Networks in Linguistics

14 September, 2020

Network Basics

Node  Link
What are networks useful for?

• Overview
  • Glance at the network’s overall structure
  • Detect clusters and patterns

• Topology
  • What are the neighbours of a given node? How many are there?
  • What is the shortest path between two nodes?
  • Given a set of nodes, which nodes are linked to all of them?

• Attributes
  • What are the nodes with specific attributes (e.g. gender, age, ethnicity)?

Lee et al., 2006

http://vis.stanford.edu/jheer/projects/vizster/images/community.png

Nodes = People
(name + profile picture)
Links = Friendship
Colour = Sub-group
Other Applications in Linguistics

• So far, we have only considered social networks, where each node represents a person

• We can also use networks to model linguistic features or lexical items of interest
  • Such networks are useful for analysing specific linking patterns in a corpus
Loanword Co-occurrence

Nodes = Loanwords
Links = Co-occurrence
(at the text-level)
Size = Frequency
Colour = Degree

Data: Māori Language Week Corpus
Software: Gephi
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Hypergraphs
Moving Beyond Pairwise Networks

Nodes (LHS) = Loanwords
Hyperedges (vertical lines) = Exact combination of loanwords (at the text-level)

Data: Māori Language Week Corpus
Software: PaohVis

Dynamic Hypergraphs

Nodes (LHS) = Loanwords
Hyperedges (vertical lines) = Exact combination of loanwords (at the text-level)

Data: Māori Language Week Corpus
Software: PaohVis
Thank you!