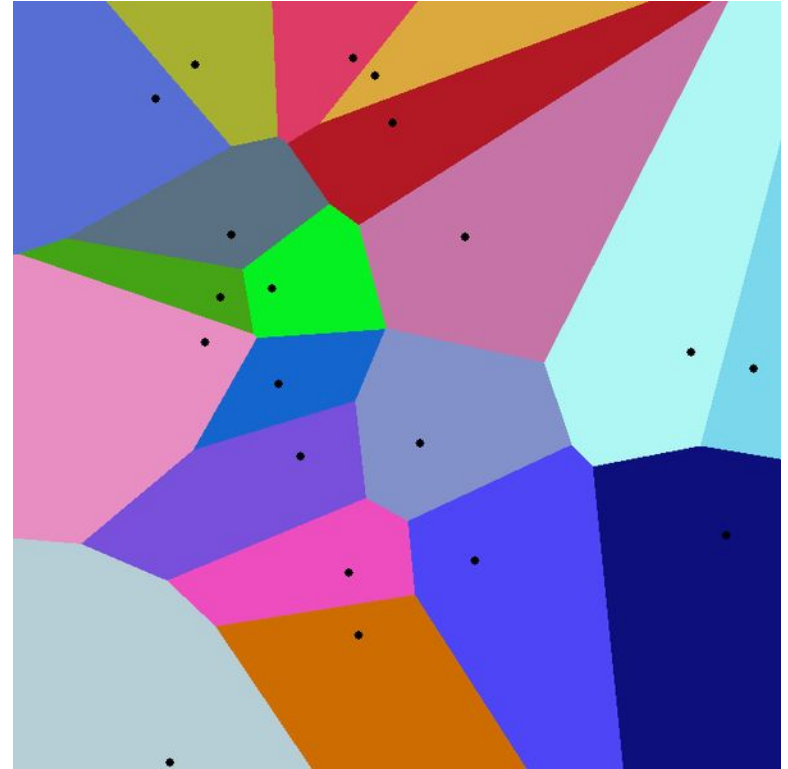
Final Presentation

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Voronoi Diagram

- Partition of a plane into voronoi cells
- Voronoi cells are defined by one central node
- Each cell is closer to its center than to any other node

Figure 1: Voronoi Diagram
[Image from
https://upload.wikimedia.org/wikipedia/commons/8/80/Euclidean_Voronoi_Diagram.png]

