

**Louisiana State University
School of Library and Information Science**

**LIS 4513: Information Techniques for Social Media
Spring 2022
Instructor: Seungwon Yang**

Catalog Description

Introduction to theories and practical approaches for analyzing social media data.

Office: 272 Coates Hall

Contact information

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Office hours: Zoom sessions available by appointment

Course Description

In this course, students will learn both theoretical and practical knowledge regarding analysis and visualization of social media data in two aspects – (1) networks and (2) content of social media. To support students, who are not familiar with computing and visualization tools, we will use easy-to-follow user guides and tutorials for setting up and using the software tools. By the end of the class, students will have skills and hands-on experience of analyzing and reporting analysis results for real-life social media data.

Course Objectives

Upon satisfactory completion of this course, the student should be able to:

- Apply computing and visualization tools for analyzing social media data.
- Describe results of analysis for textual content and networks of social media data.
- Exhibit professionalism in planning, conducting analyses, and reporting analysis results for social media research.

Textbooks

- [Required] Social Network Analysis (3rd Edition) by John Scott. (2013). Publisher: Sage. ISBN-13: 978-1446209042, ISBN-10: 1446209040.

*Note: Additional readings will be posted to the Moodle as needed.

Course Topics and Schedule:

No.	Week	Topic	Posted	Due
1	Jan 18	Course Introduction and syllabus review	D1	.
2	Jan 25	Social network analysis basics (part 1)	.	D1
3	Feb 1	Social network analysis basics (part 2)	D2	.
4	Feb 8	Influence in social networks	.	D2
5	Feb 15	Tools for social network analysis (part 1)	H1	.
6	Feb 22	Tools for social network analysis (part 2)	P1	H1
7	Mar 1	Mardi Gras Holiday	.	.
8	Mar 8	Information diffusion, Social media content analysis	D3	P1
9	Mar 15	Spring Break	.	.
10	Mar 22	Tools for content analysis (part 1)	.	D3
11	Mar 29	Tools for content analysis (part 2)	H2	.
12	Apr 5	Sentiment analysis	P2	.
13	Apr 12	Geospatial data mining	.	H2
14	Apr 19	Privacy and security issues in social media	D4	.
15	Apr 26	Applications: crisis events, politics	.	D4
16	May 3	Project #2 Due.	.	P2

* Keys:

- D1-D4: Discussion postings in the Moodle forum
- H1-H2: Homework assignments
- P1, P2: Projects 1 and 2

Weekly Topics and Readings in Detail

Week 1: Course introduction and syllabus review

- Chapter 1 from the textbook “Social Network Analysis” by John Scott.
- Social Network Sites: Definition, History, and Scholarship by boyd et al. Journal of Computer - Mediated Communication 13(2008), p.210-230.

Week 2: Social network analysis basics (part 1)

- Chapters 2, 3, and 4 from the textbook “Social Network Analysis” by John Scott.
- Chapter 3. Analyzing Relational Data. from the book “Social Network Analysis: History, Theory and Methodology (1st ed.)” by Christina Prell.
- M Granovetter, “The Strength of weak ties” American Journal of Sociology, Vol. 78, No. 6. (1973)

Week 3: Social network analysis basics (part 2)

- Chapter 6 from the textbook “Social Network Analysis” by John Scott.
- Chapters 4, 5 from the book “Social Network Analysis” by Christina Prell.

- D. Austin, “It’s a small world afterall” <http://www.ams.org/samplings/feature-column/fc-2012-08>

Week 4: Influence in social networks

- E Bakshy, J. M. Hofman, W. A. Mason, D. J. Watts. 2011 “Everyone's an influencer: quantifying influence on Twitter” In Proceedings of Int. Conf. on Web Search and Data Mining (WSDM)
- Cha, M., Haddadi, H., Benevenuto, F., and Gummadi, K.P. 2010 Measuring User Influence in Twitter: The Million Follower Fallacy, In Proceedings of 4th International Conference on Weblogs and Social Media (ICWSM)
- M. Franceschetti 2011 “PageRank: standing on the shoulders of giants” Commun. ACM, Vol. 54, pp. 92-101.
- Freeman, L. 1979 “Centrality in Social Networks: Conceptual Clarification”, Social Networks 1, No. 3.
- Bonacich, P. 1987 “Power and Centrality, a family of measures” The American Journal of Sociology, Vol. 92, No. 5.

