

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

**LIS 4513: Information Techniques for Social Media
Spring 2021
Instructor: Seungwon Yang**

Catalog Description

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

Office: 272 Coates Hall

Contact information

Seungwon Yang, Ph.D., Assistant Professor in SLIS & CCT
Email: seungwonyang@lsu.edu
Office hours: 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:

- Topics to be covered in the class are presented below. The posting of discussion topics, homework assignments, project descriptions, and their due dates are marked as D (discussion), H (homework), PD (project description), or PR (project result/deliverable).
- Students are required to complete and submit their homework assignments, discussions, and project reports/deliverables before the midnight of due dates, unless otherwise specified.
- Homework assignments may involve reading assigned papers, and then creating concept maps to visually present the key concepts and their relationships based on the content of the papers. Other types of homework will also be assigned as well.

No.	Week	Topic	Posted	Due
1	Jan 12	Course Introduction and syllabus review	D1	.
2	Jan 19	Social network analysis basics (part 1)	.	D1
3	Jan 26	Social network analysis basics (part 2)	D2	.
4	Feb 2	Influence in social networks		D2
5	Feb 9	Tools for social network analysis (part 1)	H1	
6	Feb 16	Tools for social network analysis (part 2)	PD1	H1
7	Feb 23	Information diffusion	D3	.
8	Mar 2	Project #1 Due.	.	PR1
9	Mar 9	Social media content analysis	D4	D3
10	Mar 16	Tools for content analysis (part 1)	.	.
11	Mar 23	Tools for content analysis (part 2)	H2	D4
12	Mar 30	Sentiment analysis	PD2	.
13	Apr 6	Geospatial data mining	.	H2
14	Apr 13	Privacy and security issues in social media	D5	.
15	Apr 20	Applications: crisis events, politics	.	D5
16	Apr 27	Project #2 Due.	.	PR2

* Keys:

- D1-D5: Discussion postings in the Moodle forum
- H1-H2: Homework assignments
- PD1, PD2: Project descriptions posted
- PR1, PR2: Project results (deliverables/reports) due

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 and centrality

- 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/converting-a-network-with-dates-into-dynamic.html>

Week 7: Information diffusion

- 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).

Week 8: Project 1 Due. No class.

Week 9: Social media content analysis

- 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
 - Wordle.net
 - Wordart.com
- Twitter data collection and content analysis
 - TAGS

Week 11: Tools for content analysis (part 2)

- Twitter data collection (given tweet IDs)

- Hydrate
- Sentiment analysis tools

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.aaai.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 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 (5 x 4% = 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 (participation)

Students are expected to participate in the weekly discussion and/or exercises via the Moodle discussion forums. Discussion questions and/or class exercises will be posted in Moodle and students must complete them by the designated time. The topics of the three assignments are:

- HW #1: Creating a social network graph with Gephi visualization tool
 - Undergrad students: work on a single social network, and identify central figures (nodes) in the network, etc.
 - Grad students: work on two social networks in total, and identify central figures (nodes) in each network, etc.
- HW #2: Analyzing and summarizing the content of tweets using word cloud software tools
 - Undergrad students: develop 3 word clouds and discuss about them
 - Grad students: develop 5 word clouds using groups of tweets and discuss about them

- Projects

There are two projects around the topics of network analysis and content analysis for social media data. Students are expected to work with existing software tools and real datasets for both projects.

- Project #1: Network Analysis of Social Media Data
 - Students will apply network analysis software for constructing and analyzing social networks. Datasets for the social networks will be

provided by the instructor. Using various techniques, students will find major players in the network, as well as other network information by computing centrality measures, identifying communities, etc.

- Project #2: Content Analysis of Social Media Data
 - Students will apply opensource tools for analyzing the textual and metadata content of social media data, which will be provided by the instructor. Approaches may involve word cloud development, sentiment analysis, and/or named entity recognition.
- Deliverables for Students for Each Project: the deliverables may include a project report, which may include answers to multiple questions. Undergraduate students and graduate students will include different amount of content in their report. 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. For more information see: <http://catalog.lsu.edu/content.php?catoid=12&navoid=822>.

Academic Integrity

Louisiana State University adopted the Commitment to Community in 1995 to set forth guidelines for student behavior both inside and outside of the classroom. The Commitment to Community charges students to maintain high standards of academic and personal integrity. All students are expected to read and be familiar with the LSU Code of Student Conduct and Commitment to Community, found online at www.lsu.edu/saa. It is your responsibility as a student at LSU to know and understand the academic standards for our community.

Students who are suspected of violating the Code of Conduct will be referred to the office of Student Advocacy & Accountability. For undergraduate students, a first academic violation could result in a zero grade on the assignment or failing the class and disciplinary probation until graduation. For a second academic violation, the result could be suspension from LSU. For graduate students, suspension is the appropriate outcome for the first offense. The most recent version of the Code of Student Conduct is available at <http://www.lsu.edu/saa>

Information for Students with Disabilities

LSU policy requires a student who claims disability status to make a formal request for accommodation through the Office of Disability Services, 115 Johnston Hall, phone 225-578-5919. This office provides the necessary evaluation and recommendations to ensure full participation in the course. For more information, go to <http://www.lsu.edu/disability>.

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 here: <http://students.lsu.edu/saa/students/code>. **Any violations of the LSU student code will be duly reported to the Dean of Students.**

Attendance

Policy Statement 22 governs what will be accepted as an excused absence in this course. A student is required to notify the instructor in advance of the deadline if the student is unable to complete the assignment by the deadline due to an excuse consistent with Policy Statement 22. In the event of an emergency, a student must notify the instructor within five days and request an extension for any missed assignments. The instructor reserves the right to request documentation before granting approval for a make-up assignment.