COMM 420: Taming Big Data
School of Communication, American University

Spring 2019 | W 2.30 — 5.20 pm | MCK 302

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Room: MCK 324
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Course Description

This course introduces students to Big Data as socio-technical phenomenon. You will learn how culture, politics, and economics influence Big Data, and how Big Data, in turn, shapes our public and private lives. You will also learn how to conduct research with, and about, Big Data.

Learning Outcomes

By the end of the semester you should:
- Develop a critical understanding of Big Data;
- Know Big Data's application in communication, business, and governance;
- Be able to mine data from various sources, especially social media;
- Be able to analyze Big Data using compuational methods;
- Be aware of the ethical and epistemological challenges that accompany Big Data research.

Course Structure

The course will be divided into two parts. In the first half, you will learn **Big Data skills**—specifically how to mine and analyze Big Data using various tools and softwares. This will help you conceptualize a Big Data research project ahead of the Spring Break. In the second half, we will look at **Big Data application** in the fields of business, communication, and governance as well as some ethical implications of using Big Data. This will help you better understand how the skills you have learnt can be applied in different fields. You will also conduct your proposed research project, present your findings to the class towards the end of the semester, and submit a paper based on your analysis in the finals week.

Ground Rules

To ensure that class discussions are open, vibrant, but also safe for everyone to participate in, please:

- o Complete every week's readings before the class meeting;
- o Come to the class meetings on time;
- o Turn off or silent your mobile phones inside the classroom;
- o Be willing to discuss your take on the readings with the rest of the class;
- o Treat your peers with respect;
- o Pay attention to your peers when they speak, ask questions and challenge me and each other — but in a civil manner;
- o Don't record class conversations in audio/visual formats (written notes are fine);
- o Don't quote class conversations outside the classroom without the permission of the speaker

I, however, also recognize that you may not want to ask particular questions or raise particular issues publicly. If so, please feel free to discuss them with me privately, either by email or by visiting me during my office hours (or by appointment).

Course Readings

There is no textbook for this course. Weekly readings, as assigned in the Course Calendar, will be made available via Blackboard or as web links.

Assignments and Grading

Assignments must be turned in **on time** to receive full credit. There is a 10% penalty for every day an assignment is late. Please submit all assignments on Blackboard, unless otherwise noted. If you have technical difficulties with Blackboard, you may email your assignment to me to avoid late penalty, but do submit it on Blackboard when the issue is resolved. Just write a comment indicating you turned it in on time via other means. This facilitates grading.

All written assignments should be submitted as **.doc/.docx** files using the 12-point Times New Roman or another common font, 1" margins, double-spaced line spacing, and 0.5" indent at the start of a paragraph. Headings should be flush-left and bold in the same font. Your name should be in the header at the upper-left and page numbers should be at the upper-right.

If you have a serious issue with a score or grade, you have one week after it is posted to appeal it. Scoring issues will not be discussed during class time. Your question or appeal must be stated, in writing, sent by email, citing your position, and why you feel the score is incorrect. Please include the score/grade you believe you deserve as well.

Class Paper (50%)

Proposal (10%). Conceptualize two research projects that use the data mining and analysis tools you have learnt in this class. Submit a 2-page draft proposal explaining these projects (1 page each) via Blackboard by **Friday Mar. 1**. After one-on-one proposal meetings with me on Wednesday Mar. 6, submit a 2-page final proposal on the the project you decide to pursue via Blackboard by **Friday Mar. 8**.

Presentation (15%). All students will present their research findings to the class on **Apr. 17 and Apr. 24** (schedule to be decided in advance). The presentations will be conference style, with each students having 10-12 minutes to present followed by 5-7 minutes of discussion and feedback from me and the rest of the class.

Final Paper (25%). Submit a paper based on your research via Blackboard by **Wednesday, May 1**. Incorporate all necessary revisions based on the feedback you receive during the presentation. The paper will be maximum 15 pages in length, excluding references, tables and figures. Follow the latest APA style for formatting and references.

Lead Discussant (20%)

Five weeks of the semester are reading-heavy (**Weeks 2, 9, 10, 11, 12**). Three students will lead class discussions in each of these weeks (schedule to be decided in advance). As lead discussant, you will write a 2-3-page "position paper" on the week's readings and circulate it via Blackboard to all class participants on the **Monday before class**. (All students are expected to read these position papers in addition to the week's readings ahead of the class.) During the class, you will make a 5-minute remark explaining your position to begin the discussion.