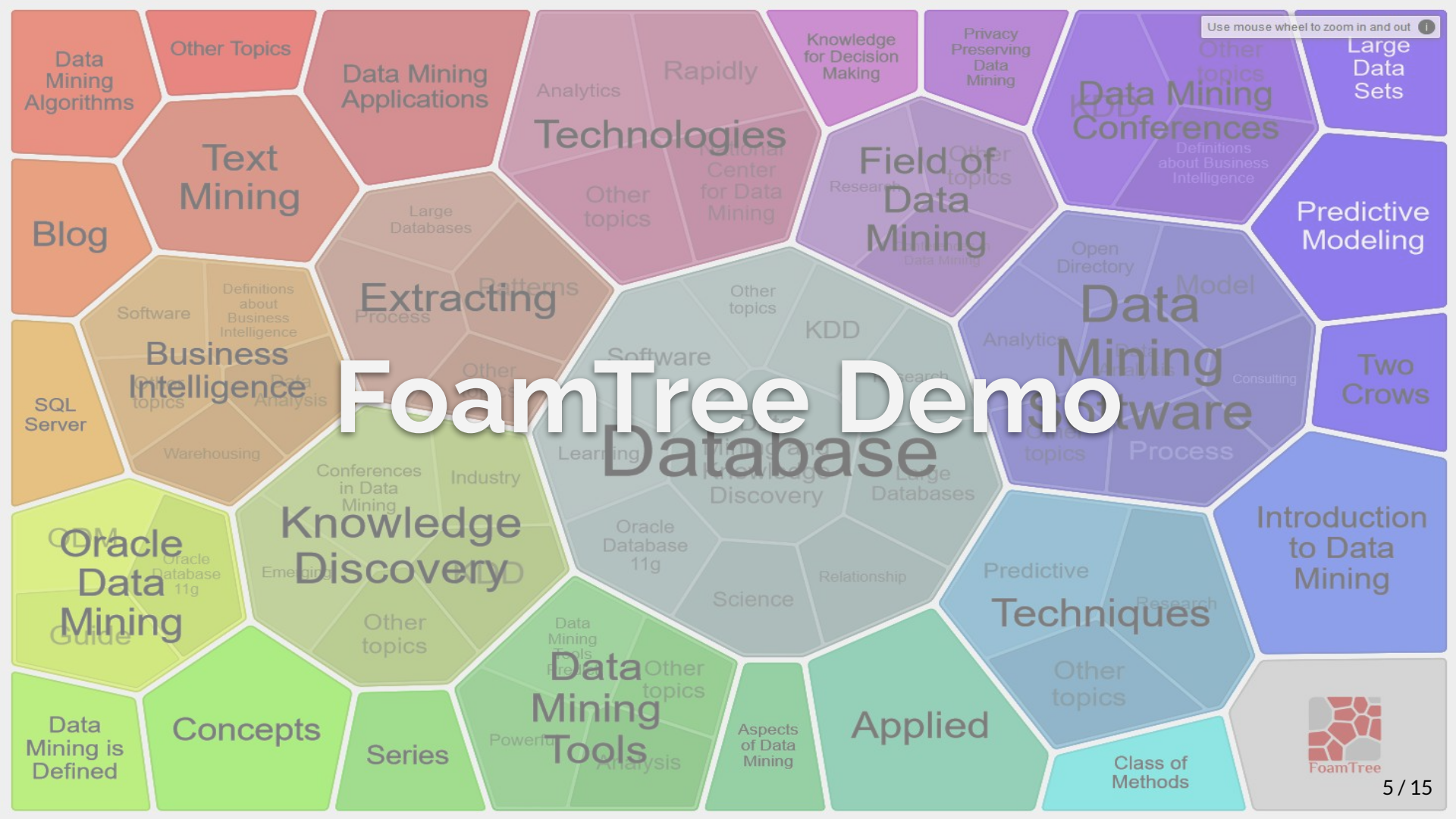




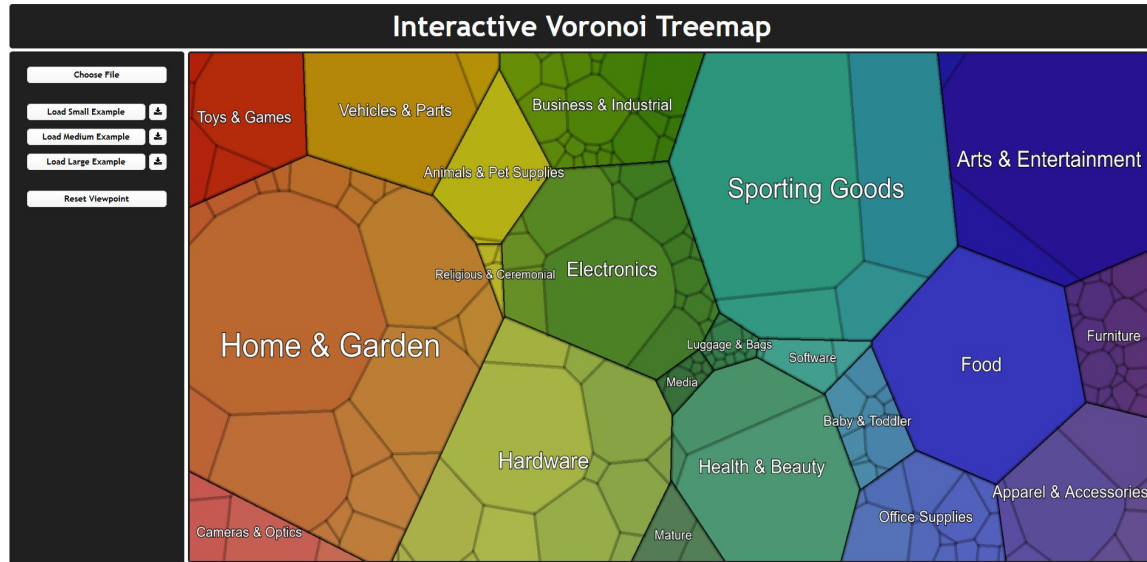
Voronoi Treemap

- Represent hierarchies as nested voronoi cells
- Recursive subdivision of a region into the cells of a centroidal Voronoi diagram
- Weighted Voronoi Treemap
 - Size of Voronoi cells depends on weights
 - Distance function

