Peer Production and Crowdsourcing

Fall 2016
Monday & Wednesday 17:30–18:45
Hellems 137

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Course Description

This is a research seminar that will analyze the social and technical mechanisms that enable popular peer production and crowdsourcing systems like Wikipedia. Understanding how social processes and technical structures intersect to enable new kinds of interaction is a central question within information science. How does the design of a peer production system tap into basic social, psychological, and organizational processes? What kinds of behavioral data can researcher extract and analyze from these systems? How can the success or failure of these systems inform the design of alternative economic and political models? This course is part of the "Problems in Information Science" series, which brings contemporary research to the classroom in the form of project-based investigation.

Learning Objectives and Course Design

By the end of the semester, students should be able to: (1) discuss and compare social processes occurring across different peer production and crowdsourcing systems; (2) identify and collect data generated by these systems; (3) design exploratory research using these data and interpret their findings; and (4) propose and evaluate the feasibility of peer production and crowdsourcing designs to expand to other social, cultural, economic, and political spheres.

The course consists of three, five-week units. The first unit focuses on peer production and crowdsourcing as *social* systems by exploring how motivations, norms, and governance interact. The second unit focuses on peer production and crowdsourcing as *technical* systems by exploring the systems that structure user interactions and the kinds of data they record. The third unit focuses on peer production and crowdsourcing as *alternative* systems to prevailing models for decision making, collaboration, and economic production.

Class will meet twice per week on Monday and Wednesday from 17:30 to 18:45 (5:30pm to 6:45pm) in Hellems 137. The format of each class will vary between lecture, discussion, activities, and lab formats depending on the learning objectives of that week. Students will complete three kinds of assignments over the course of the class: (1) weekly reflections, (2) lab exercises, and (3) a final project.

Prerequisites

There are no formal prerequisites for this course. However, you should have some familiarity (prior class, research project, internship experience, MOOC coursework, *etc.*) with methods for data mining (web scraping, information retrieval from APIs, *etc.*), quantitative analysis (statistical inference, machine learning, *etc.*), and data visualization. Knowledge of statistical software or scientific computing languages such as R or Python will also be helpful, but is not required. If you have questions or concerns about these prerequisites, please email me.

Requirements

As a research seminar, students' regular and sustained participation in all class activities is essential. Attending and participating in all seminar meetings and completing all assignments. If you need to be excused from attendance or need an extension, please notify me via email at least 24 hours in advance.

Course Website and Materials

There is no textbook for the class and we will read magazine articles, academic papers, or book chapters. For many of the class sessions I have also included a sub-section of "Additional Readings" that are purely optional but may be useful if students are interested in reading in further depth to support a research project, preparing for prelims, *etc.* Materials for the class (including a "live" version of the course schedule, readings, discussion board, lab assignments, tutorials, and data) will be made available through Desire2Learn:

https://learn.colorado.edu/d2l/home/179594

Once the semester begins, this PDF version of the syllabus will be revised infrequently and any revised requirements will be posted as announcements and updated course schedule to Desire2Learn.

For students interested in understanding Wikipedia in greater depth, I would recommend the following books:

Ayers, P., Matthews, C., and Yates, B. (2008). *How Wikipedia works: And how you can be a part of it*. No Starch Press

Benkler, Y. (2006b). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale University Press

Jemielniak, D. (2014). *Common Knowledge?: An Ethnography of Wikipedia*. Stanford University Press

Kraut, R. E., Resnick, P., Kiesler, S., Burke, M., Chen, Y., Kittur, N., Konstan, J., Ren, Y., and Riedl, J. (2012). *Building successful online communities: Evidence-based social design*. MIT Press

Reagle, J. M. (2010). *Good faith collaboration: The culture of Wikipedia*. MIT Press

Assignments

There are three kinds of assignments in the class: (1) reading responses, (2) lab assignments, and a (3) final project. Assignments should be submitted to me via Desire2Learn. I strongly prefer submissions to be in PDF format to maximize compatibility and reduce security risks. Students will complete and submit their work individually but if they work with others, they should acknowledge their collaborators by name on the submission.

Readings Responses– For weeks that do not have lab assignments, students will write at least a 500-word response to the readings for that week. Reading responses should be submitted before 9:00 (am) on their due dates for me to review them before class to support discussion. There are 8 reading responses assigned over the course of the semester. The schedule in the syllabus below has

the suggested prompts but students should feel free (1) to surface and respond to other themes from the week's readings, (2) to juxtapose the readings to prior weeks' topics, or (3) to review one of the papers listed under Additional Readings. If students are struggling with formulating a response, consider using this Checklist for Reviewing a Research Paper.

Lab Assignments – Lab assignments are intended to develop students' skill and confidence performing exploratory data analyses using real world data from peer production systems. There are 5 lab assignments assigned over the course of the semester. We will work through the lab assignments during one class session but additional work may be required outside of class to write up discussions of the results. The majority of these assignments will be framed around the English Wikipedia, but students should feel free to extend these analyses to other wikis (other language editions, Wikia wikis, *etc.*). Templates for completing the lab assignments will be provided in Jupyter Notebooks to enable students with minimal coding experience to complete them.

Final Project – In lieu of having a final exam, students will submit a project that (1) dives deeper into a topical area, (2) extends the lab assignments into a larger data analysis, (3) critically analyzes an existing peer production or crowdsourcing system, or (4) develops a detailed proposal for applying a peer production or crowdsourcing model to an untapped domain. The final project will be due at the end of the semester.

Statistical Computing

You will need to use statistical computing software in this class. You are welcome to use any scripting or statistical software you like (Python, R, *etc.*); however, I will use Jupyter notebooks written in Python for all in-class examples and solutions to the problem sets. I recommend using the Anaconda distribution of Python that includes the vast majority of libraries and functionality to support data collection and analysis for this class. You are however welcome to use any statistical software with which you are comfortable to complete lab assignments.

Evaluation

Your final grade for the course will be based on my evaluation of the three kinds of assignments as well as your general participation within discussions during class and online.

Reading Responses (30%) Responses that provide integrate other theories or perspectives, identify methodological limitations, or persuasively discuss implications in the context of contemporary topics will be evaluated more strongly than responses that simply summarize the readings or only make superficial connections among the themes.

Lab Assignments (30%) Students should include their well-commented code documenting your process as well as the final outputs (*e.g.*, submitting the Jupyter Notebook file). Students should be prepared to explain your implementation in a 1-on-1 code review if I request it. Assignments will be primarily evaluated on their completeness, use of good documentation practice, and clarity when discussing results.

Final Project (25%) Criteria for proposing and evaluating these final projects will be discussed later in the course.