Week 5: Tools for social network analysis (part 1)

- Learn how to use Gephi. <https://gephi.org/users/>
- Gephi – Introduction to network analysis and visualization. <http://www.martingrandjean.ch/gephi-introduction/>
- Gephi tutorial. <https://gephi.org/users/tutorial-visualization/>
- Other useful tools
 - Cytoscape
 - D3 visualization JavaScript library

Week 6: Tools for social network analysis (part 2)

Creating a simple dynamic network: <https://tinyurl.com/tutkbda>

- Gephi tutorial on dynamic networks https://edisciplinas.usp.br/pluginfile.php/4204986/mod_resource/content/1/gephi_tutorial_dynamics.pdf
- Converting a network with dates into a dynamic network <https://seinecle.github.io/gephi-tutorials/generated-html/convert-a-network-with-dates-into-dynamic.html>

Week 8: Information diffusion, Social media content analysis

- Eytan Bakshy, Itamar Rosenn, Cameron Marlow, and Lada Adamic. 2012. The role of social networks in information diffusion. In Proceedings of the 21st international conference on World Wide Web (WWW '12). ACM, New York, NY, USA, 519-528.
- Romero, D. M., Meeder, B. and Kleinberg, J. 2011. Differences in the Mechanics of Information Diffusion Across Topics: Idioms, Political Hashtags, and Complex Contagion on Twitter, In Proceedings of World Wide Web Conference
- J. P. Onnela, J. Saramäki, J. Hyvönen, G. Szabó, D. Lazer, K. Kaski, J. Kertész, A. L. Barabási, “Structure and tie strength in mobile communication networks”, Proceedings of the National Academy of Sciences, Vol. 104, No. 18. (01 May 2007).
- McNaught, C., & Lam, P. 2010. Using Wordle as a supplementary research tool. The qualitative report, 15(3), 630.
- Viégas, F. B., & Wattenberg, M. 2008. Timelines tag clouds and the case for vernacular visualization. *Interactions*, 15(4), 49-52.
- Collins, C., Viegas, F. B., & Wattenberg, M. 2009, October. Parallel tag clouds to explore and analyze faceted text corpora. In *Visual Analytics Science and Technology, 2009. VAST 2009. Symposium*, pp. 91-98.
- Kramer, A. (2017). Introduction to Natural Language Processing, Part 1: Lexical Units. <https://www.datascience.com/blog/natural-language-processing-lexical-units>

Week 10: Tools for content analysis (part 1)

- Word cloud tools
 - EdWordle (<http://www.edwordle.net/>)
 - Word Art (<https://wordart.com/>)
- Twitter data collection and content analysis
 - TAGS tool (<https://tags.hawksey.info/>)

Week 11: Tools for content analysis (part 2)

- Twitter data collection (given tweet IDs)
 - Hydrator: getting the full tweet data based on tweet IDs (<https://github.com/DocNow/hydrator>)
- Sentiment analysis tools
 - Sentiment Analyzer (<https://www.danielsoper.com/sentimentanalysis/default.aspx>)
 - Sentigem (<https://sentigem.com/#!>)

Week 12: Sentiment analysis

- Sentiment analysis papers:
 - C. J. Hutto, Eric Gilbert. VADER: A Parsimonious Rule-Based Model for Sentiment Analysis of Social Media Text. <https://www.aai.org/ocs/index.php/ICWSM/ICWSM14/paper/view/8109/8122>

- Bo Pang and Lillian Lee. 2008. Opinion Mining and Sentiment Analysis. Found. Trends Inf. Retr. 2, 1-2 (January 2008).
<http://www.cs.cornell.edu/home/llee/omsa/omsa.pdf>
- A Pak and P Paroubek. Twitter as a corpus for sentiment analysis and opinion mining. Proceedings of International Conference on Language Resources and Evaluation (LREC-2010), Valletta, Malta, May 17-23, 2010.
- S. O. Sood and L. Vasserman. “ESSE: Exploring Mood on the Web”, In ICWSM 2009.

