Network Graph Visualizer

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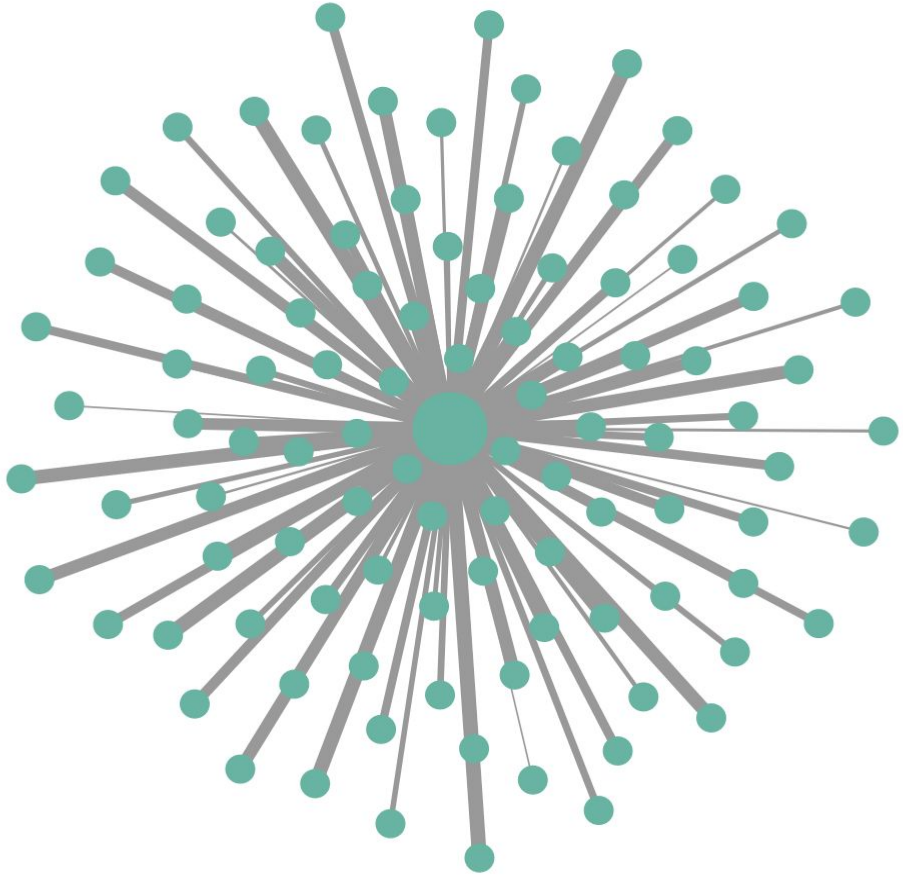
The idea

- Our postgresql database is huge, hundreds of thousands of rows.
- Must be hard to read!
- Will a visual component be easier to intuit?

The central node is your search. Hover over the nodes to see their names. The thicker the edge, the lower the pVal. The closer the node, the higher the enrichment.



Visualization Concept

- pVal as a measure indicates statistical significance. Enrichment values as a measure indicate gene-term associations.

- pVals are inversely correlated to the thickness of the edges, the thicker the edge, the lower the pVal. Enrichment is inversely correlated to distance, the weaker the association the farther away they are

- Intuitively, this makes sense. A thicker edge means it is more statistically significant, a closer node means it is more strongly associated with the gene id or MeSH term

Querying From Database

- We create two new flask API endpoints, called when the view network button on the results page is hit. One for gene and mesh search that call a function that transforms the data

- Then we have a function that transforms the data into something applicable to the d3.js network graph

- We want to account for the huge variance in enrichment and pVal datas such that it looks coherent and appealing

A Standard Normal Distribution

- The decision is made to make the graph normally distributed
- All the data is relativized to the other data within its query
- Minimum and maximum is sent to 10 to 100
- Not perfect: We don’t get a sense of absolute values but the data is easier to interpret

Limitations/The Future

- You should be able to click a gene or MeSH term and then it takes you to that version of the network graph

- Hovering over one should display exact pVal/enrichment

- Increasing visual appeal should be considered