Participation (15%) Students demonstrating consistent attendance, active engagement, high preparation, deep curiosity, sustained retention, positive attitude, persuasive arguments, and well-formatted assignments will earn the most credit.

Course Policies

In-Class Confidentiality

The success of this class depends on participants feeling comfortable sharing questions, ideas, concerns, and confusions about works-in-progress, the research process, and their personal experiences. These

assignments and discussions should be considered confidential and generally should not be discussed outside of class. You may read and comment on classmates' writing, code, and images for the sole purpose of use within this class. You may not use, run, copy, perform, display, distribute, modify, translate, or create derivative works of other students' work outside of this class without their expressed written consent or formal license. Furthermore, you may not create any audio, video, or other records during class time nor may you publicly share comments attributable to other people's identities without that person's permission.

Faculty Interaction

In addition to teaching this class, I also (1) manage a research program; (2) advise students; (3) perform service for the academic community; and (4) live my life as a private citizen. I will check e-mail between 8:00 and 18:00 on non-holiday business days and try to respond within 24 hours. I welcome online or offline interactions outside of class, however these are not appropriate spaces for discussing class matters. E-mailing me, coming to my office hours, or scheduling an appointment are the best ways to ask questions, discuss concerns, or get feedback outside of class.

Research Ethics and Professional Conduct

This course will involve participating in online communities, analyzing data available on the web, and prototyping alternative peer production and crowdsourcing systems. At all times you should make sure that your actions simultaneously minimize the risk of harm to other people as well to yourself. You should follow the Terms of Service and Privacy Policy when collecting data from websites; only collect publicly-accessible data; identify yourself as a student or researcher when interacting with others; and allow participants to remove themselves from your study if they request it. More details about research ethics with online data can be found in the Association for Computing Machinery's Code of Ethics and Professional Conduct, Association for Internet Researchers' ethics working committee reports, American Psychological Association's online research report.

Deadlines and Absences

If something causes you to miss a deadline or a class, please contact me. If you request — and obtain — an incomplete for the course and/or an extension on the final project (note: I *strongly* discourage this!), please allow at least 4 weeks after you submit your completed work for me to submit a grade. Keep this in mind if you will need the grade in order to receive your fellowship/diploma/visa/*etc.* by a particular date.

Accommodations for Disabilities

I am committed to providing everyone the support and services needed to participate in this course. If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu. If you have a temporary medical condition or injury, see Temporary Medical Conditions guidelines under Quick Links at Disability Services website and discuss your needs with me.

Religious Observance

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required assignments/attendance. If this applies to you, please email me directly as soon as possible at the beginning of the term.

Classroom Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, ability, and nationality. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes. For more information, see the policies on class behavior and the student code.

Harassment and Discrimination

The University of Colorado Boulder (CU Boulder) is committed to maintaining a positive learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU's Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU Boulder's Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the OIEC website.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the academic integrity policy of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at honorcode.colorado.edu.

Acknowledgements

The design and format of this course borrows from similar courses offered by other professors whose research and thinking has been very influential on me: Aaron Shaw's "Online Communities & Crowds" at Northwestern University's School of Communication, Benjamin Mako Hill's "Interpersonal Media" at the University of Washington's Department of Communication, and Joseph Reagle's "Online Communities" at Northeastern University's Department of Communication Studies.

Course Outline

As described above, all readings and assigned tasks are due *prior* to the class alongside which they are listed. Items listed in the "Additional Readings" subsection for each week are not required. I may adjust the list of readings or the schedule as needed throughout the quarter, so please consult the online version of the schedule for the most up-to-date information. We will meet in class a total of 29 times over the course of the the 16-week semester.

0 – Introductions & Research Ethics

Monday, August 22

Review syllabus, learning objectives, and course policies. Introduce yourselves and share motivations and goals for the class. Discuss ethical considerations when conducting online research such as collecting "public" data, following Terms of Service, and protecting human subjects.

Readings

This syllabus.

Bruckman, A. (2006). Teaching students to study online communities ethically. *Journal of Information Ethics*, pages 82–98. http://www.cc.gatech.edu/~asb/papers/journal/bruckman-information-ethics06.pdf

Zimmer, M. (2016). OkCupid study reveals the perils of big-data science. https://www.wired.com/2016/05/okcupid-study-reveals-perils-big-data-science/

Wikimedia Foundation (2016). Terms of use. https://wikimediafoundation.org/w/index.php?title=Terms_of_Use

1 – A Wager

Wednesday, August 24

In 2006, Nick Carr and Yochai Benker made a wager about the future of online information production. More than a decade later, who — if anyone — won? We will develop preliminary definitions of peer production and crowdsourcing and assess their fit to the current landscape.

Readings

Carr, N. (2006b). Calacanis's wallet and the Web 2.0 dream. http://www.roughtype.com/?p=466

Carr, N. (2006a). Benkler on Calacanis's wallet. http://www.roughtype.com/?p=479

Carr, N. (2012). Pay up, Yochai Benkler. http://www.roughtype.com/?p=1599

Benkler, Y. (2012). Carr-Benkler wager revisited. https://blogs.harvard.edu/ybenkler/2012/05/07/on-the-carr-benkler-wager/

Assignments

Reading Response 1 – due Wednesday, August 24. "Will the decentralized web collectives be able to operate successfully outside 'the price system' and without 'managerial structure'?" Do the most influential web platforms in 2016 follow peer production processes or are they price-incentivized systems? Given how web platforms now operate, what considerations did Carr and Benkler overlook?

Additional Readings

Benkler, Y. (2006a). Peer production and sharing. In *The Wealth of Networks*, chapter 3, pages 59–90. Yale University Press, New Haven, CT. `http://www.benkler.org/Benkler_Wealth_Of_Networks_Chapter_3.pdf`

Carr, N. (2005). The amorality of Web 2.0. `http://www.roughtype.com/?p=110`

Keen, A. (2006). Web 2.0. `http://www.weeklystandard.com/web-2.0/article/7898`

Lanier, J. (2006). Digital maoism: The hazards of the new online collectivism. *Edge*. `https://www.edge.org/conversation/digital-maoism-the-hazards-of-the-new-online-collectivism`

2 – Motivation
Monday, August 29
What motivates participants to join and contribute to online communities? We will examine how different motivations contribute to or detract from the success of peer production systems.

Readings

Wikipedia. Why to contribute. `https://en.wikipedia.org/wiki/Wikipedia:Why_to_contribute`

Kraut, R. E., Resnick, P., Kiesler, S., Burke, M., Chen, Y., Kittur, N., Konstan, J., Ren, Y., and Riedl, J. (2012). *Building successful online communities: Evidence-based social design*. MIT Press. Chapter 2.