Week 13: Geospatial data mining

- T Rattenbury, M Naaman. 2009 “Methods for extracting place semantics from Flickr tags” ACM Trans. Web, Vol. 3, No. 1, pp. 1-30.
- Intagorn, S., Plangprasopchok, A. and Lerman, K. 2010. Harvesting Geospatial Knowledge from Social Metadata. In Proceedings of 7th International Conference on Information Systems for Crisis Response and Management.
- D J. Crandall, L Backstrom, D Huttenlocher, J Kleinberg, 2009 “Mapping the world's photos” In Proceedings of the 18th international conference on World Wide Web, pp. 761-770.
- Bo Han et al, (2014) “Text-based User Twitter Geolocation Prediction.” J. Artificial Intelligence Research 49 pp 451—500. <http://www.jair.org/media/4200/live-4200-7781-jair.pdf>
- Cheng, Z., Caverlee, J. and Lee, K. You Are Where You Tweet: A Content-Based Approach to Geo-locating Twitter Users. 19th ACM International Conference on Information and Knowledge Management (CIKM)

Week 14: Privacy and security issues in social media

- Kosinski, M., Stillwell, D., and Graepel, T. (2013). Private traits and attributes are predictable from digital records of human behavior. Proceedings of the National Academy of Sciences, 110(15):5802-5805
- Backstrom, L. and Kleinberg, J. (2013). Romantic partnerships and the dispersion of social ties: A network analysis of relationship status on facebook. In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing - CSCW '14, CSCW '14, pages 831-841, New York, NY, USA. ACM Press.
- Golbeck J, Robles C, Turner K (2011) Predicting personality with social media. Conference on Human Factors in Computing Systems, pp 253–262
- Gosling, S. D., Augustine, A. A., Vazire, S., Holtzman, N., and Gaddis, S. (2011). Manifestations of personality in online social networks: self-reported Facebook-related behaviors and observable profile information. Cyberpsychology, behavior and social networking, 14(9):483-488.

Week 15: Applications: crisis events, politics

- Tweeting Super typhoon Haiyan: Evolving Functions of Twitter during and after a Disaster Event by Clarissa C. David et al. (2016).
- Microblogging in crisis situations: Mass protests in Iran, Tunisia, Egypt by Andrea Kavanaugh et al.
- Using Social Media to Enhance Emergency Situation Awareness by Jie Yin et al.
- Social Media and the Decision to Participate in Political Protest: Observations From Tahrir Square by Zeynep Tufekci et al. (2012)
- The Personalization of Politics: Political Identity, Social Media, and Changing Patterns of Participation by W. Lance Bennett (2012).
- Reflections on #OccupyEverywhere: Social media, public space, and emerging logics of aggregation by Jeffrey S. Juris (2012).

Week 16: Project 2 Due. No Class.

Grading Scheme

99-100%	A+
93-98%	A
90-92%	A-
87-89%	B+
84-86%	B
80-83%	B-
77-79%	C+
74-76%	C
70-73%	C-
67-69%	D+
64-66%	D
60-63%	D-
Below 60%	F

Grading Policies

All assignments are due on the dates indicated in the Course Schedule. Work submitted more than 7 days late without an acceptable excuse will be downgraded one full letter per week. Work submitted more than 7 days late without an acceptable excuse may be refused.

A grade of B indicates that the student has achieved the objectives and met the requirements for the course. A grade of "A" indicates that the student has exceeded the requirements and demonstrated a superior understanding of the principles and concepts involved. A grade of C indicates that the student has partially met the requirements, but demonstrates an incomplete understanding of the principles and concepts involved. A grade of D indicates that the work

does not meet the requirements and demonstrates a lack of understanding. A grade of F indicates that the student did not meet any of the course requirements or objectives.

Final grades will be computed from the following activities

Homework Assignments (2 x 10% = 20%)	20%
Discussions (4 x 5% = 20%)	20%
Project 1: Network Analysis Project	30%
Project 2: Content Analysis project	30%
Total	100%

Description of activities that will be graded

- Homework Assignments & Discussions

Students are expected to participate in discussions. Discussion questions and homework assignments will be posted in Moodle and students must complete them by the designated time. The topics of the three homework assignments are:

- HW #1: Creating a social network graph with Gephi visualization tool
- HW #2: Analyzing and summarizing the content of tweets using word cloud software tools

- Projects

There are two projects around the topics of network analysis (Project #1) and content analysis (Project #2) for social media data. Students are expected to work individually using existing software tools and real datasets for both projects. For each project, the deliverable is a project report. Students will be writing a project report for each project by answering questions provided in the project description. Undergraduate students and graduate students will include different amount of content in their reports. Details of the report requirements will be provided later.

Expectations

LSU's general policy states that for each credit hour, you (the student) should plan to spend at least two hours working on course related activities outside of class. Since this course is for three credit hours, you should expect to spend a minimum of six hours outside of class each week working on assignments for this course. [Visit here](#) for more information regarding general information for courses.

