Ethical Issues in Big Data Research

With an emphasis on the responsible conduct of research

NSCI 580A2—1 Credit
Fall 2016
Wednesdays 9:00am-10:50am
8 weeks (September 7th- October 26th)

Instructor

Brad R. Woods, Ph.D.
Associate Director, Research Integrity &
Compliance Review Office
Phone: 970.491.1302
Email: Brad.Woods@colostate.edu

Office Hours

By appointment

Required text

Collmann, J. and Sorin A. Matei (Eds.) (2016). *Ethical reasoning in big data: An exploratory analysis*. Switzerland. Spring International Publishing.

Course Overview

This course explores ethical issues in big data research. It examines big data research through an applied interdisciplinary approach to ethical issues surrounding collection, use, reporting, and preservation of big data. Following the mission of CSU's GAUSSI program, this course "incorporates a wide range of transferrable skills training so that trainees will be well equipped to engage and lead data-centric research within or outside academia." In addition, we will discuss topics related to the responsible conduct of research (RCR), which will satisfy related training requirements from funding agencies, such as: National Institutes of Health, National Science Foundation, and the United States Department of Agriculture—National Institute of Food and Agriculture. Additional information about RCR and the topics covered can be found here: ***ori.hhs.gov/ori-intro*** and here: ***vprnet.research.colostate.edu/RICRO/rcr/csus-rcr-training-policy-overview/***

As a graduate research seminar course, we will meet weekly to discuss course readings and identified topics. Weekly readings will come from the course text and supplemental articles and/or book chapters drawn from the scientific literature. Occasionally, we may have a guest speaker including faculty, industry professionals, members of compliance committees or offices, or community members. Announcements will be made in class concerning upcoming speakers.

Course Objectives

- Students will be able to identify and discuss ethical issues in the collection, use, and reporting of big data research;
- Students will have an understanding of how such issues arise and potential avenues for identifying solutions;
- Students will be better skilled and equipped to conduct research in a manner consistent with the goal of minimizing risks to human well-being;
- Students will be able to look for and identify potential ethical issues that emerge in transdisciplinary research using big data

- Students will understand more about the myriad ethical dilemmas that arise during the formulation of regulations and policy surrounding big data research

Expectations for students

This course is designed to be interactive and its success is largely dependent on the engagement of its members. To this end, your participation and contributions will determine both the success of the course as well as your individual success. We will discuss a variety of big data issues, drawn from a multitude of disciplines. As such, it is expected your completion of all assigned readings and all course assignments will occur before the start of a given class. Such preparedness is an essential component of this course, as class discussion will revolve around the assigned readings and/or assignments.

Attendance: Attendance is mandatory and will be taken for each class. Students are allowed two excused absences. When possible the instructor should be notified in advance of any absence.

Topics Covered

Section 1: Introduction to ethical issues in big data research/what is big data?
Week 1: Understanding "big data"
Week 2: Case studies: ethical challenges of big data research

Section 2: 4Rs: Reuse, repurposing, recombining, reanalysis
Week 3: Challenges and considerations (reuse/repurposing)
Week 4: Challenges and considerations (recombining/reanalysis)

Section 3: Technology, cloud storage, and issues affecting confidentiality and anonymity
Week 5: Unanticipated or unintended outcomes; technological innovation and privacy
Week 6: The questions surrounding public information and privacy

Section 4: Tying it all together; strategies concerning public engagement and communication
Week 7: Outreach and communication in big data research
Week 8: Mutually selected discussion

Grading

(4) Short written assignments	25 points ea.
Total	**100 points**

Grading scale

Satisfactory/Unsatisfactory: Performance equivalent to a grade of C or better is recorded as Satisfactory. Performance equivalent to D or F is recorded as Unsatisfactory. Neither the S nor U grades are used in calculating the CSU grade point average; however, courses graded S may apply to graduation requirements.