Network Analysis for Humanists

This course provides an introduction to network analysis, specifically designed for humanities students. Network analysis offers powerful methods for examining relationships, connections, and structures within cultural, historical, and literary contexts. The course covers both the theoretical foundations of network science and the practical application of network analysis and visualisation tools in humanities research.

Students will explore key concepts and methodologies while gaining hands-on experience in mapping social networks in historical archives, analysing character relationships in literature, and tracing intellectual networks in scholarly communication.

The course consists of eight sessions, each including a lecture, a seminar, and a hands-on session. Lectures introduce fundamental concepts and methods, while seminars encourage critical engagement with research projects applying network analysis to different types of humanities data. Hands-on sessions provide practical training with tools, primarily Python libraries for network analysis.

By the end of the course, students will be able to critically evaluate network-based approaches, apply network analysis techniques to their research, and interpret visualisations and metrics in meaningful ways.

Prior basic programming experience is necessary (Python, Jupyter Notebooks)

Time: Wednesdays, 13:00-16:00

Place: 65 Rue de Richelieu, 75002 Paris

Teacher: Dr Katarzyna Anna Kapitan

Schedule:

	Date	Lectures & Labs	Seminars
1	28 January	Network Thinking	Introduction
2	4 February	Fundamentals	Networks & Literature
3	11 February	Connectivity	Networks & History
4	18 February	Centrality	Networks & Manuscripts
5	11 March	Influence	Networks & Linguistics
6	18 March	Communities	Networks & Media
7	25 March	Modelling	Networks & Scholarship
8	1 April	Dynamics	Project Presentations

Primary Textbook:

- F Menczer, S Fortunato and CA Davis, *A First Course in Network Science* (Cambridge 2020).

Other Textbooks:

- A-L Barabási, *Network Science* (Cambridge 2018).
- W Mattingly, Introduction to Python for Digital Humanities (New York 2023).
- F Karsdorp, M Kestemont, A Riddell, Humanities Data Analysis: Case Studies with Python (Princeton 2021).

Labs:

- NetworkX (a package for the creation, manipulation, and study of the structure, dynamics, and functions of complex networks; https://networkx.org; Hagberg A, Schult DA, Swart PJ (2008), "Exploring network structure, dynamics, and function using NetworkX", in *Proceedings of the 7th Python in Science Conference (SciPy2008)*, Gäel Varoquaux, Travis Vaught, and Jarrod Millman (Eds), (Pasadena, CA USA), pp. 11–15).

Seminar Topics and Readings:

1. Introduction to Network Analysis in the Humanities
    a. Required reading (in-class exercise): Burge 2024
    b. Other readings: (Ahnert et al. 2020)
2. Networks & Literature
    a. Required reading: Moretti 2011
    b. Other readings: (Pang et al. 2023; Perri et al. 2022; Min and Park 2019)
3. Networks & History
    a. Required reading: Ahnert and Ahnert 2019
    b. Other readings: (Warren et al. 2016; Schich et al. 2014)
4. Networks & Manuscripts
    a. Required reading: Kaska 2023
    b. Other readings: (Kapitan and Wills 2023; King 2024)
5. Networks & Linguistics
    a. Required reading: Würschinger 2001
    b. Other readings: (Paradowski et al. 2021; List et al. 2013)
6. Networks & Media
    a. Required reading: Villa et al. 2021
    b. Other readings: (Luis Vargas et al. 2020; Grandjean 2016)
7. Networks & Scholarship
    a. Required reading: Gao et al. 2022
    b. Other readings: (Blidstein and Zhitomirsky-Geffet 2022; Fagan et al. 2018)

Assessment:

- Final Exam – 40% [Lectures]
- Group Project – 30% [Labs]
- Individual Participation & Presentation – 30% [Seminar]

Note: In order to pass the class you need to pass all three grading components (Group work, Individual work, and Final exam).

Seminar Bibliography

Ahnert, Ruth, and Sebastian E Ahnert. 2019. “Metadata, Surveillance and the Tudor State.” *History Workshop Journal* 87 (April): 27–51. https://doi.org/10.1093/hwj/dby033.

Ahnert, Ruth, Sebastian E. Ahnert, Catherine Nicole Coleman, and Scott B. Weingart. 2020. *The Network Turn*. Cambridge University Press. https://doi.org/10.1017/9781108866804.

Blidstein, Moshe, and Maayan Zhitomirsky-Geffet. 2022. “Towards a New Generic Framework for Citation Network Generation and Analysis in the Humanities.” *Scientometrics* 127: 4275–97.

Burge, Caitlin. 2024. “Network Analysis.” In *Compendium of Computational Theology 1. Introducing Digital Humanities to Theology*, edited by Christopher A. Nunn and Frederike van Oorschot. heiBOOKS. https://doi.org/10.11588/heibooks.1521.c21949.