Nov, O. (2007). What Motivates Wikipedians? *Communications of the ACM*, 50(11):60–64

Additional Readings

Kuznetsov, S. (2006). Motivations of Contributors to Wikipedia. *SIGCAS Comput. Soc.*, 36(2)

Lakhani, K. R. and Wolf, R. G. (2005). Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects. In *Perspectives on Free and Open Source Software*. MIT Press

Lampe, C., Wash, R., Velasquez, A., and Ozkaya, E. (2010). Motivations to Participate in Online Communities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '10, pages 1927–1936, New York, NY, USA. ACM

Roberts, J. A., Hann, I.-H., and Slaughter, S. A. (2006). Understanding the Motivations, Participation, and Performance of Open Source Software Developers: A Longitudinal Study of the Apache Projects. *Management Science*, 52(7):984–999

Rafaeli, S. and Ariel, Y. (2008). Online Motivational Factors: Incentives for Participation and Contribution in Wikipedia. In Barak, A., editor, *Psychological aspects of cyberspace: Theory, research, applications*, pages 243–267

Yang, H.-L. and Lai, C.-Y. (2010). Motivations of Wikipedia content contributors. *Computers in Human Behavior*, 26(6):1377–1383

3 – Commitment
Wednesday, August 31
Why do participants stick around and become active contributors within online communities? We discuss how the design impacts user commitment as well as a framework explaining how users transition into leadership roles.

Readings

Wikipedia. Wikifauna. https://en.wikipedia.org/wiki/Wikipedia:WikiFauna

Kraut, R. E., Resnick, P., Kiesler, S., Burke, M., Chen, Y., Kittur, N., Konstan, J., Ren, Y., and Riedl, J. (2012). *Building successful online communities: Evidence-based social design*. MIT Press. Chapter 3.

Preece, J. and Shneiderman, B. (2009). The Reader-to-Leader Framework: Motivating Technology-Mediated Social Participation. *AIS Transactions on Human-Computer Interaction*, 1(1):13–32

Assignments

Reading Response 2 – due Wednesday, August 31. What kinds of motivations are particular to writing an encyclopedia and what motivations might generalize across contexts? What motivations are most likely to sustain users' commitment over the long term? What are potential challenges when a system needs to support diverse motivations? What are the risks of systems that prioritize some motivations over others?

Additional Readings

Panciera, K., Halfaker, A., and Terveen, L. (2009). Wikipedians Are Born, Not Made: A Study of Power Editors on Wikipedia. In *Proceedings of the ACM 2009 International Conference on Supporting Group Work*, GROUP '09, pages 51–60, New York, NY, USA. ACM. item

4 – Labor Day
Monday, September 5 — NO CLASS

5 – Newcomers
Wednesday, September 7

How do peer production systems handle new users? What kinds of structures discourage newcomers? We will discuss and evaluate social and technical interventions to support newcomers.

Readings

Wikipedia. Seven Ages of Wikipedians. https://en.wikipedia.org/wiki/Wikipedia:Seven_Ages_of_Wikipedians

Halfaker, A., Kittur, A., and Riedl, J. (2011). Don't Bite the Newbies: How Reverts Affect the Quantity and Quality of Wikipedia Work. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, WikiSym '11, pages 163–172, New York, NY, USA. ACM

Morgan, J. T., Bouterse, S., Walls, H., and Stierch, S. (2013). Tea and Sympathy: Crafting Positive New User Experiences on Wikipedia. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, CSCW '13, pages 839–848, New York, NY, USA. ACM

6 – Culture and Norms
Monday, September 12

What does it mean to become a member of a peer production community? What kinds of behaviors are encouraged? We will discuss the different norms that shape community behavior.

Readings

MetaWiki contributors (2016). Conflicting Wikipedia philosophies. https://meta.wikimedia.org/wiki/Conflicting_Wikipedia_philosophies

Bryant, S. L., Forte, A., and Bruckman, A. (2005). Becoming Wikipedian: Transformation of Participation in a Collaborative Online Encyclopedia. In *Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work*, GROUP '05, pages 1–10, New York, NY, USA. ACM

Kriplean, T., Beschastnikh, I., and McDonald, D. W. (2008). Articulations of Wikiwork: Uncovering Valued Work in Wikipedia Through Barnstars. In *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*, CSCW '08, pages 47–56, New York, NY, USA. ACM

Additional Readings

Burke, M. and Kraut, R. (2008). Mopping Up: Modeling Wikipedia Promotion Decisions. In *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*, CSCW '08, pages 27–36, New York, NY, USA. ACM

Danescu-Niculescu-Mizil, C., Lee, L., Pang, B., and Kleinberg, J. (2012). Echoes of Power: Language Effects and Power Differences in Social Interaction. In *Proceedings of the 21st International Conference on World Wide Web*, WWW '12, pages 699–708, New York, NY, USA. ACM

Thom, J., Cosley, D. R., and Gay, G. (2009). What's Mine is Mine: Territoriality in Collaborative Authoring. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '09, pages 1481–1484, New York, NY, USA. ACM

Zhu, H., Kraut, R., and Kittur, A. (2012). Organizing Without Formal Organization: Group Identification, Goal Setting and Social Modeling in Directing Online Production. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, pages 935–944, New York, NY, USA. ACM

7 – Rules and Governance
Wednesday, September 14

In addition to norms, communities also have more formal governance structures like written rules and practices for elites to use power. We will discuss the emergence and consequences of these rules and governance mechanisms for the sustainability of the community.

Readings

Butler, B., Joyce, E., and Pike, J. (2008). Don't Look Now, but We've Created a Bureaucracy: The Nature and Roles of Policies and Rules in Wikipedia. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '08, pages 1101–1110, New York, NY, USA. ACM

Shaw, A. and Hill, B. M. (2014). Laboratories of Oligarchy? How the Iron Law Extends to Peer Production. *Journal of Communication*, 64(2):215–238

Assignments

Reading Response 3 – due Wednesday, September 14. Are the various wiki-philosophies specific to a system like Wikipedia or could they extend to other peer production contexts? What are the trade-offs to consider when adopting more formal rules? What strategies could peer production systems implement to deal with the Iron Law?

