Expanding the Sphere of Influence through Social Network Analysis

Christopher McCarty, Raffaele Vacca, Jeffrey Johnson
University of Florida
Aims

- Understand how collaboration occurs within and across disciplines

- Enable scientists to locate expertise and find collaborators across the CTSA Consortium

- Implement specific collaboration network interventions
Network Science Faculty at UF

- Christopher McCarty
- Jeffrey Johnson
- Raffaele Vacca
- H. Russell Bernard
- George Michailidis
- Gregory Webster
- Andrew Thomas
- Mattia Prosperi
- Liang Mao
- Jiang Bian
- My Thai
- Daisy Wang
- Suzanne Robbins

- Recruiting for a second preeminence network analysis position
Network Concepts
Individuals are nodes in a network
Interactions are ties
Nodes that are tied can be arranged so they are close to each other.

Network structure emerges.
Once arranged nodes exhibit properties

**Degree centrality** reflects direct ties
Betweenness centrality reflects brokering
Communities can be detected
Applying these concepts to the UF CTSI
Nodes at UF can be authors...
...or grantees

All UF grant investigators in 2013
...or the union of authors and grantees
They collaborate...

All UF pub authors and grant investigators in 2013
...and can be arranged in a network
Collaboration at UF occurs within and across disciplines

The UF 2013 collaboration network (main component)
CTSI in the main component

2009
Specific teams, centers, departments can be identified

Medicine/Cardiology – Jacksonville
... and further studied

Medicine/Cardiology – Jacksonville
Dominick Angiolillo – New collaboration via Personalized Medicine and U54
Application to Measure Collaboration in Centers and Institutes

The UF Health Cancer Center
These units can be examined as their own network

The UF Health Cancer Center
Communities of collaboration emerge

The UF Health Cancer Center

**Induction**
CTSI Pilot Program

**VS**

**Alteration**
Use network metrics to pick collaborations
Structures of Academic Units

Health Science Center

CLAS

Engineering
UF VIVO: linked data and the semantic web

Sources:
- DSR database
- HR data
- Grad school
- University registrar
- Web of Science
- Google Scholar
- Pubmed
- Faculty reporting
- Self-editing
Then we can build tools for scientists:
A semantic search engine for research topics and collaborators

Mahdi Moqri and Subhajyoti Bandyopadhyay
UF Warrington College of Business Administration
Keywords by Keywords network, with keyword communities
This helps scientists:
1) Find each other using keyword communities
2) Identify new and emerging scientific areas
Identify emerging disciplines and opportunities to create new disciplines

- **Noshir Contractor** is the Jane S. & William J. White Professor of Behavioral Sciences in the McCormick School of Engineering & Applied Science, the School of Communication and the Kellogg School of Management at Northwestern University, USA.

- Team Science

- October 26th -- Some Assembly Required: Organizing in the 21st century
Year 1 Goals

- Work with Northwestern CTSA to apply Team Science search to UF data (UF data are already in the Northwestern database)
- Reach out to Iowa CTSA (David Eichmann) to collaborate with UF/Northwestern on grant to identify emergent collaborative areas
- Build search capability into existing UFIT systems
- Recruit post-doc to work with existing team (potential post-doc with Cancer Center) to respond to requests for collaboration metrics
- Fill second preeminence SNA position
Questions?