Fagan, Jesse, Katherine S. Eddens, Jennifer Dolly, Nathan L. Vanderford, Heidi Weiss, and Justin S. Levens. 2018. “Assessing Research Collaboration through Co-Authorship Network Analysis.” *J Res Adm* 49 (1): 76–99.

Gao, Jin, Julianne Nyhan, Oliver Duke-Williams, and Simon Mahony. 2022. “Gender Influences in Digital Humanities Co-Authorship Networks.” *Journal of Documentation* 78 (7): 327–50.

Grandjean, Martin. 2016. “A Social Network Analysis of Twitter: Mapping the Digital Humanities Community.” *Cogent Arts & Humanities* 3: n.p. [art. 1171458].

Kapitan, Katarzyna Anna, and Tarrin Wills. 2023. “Sagas and Genre: A Case for Application of Network Analysis to Manuscripts Preserving Old Norse-Icelandic Saga Literature.” *Digital Scholarship in the Humanities* 38 (3): 1130–44. https://doi.org/10.1093/llc/fqad013.

Kaska, Katharina. 2023. “Scribal Networks: Visualizing Twelth-Century Cisterian Book Production through Network Analysis.” *The Journal of Historical Netwrok Research* 9 (1): 101–29. https://doi.org/DOI:%252010.25517/jhnr.v9i1.65.

King, Julia. 2024. “Syon Abbey’s Books and the Strength of Weak Ties.” *Manuscript Studies: A Journal of the Schoenberg Institute for Manuscript Studies* 9 (1): 33–71. https://doi.org/10.1353/mns.2024.a930876.

List, Johann-Mattis, Anselm Terhalle, and Matthias Urban. 2013. “Using Network Approaches to Enhance the Analysis of Cross-Linguistic Polysemies.” In *Proceedings of the 10th International Conference on Computational Semantics (IWCS 2013)*, edited by Alexander Koller and Katrin Erk. Association for Computational Linguistics. https://aclanthology.org/W13-0208/.

Luis Vargas, Patrick Emami, and Patrick Traynor. 2020. “On the Detection of Disinformation Campaign Activity with Network Analysis.” *Proceedings of the 2020 ACM SIGSAC Conference on Cloud Computing Security Workshop* (Virtual Event, USA). https://doi.org/10.1145/3411495.3421363.

Menczer, Filippo, Santo Fortunato, and Clayton A. Davis. 2020. *A First Course in Network Science*. Cambridge University Press.

Min, Semi, and Juyong Park. 2019. “Modeling Narrative Structure and Dynamics with Networks, Sentiment Analysis, and Topic Modeling.” *PLoS ONE* 14 (12): n.p. [e0226025].

Moretti, Franco. 2011. “Network Theory, Plot Analysis.” *New Left Review* 68: 80–102.

Pang, Nana, Meng Sun, and Haoran Zhu. 2023. “Louise or Ferdinand? Exploring the Protagonists of Love and Intrigue Using Social Network Analysis.” *Digital Scholarship in the Humanities* 38: 1214–26.

Paradowski, Michał B., Andrzej Jarynowski, Karolina Czopek, and Magdalena Jelińska. 2021. “Peer Interactions and Second Language Learning: The Contributions of Social Network Analysis in Study Abroad versus At-Home Environments.” In *Language, Mobility and Study Abroad in the Contemporary European Context*, edited by Rosamond Mitchell and Henry Tyne. Routledge.

Perri, Vincenzo, Lisi Qarkaxhija, Albin Zehe, Andreas Hotho, and Ingo Scholtes. 2022. “One Graph to Rule Them All: Using NLP and Graph Neural Networks to Analyse Tolkien’s Legendarium.” *CHR 2022: Computational Humanities Research Conference* (Antwerp, Belgium), December 12, n.p.

Schich, Maximilian, Chaoming Song, Yong-Yeol Ahn, et al. 2014. “A Network Framework of Cultural History.” *Science* 345 (6196): 558–62. https://doi.org/10.1126/science.1240064.

Villa, Giacomo, Gabriella Pasi, and Marco Viviani. 2021. “Echo Chamber Detection and Analysis.” *Social Network Analysis and Mining* 11: n.p. [article 78]. https://doi.org/10.1007/s13278-021-00779-3.

Warren, Christopher N., Daniel Shore, Jessica Otis, Lawrence Wang, Mike Finegold, and Cosma Shalizi. 2016. “Six Degrees of Francis Bacon: A Statistical Method for Reconstructing Large Historical Social Networks.” *Digital Humanities Quarterly* 10 (3): n.p.

Würschinger, Quirin. 2001. “Social Networks of Lexical Innovation. Investigating the Social Dynamics of Diffusion of Neologisms on Twitter.” *Frontiers in Artificial Intelligence* 4: n.p. [art. 648583].