Additional Readings

Beschastnikh, I., Kriplean, T., and McDonald, D. W. (2008). Wikipedian Self-Governance in Action: Motivating the Policy Lens. In *Proceedings of the International Conference on Web and Social Media*, ICWSM '08

Black, L. W., Welser, H. T., Cosley, D., and DeGroot, J. M. (2011). Self-Governance Through Group Discussion in Wikipedia Measuring Deliberation in Online Groups. *Small Group Research*, 42(5):595–634

Forte, A., Larco, V., and Bruckman, A. (2009). Decentralization in Wikipedia Governance. *Journal of Management Information Systems*, 26(1):49–72

Kriplean, T., Beschastnikh, I., McDonald, D. W., and Golder, S. A. (2007). Community, Consensus, Coercion, Control: CS*W or How Policy Mediates Mass Participation. In *Proceedings of the 2007 International ACM Conference on Supporting Group Work*, GROUP '07, pages 167–176, New York, NY, USA. ACM

Kostakis, V. (2010). Peer governance and Wikipedia: Identifying and understanding the problems of Wikipedia's governance. *First Monday*, 15(3)

Konieczny, P. (2010). Adhocratic Governance in the Internet Age: A Case of Wikipedia. *Journal of Information Technology & Politics*, 7(4):263–283

O'Mahony, S. and Ferraro, F. (2007). The Emergence of Governance in an Open Source Community. *Academy of Management Journal*, 50(5):1079–1106

8 – Conflict

Conflict is inevitable as social groups grow larger. What kinds of conflict in peer production systems and how does the community manage them? We will discuss how Wikipedia manages conflicts through a several technical and social processes.

Readings

Kittur, A., Suh, B., Pendleton, B. A., and Chi, E. H. (2007). He Says, She Says: Conflict and Coordination in Wikipedia. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '07, pages 453–462, New York, NY, USA. ACM

Joyce, E., Butler, B., and Pike, J. (2011). Handling Flammable Materials: Wikipedia Biographies of Living Persons As Contentious Objects. In *Proceedings of the 2011 iConference*, iConference '11, pages 25–32, New York, NY, USA. ACM

Additional Readings

Arazy, O., Yeo, L., and Nov, O. (2013). Stay on the Wikipedia task: When task-related disagreements slip into personal and procedural conflicts. *Journal of the American Society for Information Science and Technology*, 64(8):1634–1648

Borra, E., Weltevrede, E., Ciuccarelli, P., Kaltenbrunner, A., Laniado, D., Magni, G., Mauri, M., Rogers, R., and Venturini, T. (2015). Societal Controversies in Wikipedia Articles. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, CHI '15, pages 193–196, New York, NY, USA. ACM

Kittur, A. and Kraut, R. E. (2010). Beyond Wikipedia: Coordination and Conflict in Online Production Groups. In *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work*, CSCW '10, pages 215–224, New York, NY, USA. ACM

Matei, S. A. and Dobrescu, C. (2010). Wikipedia's "Neutral Point of View": Settling Conflict through Ambiguity. *The Information Society*, 27(1):40–51

Osman, K. (2013). The Role of Conflict in Determining Consensus on Quality in Wikipedia Articles. In *Proceedings of the 9th International Symposium on Open Collaboration*, WikiSym '13, pages 12:1–12:6, New York, NY, USA. ACM

Sumi, R., Yasseri, T., Rung, A., Kornai, A., and Kertesz, J. (2011). Edit Wars in Wikipedia. In *2011 IEEE Third Inernational Conference on Social Computing (SocialCom)*, pages 724–727

Towne, W. B., Kittur, A., Kinnaird, P., and Herbsleb, J. (2013). Your Process is Showing: Controversy Management and Perceived Quality in Wikipedia. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, CSCW '13, pages 1059–1068, New York, NY, USA. ACM

Yasseri, T., Sumi, R., Rung, A., Kornai, A., and Kertész, J. (2012). Dynamics of Conflicts in Wikipedia. *PLoS ONE*, 7(6):e38869

9 – Bias

Wednesday, September 21

How susceptible are peer production systems to the biases of their contributors? We will discuss research findings about geographic, cultural, gender, and political biases in Wikipedia.

Readings

Hecht, B. and Gergle, D. (2009). Measuring Self-focus Bias in Community-maintained Knowledge Repositories. In *Proceedings of the Fourth International Conference on Communities and Technologies*, C&T '09, pages 11–20, New York, NY, USA. ACM

Wagner, C., Graells-Garrido, E., Garcia, D., and Menczer, F. (2016). Women through the glass ceiling: gender asymmetries in Wikipedia. *EPJ Data Science*, 5(1)

Greenstein, S. and Zhu, F. (2012). Is Wikipedia Biased? *American Economic Review*, 102(3):343–348

Assignments

Reading Response 4 – due Wednesday, September 21. How do conflict resolution strategies need to change as peer production communities change in size, complexity, or mission? What are trade-offs to consider around conflict management when bringing more diverse contributors into the system? What are other kinds of bias that can creep into peer production systems?

Additional Readings

Antin, J., Yee, R., Cheshire, C., and Nov, O. (2011). Gender differences in Wikipedia editing. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, pages 11–14, Mountain View, California. ACM

Collier, B. and Bear, J. (2012). Conflict, Criticism, or Confidence: An Empirical Examination of the Gender Gap in Wikipedia Contributions. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, pages 383–392, New York, NY, USA. ACM

Graells-Garrido, E., Lalmas, M., and Menczer, F. (2015). First Women, Second Sex: Gender Bias in Wikipedia. In *Proceedings of the 26th ACM Conference on Hypertext & Social Media*, HT '15, pages 165–174, New York, NY, USA. ACM

Iosub, D., Laniado, D., Castillo, C., Fuster Morell, M., and Kaltenbrunner, A. (2014). Emotions under Discussion: Gender, Status and Communication in Online Collaboration. *PLoS ONE*, 9(8):e104880

Johnson, I. L., Lin, Y., Li, T. J.-J., Hall, A., Halfaker, A., Schöning, J., and Hecht, B. (2016). Not at Home on the Range: Peer Production and the Urban/Rural Divide. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, CHI '16, pages 13–25, New York, NY, USA. ACM

Lam, S. T. K., Uduwage, A., Dong, Z., Sen, S., Musicant, D. R., Terveen, L., and Riedl, J. (2011). WP:Clubhouse?: An Exploration of Wikipedia's Gender Imbalance. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, WikiSym '11, pages 1–10, New York, NY, USA. ACM

Reagle, J. and Rhue, L. (2011). Gender Bias in Wikipedia and Britannica. *International Journal of Communication*, 5:21

10 – Revision Histories
Monday, September 26

Wikipedia records every change made to every article since its inception. We will discuss how to access these data and what is recorded. We will look at two papers that used these data to understand the dynamics of conflict between users and well as how to measure how much time users invest in editing Wikipedia.

