Resource discovery in p2p

→ Associate semantic vectors with queries/resources
→ Semantic vectors guide resource placement and query fwd

How do you **create semantic vectors**? Use spectral Layout (as has done Matteo for forwarding).

Spectral layout:

+ solves the following problem in sensor networks

Given a set of sensors, and a mechanism by which each sensor can estimate its distance to nearby sensors, determine the coordinates of every sensor via sensor-to-sensor communication.

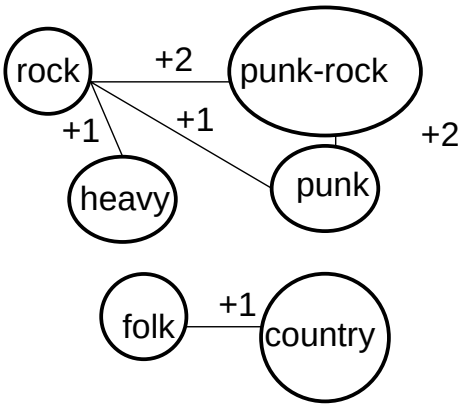
+ may solve this problem in semantic tagging

Given a set of tags, and a mechanism by which each tag can estimate its semantic distance to similar tags, determine the coordinates of every tag.

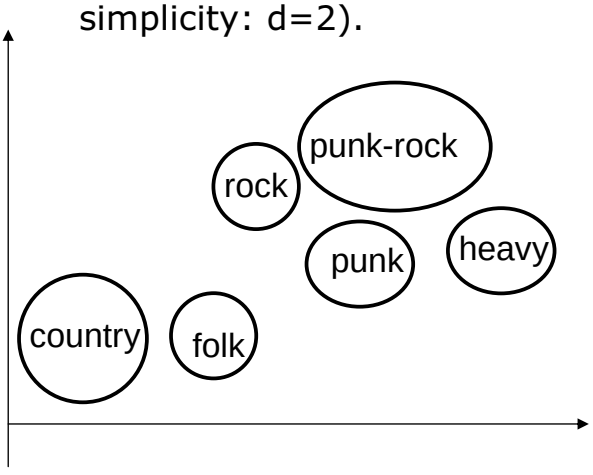
Spectral Layout

A mechanism by which each tag can estimate its semantic distance to similar tags:

Look at co-occurrences!



Spectral Layout: Given pair wise semantic distances, place the tags in a 'semantic' layout (d-dimensional. For simplicity: d=2).



So it associates a point (xi,yi) to the i-th tag

CAN

Guide resource placement and query forwarding based on semantic points:

Resource Placement

Given tags of a resource, determine its semantic point. Place the resource in a **CAN** using as a key its semantic point.

Query Forwarding

Given keywords of the query, determine the corresponding semantic point. Then, search in the radius of that point

Problems

Dynamic. Frequent addition of resource → frequent change in semantic similarity among tags.

No unique solution. The algorithm may not have a unique solution