UNIVERSITY OF CENTRAL ARKANSAS™

DEPARTMENT OF MATHEMATICS
MASTER THESIS DEFENSE

SPEAKER: J. Mitchell Harrelson, Graduate Student
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Title: A Social Network Analysis Technique in Authorship Networks: Edge-Weighted Network Approach

Date: Wednesday, July 26, 2017

Time: 3:00 pm – 4:00 pm

Place: MCS 220

ABSTRACT: When multiple authors publish a paper together, not all authors contribute equally. Sometimes, authors who contribute very little to the final product are included in authorship listing. These low-contribution authors are traditionally given the same credit as any other author in traditional social network analysis techniques. While these low-contribution authors still have a quantifiable connection to other co-authors, the magnitude of those connections should not be considered equal to connections between high-contribution authors.

Authors can be listed several ways but are frequently listed in order of contribution on the work. Working under the assumption that authors are listed in order of contribution, most to least, a new method for determining edge weights in social networks is developed. Social network analysis centrality techniques are used to determine the most influential authors in the network, and the changes in ranking between the proposed method and older methods are interpreted.

The developed weighting method has more profound effect on some centrality measures, most notably betweenness centrality. Some low-contribution authors persist in the rankings for some centrality measures because of close relationships with prolific, high-contribution authors.