Readings

Viegas, F. B., Wattenberg, M., and Dave, K. (2004). Studying cooperation and conflict between authors with history flow visualizations. In *CHI '04: Proceedings of the SIGCHI conference on Human factors in computing systems*, pages 575–582, New York, NY, USA. ACM Press

Geiger, R. S. and Halfaker, A. (2013a). Using Edit Sessions to Measure Participation in Wikipedia. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, CSCW '13, pages 861–870, New York, NY, USA. ACM

Additional Readings

Ekstrand, M. D. and Riedl, J. T. (2009). Rv You're Dumb: Identifying Discarded Work in Wiki Article History. In *Proceedings of the 5th International Symposium on Wikis and Open Collaboration*, WikiSym '09, pages 4:1–4:10, New York, NY, USA. ACM

11 – Revision Histories Lab
Wednesday, September 28

We will share and discuss the findings from our laboratory assignments.

Assignments

Lab Assignment 1 – due September 28.

12 – Networks
Monday, October 3

Wikipedia encodes a variety of relationships in its data. We will discuss these different kinds of relationships and explore how to use methods from network science to understand and visualize these data.

Readings

Keegan, B. C., Ceni, A., and Smith, M. A. (2013). Analyzing Multi-dimensional Networks Within MediaWikis. In *Proceedings of the 9th International Symposium on Open Collaboration*, WikiSym '13, pages 1:1–1:10, New York, NY, USA. ACM

Kane, G. C. (2009). It's a Network, Not an Encyclopedia: A Social Network Perspective on Wikipedia Collaboration. *Academy of Management Proceedings*, 2009(1):1–6

Additional Readings

Aragon, P., Laniado, D., Kaltenbrunner, A., and Volkovich, Y. (2012). Biographical Social Networks on Wikipedia: A Cross-cultural Study of Links That Made History. In *Proceedings of the Eighth Annual International Symposium on Wikis and Open Collaboration*, WikiSym '12, pages 19:1–19:4, New York, NY, USA. ACM

Brandes, U., Kenis, P., Lerner, J., and van Raaij, D. (2009). Network Analysis of Collaboration Structure in Wikipedia. In *Proceedings of the 18th International Conference on World Wide Web*, WWW '09, pages 731–740, New York, NY, USA. ACM

Jankowski-Lorek, M., Jaroszewicz, S., Ostrowski, L., and Wierzbicki, A. (2016). Verifying social network models of Wikipedia knowledge community. *Information Sciences*, 339:158–174

Keegan, B., Gergle, D., and Contractor, N. (2012). Do Editors or Articles Drive Collaboration?: Multilevel Statistical Network Analysis of Wikipedia Coauthorship. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, pages 427–436, New York, NY, USA. ACM

Laniado, D., Tasso, R., Volkovich, Y., and Kaltenbrunner, A. (2011). When the Wikipedians Talk: Network and Tree Structure of Wikipedia Discussion Pages. In *Fifth International AAAI Conference on Weblogs and Social Media*, ICWSM '11. AAAI

Massa, P. (2011). Social Networks of Wikipedia. In *Proceedings of the 22Nd ACM Conference on Hypertext and Hypermedia*, HT '11, pages 221–230, New York, NY, USA. ACM

Suh, B., Chi, E. H., Pendleton, B. A., and Kittur, A. (2007). Us vs. Them: Understanding Social Dynamics in Wikipedia with Revert Graph Visualizations. In *Proceedings of the 2007 IEEE Symposium on Visual Analytics Science and Technology*, VAST '07, pages 163–170, Washington, DC, USA. IEEE Computer Society

Welser, H. T., Cosley, D., Kossinets, G., Lin, A., Dokshin, F., Gay, G., and Smith, M. (2011). Finding Social Roles in Wikipedia. In *Proceedings of the 2011 iConference*, iConference '11, pages 122–129, New York, NY, USA. ACM

13 – Networks Lab
Wednesday, October 5
We will share and discuss the findings from our laboratory assignments.

Assignments

Lab Assignment 2 – due Wednesday, October 5.

14 – Pageviews
Monday, October 10
Wikipedia collects data about the volume of pageviews for each article. What do these patterns of information consumption reveal? We will explore how they be combined with other kinds of data to measure inefficiencies or make forecasts.

Readings

Generous, N., Fairchild, G., Deshpande, A., Valle, S. Y. D., and Priedhorsky, R. (2014). Global Disease Monitoring and Forecasting with Wikipedia. *PLOS Comput Biol*, 10(11):e1003892

Warncke-Wang, M., Ranjan, V., Terveen, L., and Hecht, B. (2015). Misalignment Between Supply and Demand of Quality Content in Peer Production Communities. In *Ninth International AAAI Conference on Web and Social Media*

Additional Readings

Althoff, T., Borth, D., Hees, J., and Dengel, A. (2013). Analysis and Forecasting of Trending Topics in Online Media Streams. In *Proceedings of the 21st ACM International Conference on Multimedia*, MM '13, pages 907–916, New York, NY, USA. ACM

Choi, H. and Varian, H. (2012). Predicting the Present with Google Trends. *Economic Record*, 88:2–9

Crane, R. and Sornette, D. (2008). Robust dynamic classes revealed by measuring the response function of a social system. *Proceedings of the National Academy of Sciences*, 105(41):15649–15653

Hickmann, K. S., Fairchild, G., Priedhorsky, R., Generous, N., Hyman, J. M., Deshpande, A., and Valle, S. Y. D. (2015). Forecasting the 2013–2014 Influenza Season Using Wikipedia. *PLOS Comput Biol*, 11(5):e1004239

Kämpf, M., Tismer, S., Kantelhardt, J. W., and Muchnik, L. (2012). Fluctuations in Wikipedia access-rate and edit-event data. *Physica A: Statistical Mechanics and its Applications*, 391(23):6101–6111

Mestyán, M., Yasseri, T., and Kertész, J. (2013). Early Prediction of Movie Box Office Success Based on Wikipedia Activity Big Data. *PLOS ONE*, 8(8):e71226

Moat, H. S., Curme, C., Avakian, A., Kenett, D. Y., Stanley, H. E., and Preis, T. (2013). Quantifying Wikipedia Usage Patterns Before Stock Market Moves. *Scientific Reports*, 3

Ratkiewicz, J., Fortunato, S., Flammini, A., Menczer, F., and Vespignani, A. (2010). Characterizing and Modeling the Dynamics of Online Popularity. *Physical Review Letters*, 105(15):158701

Thij, M. t., Volkovich, Y., Laniado, D., and Kaltenbrunner, A. (2012). Modeling page-view dynamics on Wikipedia. *arXiv preprint arXiv:1212.5943*

15 – Pageviews Lab
Wednesday, October 12
We will share and discuss the findings from our laboratory assignments.

Assignments

Lab Assignment 3 – due Wednesday, October 12.

16 – Ontologies and Linked Data
Monday, October 17
Wikipedia encodes a variety of semantic and other structured data in infoboxes, categories, templates, and other structures. How are these data structured and linked together? What are the opportunities and challenges of new projects like WikiData?