Sentiment Analysis (10%)

You will complete a sentiment analysis assignment using R. Details TBD. Submit it via Blackboard by **Tuesday, Feb. 19.**

Unsupervised Machine Learning/Topic Modeling (10%)

You will complete an unsupervised machine learning assignment using R. Details TBD. Submit it via Blackboard by **Tuesday, Mar. 5**.

Attendance & Participation (10%)

You are expected to attend all classes, remain attentive in the classroom, and actively participate in class discussions. Your participation should reflect your familiarity with assigned readings as well as the position papers circulated by lead discussants of the week.

Grading Scale

Grade	%
A	95-100
A-	90-94
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	64-66
D-	60-63
F	Below 60

Policies and Practices of American University, SOC, & the Department

Academic Integrity
This class follows the Academic Integrity Policy at American University, which holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy http://www.american.edu/academics/integrity/code.cfm and know they are responsible to learn about instructor and general academic expectations with regard to proper citation of sources in written work – APA citation. Be mindful that any violations of the Academic Integrity policy will be taken to the AIC Administrator. It is not permissible for any student to submit the same material, with substantially the same style, structure, or wording, to instructors in two or more courses.

Religious Observances
American University's religious observances policy, found at http://www.american.edu/ocl/kay/About-Us-Religious-Holy-Days-Policy.cfm. Students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes – please send this notification through email to the professor.

Use of Student Work (FERPA)
The professor will use academic work that you complete this semester for educational purposes in this course during this semester. Your registration and continued enrollment constitute your permission.

Defining and Reporting Discrimination and Harassment (Title IX)
American University expressly prohibits any form of discrimination and discriminatory harassment including sexual harassment, dating and domestic violence, sexual assault, and stalking. The University is an equal opportunity, affirmative action institution that operates in compliance with applicable laws and regulations. AU does not discriminate on the basis of race, color, national origin, religion, sex (including pregnancy), age, sexual orientation, disability, marital status, personal appearance, gender identity and expression, family responsibilities, political affiliation, source of income, veteran status, an individual's genetic information, or any other bases under federal or local laws in its programs and activities.

As a faculty member, I am required to report discriminatory or harassing conduct to the university if I witness it or become aware of it – regardless of the location of the incident. There are four confidential resource on campus if you wish to speak to someone who is not required to report: Counseling Center, victim advocates in OASIS, medical providers in the Student Health Center, and ordained clergy in the Kay Spiritual Life Center. If you experience any of the above, you have the option of filing a report with [University Police](#) (202-885-2527), the [Office of the Dean of Students](#) ([dos@american.edu](#) or 202-885-3300), or the [Title IX Office](#) (202-885-3373 or [TitleIX@american.edu](#)). For more information, including a list of supportive resources on and off-campus, contact [OASIS](#) ([oasis@american.edu](#) or 202-885-7070) or check out the [Support Guide on the Title IX webpage](#).

Emergency Preparedness
In the event of an emergency, American University will implement a plan for meeting the needs of all members of the university community. Should the university be required to close for a period of time, we are committed to ensuring that all aspects of our educational programs will be delivered to our students. These may include altering and extending the duration of the traditional term schedule to complete essential instruction in the traditional format and/or use of distance instructional methods. Specific strategies will vary from class to class, depending on the format of the course and the timing of the emergency. Faculty will communicate class-specific information to students via AU email and Blackboard, while students must inform their faculty immediately of any absence. Students are responsible for checking their AU e-mail regularly and keeping themselves informed of emergencies. In the event of an emergency, students should refer to the AU Student Portal, the AU Web site (www. prepared. american.edu) and the AU information line at (202) 885-1100 for general university-wide information, as well as contact their faculty and/or respective dean's office for course and school/college specific information. This class will follow directions from the University – if campus is closed and classes cancelled, then this class will also be cancelled.

Support for AU Students
American University provides numerous services that help students maximize their academic success and social and emotional wellbeing.

