Social Network Analysis for Computer Scientists

This course deals with computer science (CS) aspects of social network analysis (SNA), and is open to all students in the master computer science programme at Leiden University.

If you want to participate in the 2022 edition and are in a different programme, then you should contact the lecturer in advance.

Course information

Lectures: Fridays from 11:00 to 12:45 in Gorlaeus room C1 (except Oct 14 in Lipsius 011)
Lab sessions: Fridays from 9:00 to 10:45 in Snellius rooms 302/304 and 306/308
Prerequisites: a CS bachelor with courses on Algorithms, Data Structures and Data Mining
Literature: provided papers and book chapters (free and digitally available)
Examination: based on presentation, paper, programming, peer review and participation (no exam)
Brightspace link: **2223-S1 Social Network Analysis for Computer Scientists (https://brightspace.universiteitleiden.nl/d2l/home/168899)**
Study points: 6 ECTS

Lecturer: **dr. Frank Takes (../)** (**f.w.takes@liacs.leidenuniv.nl (mailto:f.w.takes@liacs.leidenuniv.nl)**, room 157b)
Assistants: **Hanjo Boekhout MSc (https://www.universiteitleiden.nl/en/staffmembers/hanjo-boekhout)** (**h.d.boekhout@liacs.leidenuniv.nl (mailto:h.d.boekhout@liacs.leidenuniv.nl)**, room 126),
Rachel de Jong MSc (https://www.universiteitleiden.nl/en/staffmembers/1/rachel-de-jong#) (**r.g.de.jong@liacs.leidenuniv.nl (mailto:r.g.de.jong@liacs.leidenuniv.nl)**, room 126),
Yasmin Kareem BSc, Marton Menyhert BSc and Jie Wu BSc.

Need help? Ask your questions during the lab sessions. If it is more urgent, walk by the lecturer or assistant's offices. If they are not around, contact **snacs@liacs.leidenuniv.nl (mailto:snacs@liacs.leidenuniv.nl)**.

Network with 1458 nodes and 1948 edges.

Course schedule

Date	Lecture (11:00-12:45)	Lab session (9:00-10:45)

1.	Sep 9, 2022	**Lecture 0: Course information** **Lecture 1: Introduction**	No lab session in the first week
2.	Sep 16, 2022	Lecture 2: ...	...
	...	...	...
	...	...	...
	Oct 3, 2022	Deadline for Assignment 1	
	...	...	...
	Oct 24, 2022	Deadline for Assignment 2	
	...	...	...
	Nov 10, 2022	Deadline course project paper: a first version of the paper ready in PDF for peer review by fellow students	
	...	...	...
	Nov 25, 2022	Optional deadline course project paper to receive preliminary paper feedback from course staff (hand in via Brightspace)	
	...	...	...
	Dec 18, 2021	Deadline for final course project paper	
	Dec 20, 2021	Retake deadline for assignments	
	Dec 23, 2021	Course end. Grades are sent to student administration	
	Jan 31, 2022	Course project retake deadline	

Course description

See the **e-Studyguide (https://studiegids.universiteitleiden.nl/en/courses/114159/social-network-analysis-for-computer-scientists)** for a more general description.

Topics include: SNA from a CS perspective (graph representation, complexity issues, examples), Graph Structure (power law, small world phenomenon, clustering coefficient, hierarchies), Paths and Distances (neighborhoods, radius, diameter), Spidering and Sampling (BFS, forest fire, random walks), Graph Compression (graph grammars, bitwise tricks, encryption, hashing), Centrality (degree centrality, closeness centrality, betweenness centrality, rating and ranking), Centrality and Webgraphs (HITS, PageRank, structure of the web), Community Detection (spectral clustering, modularity), Visualization (force-based algorithms, Gephi), Graph Models (random graphs, preferential attachment), Link Prediction (structure, semantics, prediction algorithms, graph mining), Contagion (diffusion of information, spreading activation, gossipping) and Privacy and Anonymity ((de-)anonymizing graphs, ethical aspects, privacy issues) and various other topics that have been added over the years but are not yet in the list above.

The course was also given in **2014 (index2014.html)**, **2015 (index2015.html)**, **2016 (index2016.html)**, **2017 (index2017.html)**, **2018 (index2018.html)**, **2019 (index2019.html)**, **2020 (index2020.html)** and **2021**

(index2021.html).

Page maintained by Frank Takes (../)