Readings

(2005). Shirky: Ontology is Overrated – Categories, Links, and Tags. http://shirky.com/writings/ontology_overrated.html

Vrandečić, D. and Krötzsch, M. (2014). Wikidata: A Free Collaborative Knowledgebase. *Communications of the ACM*, 57(10):78–85

Additional Readings

Bizer, C. (2009). The Emerging Web of Linked Data. *IEEE Intelligent Systems*, 24(5):87–92

Erxleben, F., Günther, M., Krötzsch, M., Mendez, J., and Vrandečić, D. (2014). Introducing Wikidata to the Linked Data Web. In *The Semantic Web – ISWC 2014*, number 8796 in Lecture Notes in Computer Science, pages 50–65. Springer

Kittur, A., Chi, E. H., and Suh, B. (2009). What's in Wikipedia?: Mapping Topics and Conflict Using Socially Annotated Category Structure. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '09, pages 1509–1512, New York, NY, USA. ACM

Völkel, M., Krötzsch, M., Vrandecic, D., Haller, H., and Studer, R. (2006). Semantic Wikipedia. In *Proceedings of the 15th International Conference on World Wide Web*, WWW '06, pages 585–594, New York, NY, USA. ACM

Yu, J., Thom, J. A., and Tam, A. (2007). Ontology Evaluation Using Wikipedia Categories for Browsing. In *Proceedings of the Sixteenth ACM Conference on Conference on Information and Knowledge Management*, CIKM '07, pages 223–232, New York, NY, USA. ACM

17 – Ontologies Lab
Wednesday, October 19

We will share and discuss the findings from our laboratory assignments.

Assignments

Lab Assignment 4 – due Wednesday, October 19.

18 – Bots
Monday, October 24

Peer production systems require repetitive maintenance tasks that lend themselves to automation. What kinds of tasks can be automated? What are the consequences of relying on bots to help maintain the system?

Readings

Geiger, R. S. and Ribes, D. (2010). The Work of Sustaining Order in Wikipedia: The Banning of a Vandal. In *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work*, CSCW '10, pages 117–126, New York, NY, USA. ACM

Geiger, R. S. and Halfaker, A. (2013b). When the Levee Breaks: Without Bots, What Happens to Wikipedia's Quality Control Processes? In *Proceedings of the 9th International Symposium on Open Collaboration*, WikiSym '13, pages 6:1–6:6, New York, NY, USA. ACM

Additional Readings

Halfaker, A., Geiger, R. S., and Terveen, L. G. (2014). Snuggle: Designing for Efficient Socialization

and Ideological Critique. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '14, pages 311–320, New York, NY, USA. ACM

Müller-Birn, C., Dobusch, L., and Herbsleb, J. D. (2013). Work-to-rule: The Emergence of Algorithmic Governance in Wikipedia. In *Proceedings of the 6th International Conference on Communities and Technologies*, C&T '13, pages 80–89, New York, NY, USA. ACM

Steiner, T. (2014). Bots vs. Wikipedians, Anons vs. Logged-Ins (Redux): A Global Study of Edit Activity on Wikipedia and Wikidata. In *Proceedings of The International Symposium on Open Collaboration*, OpenSym '14, pages 25:1–25:7, New York, NY, USA. ACM

19 – Bots Lab
Wednesday, October 26

We will share and discuss the findings from our laboratory assignments.

Assignments

Lab Assignment 5 – due Wednesday, October 26.

20 – Edge Case 1: High-Tempo Collaboration
Monday, October 31

Wikipedia's social and technical structures were organized assuming that its knowledge would be established and stable. However, Wikipedians have demonstrated a remarkable capacity to rapidly create and revise articles in response to current and breaking news events.

Readings

Keegan, B., Gergle, D., and Contractor, N. (2011). Hot off the Wiki: Dynamics, Practices, and Structures in Wikipedia's Coverage of the Tōhoku Catastrophes. In *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, WikiSym '11, pages 105–113, New York, NY, USA. ACM

Keegan, B. (2013). A History of Newswork on Wikipedia. In *Proceedings of the 9th International Symposium on Open Collaboration*, WikiSym '13, pages 7:1–7:10, New York, NY, USA. ACM

Additional Readings

Bechky, B. and Okhuysen, G. (2011). Expecting the Unexpected? How SWAT Officers and Film Crews Handle Surprises. *The Academy of Management Journal*, 54:239–261. 2

Bigley, G. A. and Roberts, K. H. (2001). The Incident Command System: High-Reliability Organizing for Complex and Volatile Task Environments. *The Academy of Management Journal*, 44:1281–1299. 6

Faraj, S. and Xiao, Y. (2006). Coordination in Fast-Response Organizations. *Management Science*, 52(8):1155–1169

Keegan, B. C. and Brubaker, J. R. (2015). 'Is' to 'Was': Coordination and Commemoration in Posthumous Activity on Wikipedia Biographies. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, CSCW '15, pages 533–546, New York, NY, USA. ACM

Klein, K. J., Ziegert, J. C., Knight, A. P., and Xiao, Y. (2006). Dynamic Delegation: Shared, Hierarchical, and Deindividualized Leadership in Extreme Action Teams. *Administrative Science Quarterly*, 51(4):590–621

Majchrzak, A., Jarvenpaa, S. L., and Hollingshead, A. B. (2007). Coordinating Expertise Among Emergent Groups Responding to Disasters. *Organization Science*, 18(1):147–161

Palen, L. and Vieweg, S. (2008). The Emergence of Online Widescale Interaction in Unexpected Events: Assistance, Alliance & Retreat. In *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*, CSCW '08, pages 117–126, New York, NY, USA. ACM

Palen, L. and Anderson, K. M. (2016). Crisis informatics—New data for extraordinary times. *Science*, 353(6296):224–225

Weick, K. E., Sutcliffe, K. M., and Obstfeld, D. (1999). Organizing for high reliability: Processes of collective mindfulness. In Sutton, R. I. and Staw, B. M., editors, *Research in organizational behavior, Vol. 21*, pages 81–123. Elsevier Science/JAI Press, US

21 – Edge Case 2: Alternative Internet Encyclopedias

Wednesday, November 2

The MediaWiki software and encyclopedic mission of Wikipedia were adopted by other online communities that have very different norms and values. We will discuss how these alternative norms and values influenced the success and sustainability of these encyclopedias.

Readings

Note: These alternative encyclopedias contain content that you may find offensive.

Colbert, S. (2009). Andy Schlafly. The Colbert Report.