Academic Support and Access Center MGC 243, 202-885-3360 supports the academic development and educational goals of all AU students while also providing support to students with disabilities. We offer workshops on topics of interest to all students such as time management, note taking, critical thinking, memory skills, and test taking. Additional support includes free private and group tutoring in many subjects, supplemental instruction, The Math Lab and The Writing Lab.

Counseling Center MGC 214, 202-885-3500 is here to help students make the most of their university experience, both personally and academically. We offer individual and group counseling, urgent care, self-help resources, referrals to private care, as well as programming to help you gain the skills and insight needed to overcome adversity and thrive while you are in college. Contact the Counseling Center to make an appointment in person or by telephone, or visit the Counseling Center page on the AU website for additional information.

Center for Diversity & Inclusion MGC 201, 202-885-3651 is dedicated to enhancing LGBTQ, Multicultural, First Generation, and Women's experiences on campus and to advance AU's commitment to respecting & valuing diversity by serving as a resource and liaison to students, staff, and faculty on issues of equity through education, outreach, and advocacy.

OASIS: The Office of Advocacy Services for Interpersonal and Sexual Violence 202-885-7070 provides free and confidential advocacy services for anyone in the campus community who is impacted by sexual violence (sexual assault, dating or domestic violence, and stalking).

The Writing Center First floor of Bender Library offers free, individual coaching sessions to all AU students. In your 45-minute session, a student writing consultant can help you address your assignments, understand the conventions of academic writing, and learn how to revise and edit your own work. Hours: 11 a.m. to 9 p.m. Monday through Thursday; 11 a.m. to 6 p.m. Thursday. Call 202-885-2991 to arrange a session. Meanwhile find handouts, information, and a weekly writer's blog at the Writing Center website and on Facebook.

International Student & Scholar Services, Batelle 4th Butler Pavilion, Room 410 has resources to support academic success and participation in campus life including academic counseling, support for second language learners, response to questions about visas, immigration status and employment and intercultural programs, clubs and other campus resources.

Undergraduate Research Support American University offers undergraduates many opportunities to learn research methodology, present their findings at conferences, and compete for awards.

Course Calendar

Week 1	Jan 16	Introduction
Week 2	Jan 23	What is Big Data
		◦ Anderson The End of Theory
		◦ Kitchin & McArdle What Makes Big Data, Big Data
		◦ Boyd & Crawford Critical Questions for Big Data
Week 3	Jan 30	Introduction to Data Mining
Week 4	Feb 6	Introduction to R
Week 5	Feb 13	Sentiment Analysis
Week 6	Feb 20	Sentiment Analysis II
Week 7	Feb 27	Topic Modeling I
Week 8	Mar 6	Proposal Meetings
SPRING BREAK — NO CLASS		
Week 9	Mar 20	Topic Modeling II
Week 10	Mar 27	Big Data in Business & Communication
		◦ Wertz Why Sentiment Analysis Could Be Your Best Kept Marketing Secret
		◦ Mattila & Salman Analysing Social Media Marketing on Twitter using Sentiment Analysis
		◦ Ducange et al A glimpse on big data analytics in the framework of marketing strategies
		◦ Taylor et al Emerging practices and perspectives on Big Data analysis in economics
Week 11	Apr 3	Big Data in Politics & Governance
		◦ Janssen & Kuk The challenges and limits of big data algorithms in technocratic governance
		◦ Lewis & Westlund Big data and journalism: Epistemology, expertise, economics, and ethics
		◦ Shahin Right to Be Forgotten
		◦ Khazraee Mapping the political landscape of Persian Twitter
Week 12	Apr 10	Data Privacy & Surveillance
		◦ Angwin et al Machine Bias
		◦ Stoycheff et al Privacy and the Panopticon
		◦ Kennedy & Moss Known or knowing publics? Social media data mining and the question of public agency
Week 13	Apr 17	Ethics of Big Data/Artificial Intelligence
		◦ Kaplan & Haenlein Siri, Siri, in my hand: Who's the fairest in the land?
		◦ Yuan How Cheap Labor Drives China's A.I. Ambitions
		◦ Boddington Moral Technology
		◦ Katz Noam Chomsky on Where Artificial Intelligence Went Wrong
Week 14	Apr 24	Research Presentations
Week 15	May 1	Final Papers due