Tutorial: From Literature Review to Simulation Guidelines

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Abstract. In this tutorial, participants will learn how to use a combination of network science and large language models to conduct a literature review, assess the literature and generate a series of stylized facts ang guidelines for a simulation model from that literature. The foundations of collecting, cleaning, and analyzing citation data for use in bibliometric analyses. We will cover how to find data, how to select data for inclusion, ways to clean data and curate appropriate metadata, discuss common tools used for citation management and selection, and learn how to use ORA-PRO to perform bibliometric and network analytical techniques to derive insights from citation data. We will cover how to use LLMs to characterize the literature groups and extract stylized facts and guidelines for simulation models.

Keywords: bibliometrics, citation data, network analysis, LLMs

Who are the most prolific scholars in a given field of study? Where are the different academic communities – the "invisible colleges" that form organically through the exchange of ideas, but span multiple organizations and cross geographic lines? Which topics and ideas characterize an academic field? Which of these represent the focus of the academic community, and where might there be gaps upon which we should focus our efforts?

In this tutorial, participants will learn what kinds of scholarly literature exist, ways to appropriately scope literature searches, tools and techniques for finding, storing, screening, and cleaning citation data, and how to perform bibliometric techniques to answer the above questions and more. We will provide a survey of tools that can be used in each step of the process, though the topics covered will afford you the methodological foundations to use the tools of your choice on data from across various academic disciplines.

This tutorial is geared toward doctoral students, faculty, and research staff from any academic discipline with a need or desire to perform in-depth analyses of citation data.

Instructor bio: Luke Osterritter is a doctoral researcher with the Center for Computational Analysis of Social and Organizational Systems (CASOS), part of the Software and Societal Systems department at CMU's School of Computer Science.

His research centers around using dynamic network analysis and agent-based modeling techniques to study organizational resilience, insider risk, and social

cybersecurity. He has professional experience relating to cyber security, enterprise threat management, workforce development, and systems engineering.

Luke is a Certified Information Systems Security Professional and holds master's degrees from the University of Pittsburgh and Carnegie Mellon University.