Sanger, L. (2007). Why the Citizendium Will (Probably) Succeed. http://larrysanger.org/2007/03/why-the-citizendium-will-succeed/

CreationWiki. About. http://www.creationwiki.org/CreationWiki:About

RationalWiki. About. http://rationalwiki.org/wiki/RationalWiki

Conservapedia. About. http://www.conservapedia.com/Conservapedia:About

Encyclopedia Dramatica. About. https://encyclopediadramatica.se/Encyclopedia_Dramatica:About

Assignments

Reading Response 5 – due Wednesday, November 2. What shortcomings did the creators of these alternative encyclopedias identify with Wikipedia's model? How were their alternative values implemented in the code of the system and practices of the community? How should we judge the success of their alternative approaches?

Additional Readings

Lam, S. K. and Riedl, J. (2011). The past, present, and future of Wikipedia. *Computer*, 44(3):87–90

Hill, B. M. (2013). Almost Wikipedia: Eight Early Encyclopedia Projects and the Mechanisms of Collective Action. *Essays on Volunteer Mobilization in Peer Production*, pages 1–38. https://mako.cc/academic/hill-almost_wikipedia-DRAFT.pdf

O'Neil, M. (2010). Shirky and Sanger, or the costs of crowdsourcing. *Journal of Science Communication*, 9(1)

Sanger, L. M. (2009). The Fate of Expertise after Wikipedia. *Episteme*, 6(01):52–73

Shirky, C. (2006). Larry Sanger, Citizendium, and the Problem of Expertise. https://web.archive.org/web/20150906111714/http://many.corante.com/archives/2006/09/18/larry_sanger_citizendium_and_the_problem_of_expertise.php

Sundin, O. and Haider, J. (2007). Debating information control in web 2.0: The case of Wikipedia vs. Citizendium. *Proceedings of the American Society for Information Science and Technology*, 44(1):1–7

22 – Successors 1: Citizen Science

Monday, November 7 Wikipedia demonstrated that a long tail of non-experts can produce a large and high-quality encyclopedia. How effective are aggregating the contributions from other non-experts at solving other scientific tasks? We will explore how lessons from peer production have influenced the development of citizen science.

Readings

Rotman, D., Preece, J., Hammock, J., Procita, K., Hansen, D., Parr, C., Lewis, D., and Jacobs, D. (2012). Dynamic Changes in Motivation in Collaborative Citizen-science Projects. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, pages 217–226, New York, NY, USA. ACM

Wiggins, A. and Crowston, K. (2011). From Conservation to Crowdsourcing: A Typology of Citizen Science. In *Proceedings of the 44th Hawaii International Conference on System Sciences*, HICSS '11, pages 1–10. IEEE

Additional Readings

Anderson, D. P., Cobb, J., Korpela, E., Lebofsky, M., and Werthimer, D. (2002). SETI@Home: An Experiment in Public-resource Computing. *Communications of the ACM*, 45(11):56–61

Cooper, S., Khatib, F., Treuille, A., Barbero, J., Lee, J., Beenen, M., Leaver-Fay, A., Baker, D., and Popovic, Z. (2010). Predicting protein structures with a multiplayer online game. *Nature*, 466(7307):756–60

Lintott, C. J., Schawinski, K., Slosar, A., Land, K., Bamford, S., Thomas, D., Raddick, M. J., Nichol, R. C., Szalay, A., Andreescu, D., Murray, P., and Vandenberg, J. (2008). Galaxy Zoo: morphologies derived from visual inspection of galaxies from the Sloan Digital Sky Survey. *Monthly Notices of the Royal Astronomical Society*, 389(3):1179–1189

Reed, J., Raddick, M. J., Lardner, A., and Carney, K. (2013). An Exploratory Factor Analysis of Motivations for Participating in Zooniverse, a Collection of Virtual Citizen Science Projects. In *Proceedings of the 46th Hawaii International Conference on System Sciences*, HICSS '13, pages 610–619

Sakaki, T., Okazaki, M., and Matsuo, Y. (2010). Earthquake Shakes Twitter Users: Real-time Event Detection by Social Sensors. In *Proceedings of the 19th International Conference on World Wide Web*, WWW '10, pages 851–860, New York, NY, USA. ACM

Stefanovitch, N., Alshamsi, A., Cebrian, M., and Rahwan, I. (2014). Error and attack tolerance of collective problem solving: The DARPA Shredder Challenge. *EPJ Data Science*, 3(1)

Yuen, M.-C., King, I., and Leung, K.-S. (2011). A Survey of Crowdsourcing Systems. In *Proceedings of Social Computing 2011*, pages 766–773. IEEE

23 – Successors 2: OpenStreetMaps

Wednesday, November 9

The peer production model has also been adopted to produce other common goods such as maps. We will discuss how "geo-wikis" work and what additional considerations are needed when moving away from textual data. **Featuring a guest lecture by Jennings Anderson.**

Readings

Haklay, M. M. and Weber, P. (2008). OpenStreetMap: User-Generated Street Maps. *IEEE Pervasive Computing*, 7(4):12–18

Priedhorsky, R. and Terveen, L. (2008). The Computational Geowiki: What, Why, and How. In *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*, CSCW '08, pages 267–276, New York, NY, USA. ACM

Assignments

Reading Response 6 – due Wednesday, November 9. TBD.

Additional Readings

Budhathoki, N. R. and Haythornthwaite, C. (2013). Motivation for Open Collaboration Crowd and Community Models and the Case of OpenStreetMap. *American Behavioral Scientist*, 57(5):548–575

Elwood, S., Goodchild, M. F., and Sui, D. Z. (2012). Researching Volunteered Geographic Information: Spatial Data, Geographic Research, and New Social Practice. *Annals of the Association of American Geographers*, 102(3):571–590

Goodchild, M. F. (2007). Citizens as sensors: the world of volunteered geography. *GeoJournal*, 69(4):211–221

Mooney, P., Corcoran, P., and Winstanley, A. C. (2010). Towards Quality Metrics for OpenStreetMap. In *Proceedings of the 18th SIGSPATIAL International Conference on Advances in Geographic Information Systems*, GIS '10, pages 514–517, New York, NY, USA. ACM

Palen, L., Soden, R., Anderson, T. J., and Barrenechea, M. (2015). Success & Scale in a Data-Producing Organization: The Socio-Technical Evolution of OpenStreetMap in Response to Humanitarian Events. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, CHI '15, pages 4113–4122, New York, NY, USA. ACM

Quattrone, G., Dittus, M., and Capra, L. (2016). Exploring Maintenance Practices in Crowd-Mapping. In *Proceedings of the 27th ACM Conference on Hypertext and Social Media*, HT '16, pages 285–290, New York, NY, USA. ACM