FoamTree Demo



Our Interactive Voronoi Tree: IVT





Technologies

- [Node js packet manager](#)
- [Webpack](#)
- [Electron](#)
- D3:
 - [D3-dsv](#)
 - [D3-hierarchy](#)
 - [D3-voronoi-treemap](#)
- [Riot.js](#)
- [PixiJS](#)
- [Pixi-Viewport](#)

Pixi.js

- Used to visualize the treemap
- Offers simple drawing capabilities
- Uses WebGL or Canvas depending on the browser

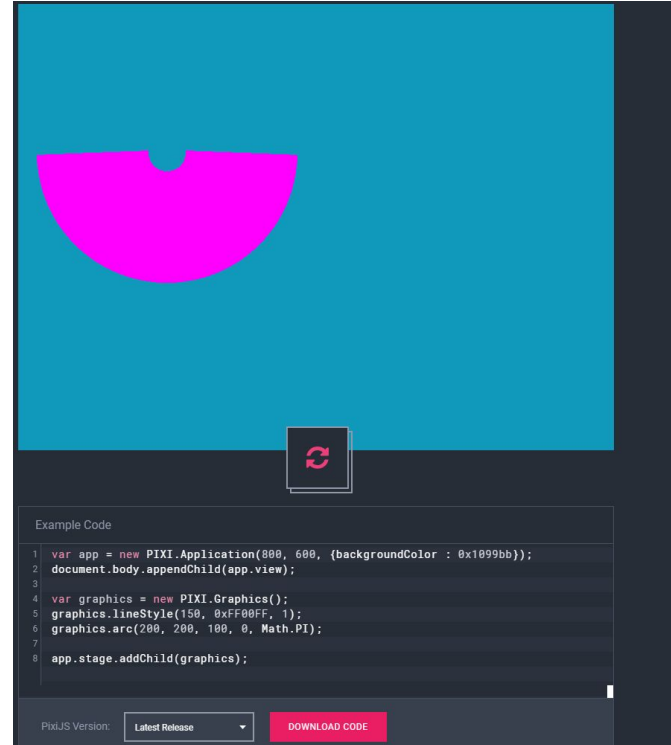


Figure 3: Pixi Example Code [Screenshot from [github](#)]



Pixi-Viewport

- Offers intuitive 2D-Camera capabilities for Pixi.js applications
- Options include
 - Zooming
 - Clicking
 - Dragging
 - Pinching



D3-Voronoi-Treemap

- Offers weighted calculation of entire voronoi treemap
- Uses d3-hierarchy as input and output



Supported File Formats

- JSON
- CSV



Sample JSON File

[Dataset inspired by
<https://github.com/WYanChao/Orthogonal-Voronoi-Treemap/blob/master/data/globalEconomyByGDP.json>]

```
{
  "name": "America",
  "children": [
    {
      "name": "North America",
      "children": [
        {"name": "United States", "weight":24.32},
        {"name": "Canada", "weight":2.09},
        {"name": "Mexico", "weight":1.54}
      ]
    },
    {
      "name": "South America",
      "children": [
        {"name": "Brazil", "weight":2.39},
        {"name": "Argentina", "weight":0.79},
        {"name": "Venezuela", "weight":0.5},
        {"name": "Colombia", "weight":0.39}
      ]
    }
  ]
}
```



Sample CSV Files

Unique Parents	Non-Unique Parents
<pre>name,parent,weight cars,, owned,cars, traded,cars, learned,cars, pilot,owned,40 325ci,owned,40 accord,owned,20 chevette,traded,10 odyssey,learned,20 maxima,learned,10</pre>	<pre>id,name,parentId,weight 1,Father,, 2,Alice,1, 3,Alice,1, 4,Bob,2,10 5,Doris,3,20</pre>

[Unique Parents Dataset from
<https://github.com/d3/d3-hierarchy#stratify>]

[Non-Unique Parents Dataset created by Lisa
Weiβ]



Sample CSV Files

Unique Parents	Non-Unique Parents
<code>name parent, weight cars,, owned,cars, traded,cars, learned,cars, pilot,owned,40 325ci,owned,40 accord,owned,20 chevette,traded,10 odyssey,learned,20 maxima,learned,10</code>	<code>id,name,parentId, weight 1,Father,, 2,Alice,1, 3,Alice,1, 4,Bob,2,10 5,Doris,3,20</code>

[Unique Parents Dataset from
<https://github.com/d3/d3-hierarchy#stratify>]

[Non-Unique Parents Dataset created by Lisa
Weiß]

Interactive Voronoi Treemap

Choose File

Load Small Example



Load Medium Example



Load Large Example



Reset Viewpoint

