THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

Master's Thesis Presentation

Yu Sen Lui
Department of Statistics
The University of Chicago

"Comparing machine-coded international relations dyadic data with Bayesian nonnegative tensor factorisation"

June 5, 2025, at 4:00 PM
Jones 304, 5747 S. Ellis Avenue

Abstract

Machine-coded scraped international relations dyadic events data is a concept since the Cold War, and was implemented in 2008 with a global scope. However, more recently, data sets with near-real-time updates and modern parsing algorithms have been implemented. We do an exploratory analysis comparing 3 different datasets: Integrated Crisis Early Warning System (ICEWS), Global Database of Events, Language, and Tone (GDELT), Temporally Extended Regular Reproducible International Event Records (TERRIER). We transform these datasets into 4-mode tensors, along with a combined 5-mode tensor, and do full Bayesian inference with Coordinate Ascent Variational Inference to decompose these tensors into nonnegative factor matrices that reveal whether the datasets converge on events, and expose differences in the way these datasets record events.
