



École des sciences de l'information
School of Information Studies

ISI 6300C Special Topics: Applied Social Network Analysis

Fall 2018, Wednesday 14:30-17:30, CRX 421 (HYBRID)

COURSE OUTLINE

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Office hours: Thursday 13:00-14:00 or by appointment



Course description

ISI6300 C Special Topics: APPLIED SOCIAL NETWORK ANALYSIS (3cr.)

Social network analysis (SNA) and network visualizations are able to communicate complex information about various types of entities and their relationships between them. Taking advantage of the brain's preattentive processing of visual information, network graphs convey structured information in a particularly efficient manner. This course provides an introduction into SNA, including theoretical frameworks and indicators, and applies it to Twitter and bibliometric data with the help of SNA visualization software such as Gephi and VOSviewer.

Course objectives and learning outcomes

Upon completion of this course, students will be able to:

- Understand the concepts and theoretical foundations of social network analysis (SNA) based on interdisciplinary methods from information studies, statistics, communication and graphic design.
- Understand basic concepts, advantages and disadvantages of data visualization and apply relevant design principles.
- Compute and interpret various SNA indicators.
- Collect and clean relevant social network data from Twitter and Web of Science.
- Create social network graphs using Gephi and VOSviewer and understand how visualization algorithms work.
- Develop a research project using SNA and data visualization (group project).
- Present SNA project results in form of an infographic (group project).

Language of instruction

English

Students may submit their work in either English or French in accordance with the University of Ottawa's Regulation on Bilingualism: <http://web5.uottawa.ca/admingov/bilingualism.html>

Teaching methods

The course will include presentations by the professor and guest speakers, class discussions and exercises, readings, assignments, group work and a final paper. ISI 6300C is a blended learning course (HYBRID) with three classes taking place online.

Evaluation methods and distribution of grades

Class participation	10%	The participation component of the grade will take into account preparation and active participation in class discussions and activities. Absences from class must be discussed with the professor.
Assignments	30%	
Group work	30%	
Final paper	30%	
	<hr/>	Deadlines for assignments and the final paper must be respected.
	100%	

Required and recommended readings

Required readings are provided two weeks ahead of each class in the course schedule in BrightSpace.

Recommended further reading:

- Börner, K., & Polley, D.E. (2014). *Visual Insights. A Practical Guide to Making Sense of Data*. Cambridge, MA: MIT Press.
- Borgatti, S.P., Everett, M.G., & Johnson, J.C. (2013). *Analyzing Social Networks* (2nd ed.). London: Sage Publications.
- Munzner, T. (2015). *Visualization Analysis and Design*. Boca Raton, FL: CRC Press.
- Rendgen, S. (2012). *Information Graphics*. Cologne: Taschen.
- Tufte, E. (1983). *The Visual Display of Quantitative Information* (2nd ed.). Cheshire, CT: Graphics Press.
- Tufte, E. (2006). *Beautiful Evidence*. Cheshire, CT: Graphics Press.
- Scott, J. (1991). *Social Network Analysis* (4th ed.). Sage Publications: London.

Academic Regulations

Please consult the University of Ottawa's regulations on:

- **Academic Fraud:** <http://www.uottawa.ca/about/academic-regulation-14-other-important-information>
- **Plagiarism:** <http://www.uottawa.ca/vice-president-academic/sites/www.uottawa.ca.vice-president-academic/files/academic-integrity-students-guide.pdf>
- **Examinations & Grading:** http://www.uottawa.ca/graduate-studies/students/general-regulations?cat_1=89

Sexual Violence

The University of Ottawa does not tolerate any form of sexual violence. Sexual violence refers to any act of a sexual nature committed without consent, such as rape, sexual harassment or online harassment. The University, as well as student and employee associations, offers a full range of resources and services allowing members of our community to receive information and confidential assistance and providing for a procedure to report an incident or make a complaint. For more information, visit <http://www.uottawa.ca/sexual-violence-support-and-prevention>

Calendar of activities and evaluations

Class presentations and discussions

Week 1. What is Social Network Analysis? (06.09.)

Outline of the scope, objectives, and requirements of the course; introduction to Social Network Analysis (SNA); historical development of mapping; areas of application

Assignment 1: Converting network representations (due 11.09.)

Week 2. Data vis I: Design principles (13.09.)

Foundations and principles of data visualization; Tufte's design principles; use of color; 3D visualization

Week 3. Data vis II: Graphs and tables (20.09.)

Visualization of research data; selection and design of graphs and tables including bar charts, stacked graphs, scatterplots, glyphs

Assignment 2: Selecting and designing graphs (due 25.09.)

Week 4. SNA indicators and algorithms (27.09.)

Calculation and interpretation of SNA indicators including network density, centrality measures; layout algorithms

Week 5. Data collection and cleaning (Part I: online, 04.10., Part II: 09.10. *)

Part I: Collection and cleaning of Web of Science data; cleaning of bibliographic data for co-authorship networks; name disambiguation; institutional names

Assignment 3: Data collection and cleaning (due 16.10.)

Part I: Collection of online data for SNA; Python; Twitter API; Twitter follower networks;
Guest speaker: Juan Pablo Alperin (SFU)

*takes place Tuesday, 09.10., 12-2PM at CRX326

Week 6. SNA tools I: VOSviewer (online, 12.10.)

Creating and analyzing network graphs in VOSviewer

Assignment 4: Creating a co-occurrence network with VOSviewer (due 25.10.)

Week 7. SNA tools II: Gephi (online, 19.10.)

Creating and analyzing network graphs in Gephi

Assignment 5: Creating a network with Gephi (due 28.10.)

Week 8. 3D visualization and printing (Atelier coFab, 01.11.)

Guest speaker: David McDougall (uOttawa Department of Visual Arts, Atelier coFab)

Generating 3D network graphs; basic application of 3D printing at Atelier coFab

Week 9. SNA vis project I (08.11.)

SNA group project; outline of idea and research questions; planning of data collection and cleaning; feedback for methodology; infographics

Week 10. SNA vis project II (online, 12.-18.11.)

SNA project management; finalizing research questions and methodology; data collection and cleaning

Week 11. SNA vis project III (22.11.)

Finalizing data cleaning, SNA and network graph; preparing infographic and 3D model; 3D printing

Week 12. SNA project presentations (29.11.)

Final group project presentations including infographic and 3D print; feedback

Assignments

Assignments need to be submitted via BrightSpace and are due at midnight each Tuesday after they were assigned. Late submissions are not accepted. Exceptions must be discussed with the professor.

Assignment 1: Converting network representations

~~Assignment 2: Selecting and designing graphs~~ (cancelled; will be graded as 100% for all students)

Assignment 3: Data collection and cleaning

Assignment 4: Creating a co-occurrence network with VOSviewer

Assignment 5: Creating a network with Gephi

Final Paper

The final paper, including infographic and methodological outline, need to be submitted as a PDF via BrightSpace. Late submissions are not accepted.

Due: December 6