LSU Student Code of Conduct

The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code as described on the [Code of Conduct page](#). Any violations of the LSU student code will be duly reported to the Dean of Students.

Disabilities

The University is committed to making reasonable efforts to assist individuals with disabilities in their efforts to avail themselves of services and programs offered by the University. To this end, Louisiana State University will provide reasonable accommodations for persons with documented qualifying disabilities. If you have a disability and feel you need accommodations in this course, you must present a letter to me from Disability Services in 115 Johnston Hall, indicating the existence of a disability and the suggested accommodations.

Academic Success

The primary ingredients of your academic success are attending class, managing your time efficiently, taking good notes, and developing good critical thinking and communication abilities. LSU has a number of excellent resources that will assist you in developing these skills. The place to begin is the [Center for Academic Success](#) (CAS). The CAS offers guidance on what learning strategies are best suited to your talents, tutoring in the basic subjects, and workshops on a variety of topics, from note taking to time management. [Communication Across the Curriculum](#) assist students in developing the communication skills necessary for academic and professional success. Finally, with respect to professional success, the [LSU Olinde Career Center](#) can assist you in choosing a major and a profession that best suits your talents and passions and help you develop a four year career plan to ensure success when you graduate from LSU.

Diversity, Equity, and Inclusion

We believe diversity, equity, and inclusion enrich the educational experience of our students, faculty, and staff, and are necessary to prepare all people to thrive personally and professionally in a global society. Therefore, LSU is firmly committed to an environment that affords respect to all members of our community. We will work to eliminate barriers that any members of our community experience.

To make LSU a place where that can happen, we must recognize and reflect on the inglorious aspects of our history. We now acknowledge the need to confront the ways racism, sexism, ableism, ageism, classism, LGBTQ+ phobia, intolerance based on religion or on national origin, and all forms of bias and exploitation have shaped our everyday lives.

We accept personal and professional responsibility to eliminate bias and oppression wherever they are found. We understand our obligation to speak up when we see bias whether it be in our teaching, study, or daily work. Our community will educate themselves proactively and continuously about how to intervene and bring bias to the attention of others with commitment and compassion.

We will hold ourselves accountable for our actions and inactions, and for maintaining intentional, measurable, and meaningful efforts to enhance diversity, equity, and inclusion, including through ongoing evaluation of our policies, practices, and procedures.

Nondiscrimination, Sexual Harassment, and Title IX

LSU provides equal opportunity for all qualified persons in admission to, participation in, or employment in the programs and activities which the university operates without regard to race, creed, color, marital status, sexual orientation, gender identity, gender expression, religion, sex, national origin, age, mental or physical disability, or veteran's status. LSU has implemented a procedure to address complaints for those who believe they have been subjected to discrimination and/or harassment in violation of this policy. Please know that your instructors are here to support you and listen to your experience. We also want you to know that we are mandatory reporters and must report what we know to the Office of Civil Rights and Title IX. All LSU employees, with few exceptions, are required to report instances of sex-or gender-based harassment and discrimination, including sexual misconduct and power-based violence (e.g. sexual assault, stalking, dating violence, domestic violence, sexual exploitation, retaliation, etc.) for which they may not be the victim, but of which they are aware. The [Office of Civil Rights & Title IX](#) is the LSU office responsible for investigating complaints regarding any type of discrimination, sexual harassment, or power-based violence. The [Office of Civil Rights & Title IX](#) is located in 118 Himes Hall and the phone number is 225-578-9000. If you are aware of an individual who has been victimized, you are encouraged to contact the [Office of Civil Rights & Title IX](#) or file an online report by going to www.lsu.edu/support and clicking the Report An Incident box.

If you have been assaulted, harassed, or a victim of violence, we encourage you to contact the [Office of Civil Rights & Title IX](#). Please reach out for help immediately. Some excellent resources available to Baton Rouge residents include:

1. [STAR](#) (Sexual Trauma Awareness and Response; 24/7 hotline: 1-855-435-STAR,
2. [IRIS Domestic Violence Center](#); 24/7 hotline: 1-800-541-9706
3. [THE PHONE Baton Rouge](#); 24/7 hotline: 225-924-3900
4. [The Lighthouse Program](#); 225-578-5718

For additional information visit www.lsu.edu/civil-rights. LSU's policies on sexual harassment ([PM 73](#)) and sexual harassment of students ([PS-95](#)) are available on the LSU website.