Wang, Y., Liu, X., Wei, H., Forman, G., Chen, C., and Zhu, Y. (2013). CrowdAtlas: Self-updating Maps for Cloud and Personal Use. In *Proceeding of the 11th Annual International Conference on Mobile Systems, Applications, and Services*, MobiSys '13, pages 27–40, New York, NY, USA. ACM

24 – Creative Collaboration 1: Scratch

Monday, November 14

Peer production communities can also collaborate to produce creative work. Scratch is an online community of young people who create, share, and remix animations, games, and other computational projects. **Featuring a guest lecture by Professor Ricarose Roque.**

Readings

Resnick, M., Maloney, J., Monroy-Hernández, A., Rusk, N., Eastmond, E., Brennan, K., Millner, A., Rosenbaum, E., Silver, J., Silverman, B., and Kafai, Y. (2009). Scratch: Programming for All. *Commun. ACM*, 52(11):60–67

Roque, R., Rusk, N., and Resnick, M. (2016). Supporting Diverse and Creative Collaboration in the Scratch Online Community. In Cress, U., Moskaliuk, J., and Jeong, H., editors, *Mass Collaboration and*

Education, number 16 in Computer-Supported Collaborative Learning Series, pages 241–256. Springer

Additional Readings

Dasgupta, S., Hale, W., Monroy-Hernández, A., and Hill, B. M. (2016). Remixing As a Pathway to Computational Thinking. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, CSCW '16, pages 1438–1449, New York, NY, USA. ACM

Hill, B. M. and Monroy-Hernández, A. (2013). The Cost of Collaboration for Code and Art: Evidence from a Remixing Community. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, CSCW '13, pages 1035–1046, New York, NY, USA. ACM

Monroy-Hernández, A., Hill, B. M., Gonzalez-Rivero, J., and boyd, d. (2011). Computers Can't Give Credit: How Automatic Attribution Falls Short in an Online Remixing Community. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '11, pages 3421–3430, New York, NY, USA. ACM

Nickerson, J. V. and Monroy-Hernández, A. (2011). Appropriation and Creativity: User-Initiated Contests in Scratch. In *Proceedings of the 44th Hawaii International Conference on System Sciences*, HICSS '11, pages 1–10. IEEE

25 – Creative Collaboration 2: Threadless
Wednesday, November 16

How can crowds be utilized within traditional organizations to support research and development? We will examine the case of the Threadless community and how the crowd is used to generate and evaluate creative designs.

Readings

Brabham, D. C. (2010). Moving the crowd at threadless: Motivations for participation in a crowd-sourcing application. *Information, Communication & Society*, 13(8):1122–1145

Kittur, A. (2010). Crowdsourcing, Collaboration and Creativity. *XRDS*, 17(2):22–26

Assignments

Reading Response 7 – due Wednesday, November 16. TBD.

Additional Readings

Brabham, D. C. (2008). Crowdsourcing as a Model for Problem Solving An Introduction and Cases. *Convergence: The International Journal of Research into New Media Technologies*, 14(1):75–90

Brabham, D. C. (2010). Moving the crowd at threadless: Motivations for participation in a crowd-sourcing application. *Information, Communication & Society*, 13(8):1122–1145

Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., and Schader, M. (2011). Managing the Crowd: Towards a Taxonomy of Crowdsourcing Processes. *AMCIS 2011 Proceedings*

Hutter, K., Hautz, J., Füller, J., Mueller, J., and Matzler, K. (2011). Communition: The Tension between Competition and Collaboration. *Creativity and Innovation Management*, 20(1):3–21

Yu, L. and Nickerson, J. V. (2011). Cooks or Cobblers?: Crowd Creativity Through Combination. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '11, pages 1393–1402, New York, NY, USA. ACM

Yu, L. L., Nickerson, J. V., and Sakamoto, Y. (2012). Collective Creativity: Where We Are and Where We Might Go. SSRN Scholarly Paper ID 2037908, Social Science Research Network, Rochester, NY

26 – Fall Break
Monday, November 21 — NO CLASS

27 – Fall Break
Wednesday, November 23 — NO CLASS

28 – Beyond Wikis: Open Hardware
Monday, November 28
Peer production models can also extend beyond online and software collaborations. What strategies have members of the Open Hardware movement translated from elsewhere and what have they had to innovate themselves?

Readings

Buechley, L. and Hill, B. M. (2010). LilyPad in the Wild: How Hardware's Long Tail is Supporting New Engineering and Design Communities. In *Proceedings of the 8th ACM Conference on Designing Interactive Systems*, DIS '10, pages 199–207, New York, NY, USA. ACM

Kuznetsov, S. and Paulos, E. (2010). Rise of the Expert Amateur: DIY Projects, Communities, and Cultures. In *Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries*, NordiCHI '10, pages 295–304, New York, NY, USA. ACM

Weiss, A. (2008). Open Source Hardware: Freedom You Can Hold? *netWorker*, 12(3):26–33

Additional Readings

Buechley, L., Rosner, D. K., Paulos, E., and Williams, A. (2009). DIY for CHI: Methods, Communities, and Values of Reuse and Customization. In *CHI '09 Extended Abstracts on Human Factors in Computing Systems*, CHI EA '09, pages 4823–4826, New York, NY, USA. ACM

Malinen, T., Mikkonen, T., Tienvieri, V., and Vadén, T. (2010). Open Source Hardware Through Volunteer Community: A Case Study of eCars – Now! In *Proceedings of the 14th International Academic MindTrek Conference: Envisioning Future Media Environments*, MindTrek '10, pages 65–68, New York, NY, USA. ACM

Mellis, D. A., Gordon, D., and Buechley, L. (2011). Fab FM: The Design, Making, and Modification of an Open-source Electronic Product. In *Proceedings of the Fifth International Conference on Tangible, Embedded, and Embodied Interaction*, TEI '11, pages 81–84, New York, NY, USA. ACM

Mellis, D. and Buechley, L. (2012). Collaboration in Open-source Hardware: Third-party Variations on the Arduino Duemilanove. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, CSCW '12, pages 1175–1178, New York, NY, USA. ACM

29 – Beyond Wikis: Blockchains
Wednesday, November 30
Peer production can also be used to ensure accountability across a complex system. Crypto-currencies like Bitcoin introduced the idea of "blockchains" that offer some radical ideas about how to decentralize control over important transactions.

Readings

Swan, M. (2015). *Blockchain.* O'Reilly. Skim Chapters 1–3.

Assignments

Reading Response 8 – due Wednesday, November 30. TBD.

30 – Platform Cooperativism
Monday, December 5

Peer production demonstrated the potential for information technology to support the production of valuable goods in the absence of traditional economic incentives. How far could these models be applied to other areas of the economy? **Featuring a guest lecture by Professor Nathan Schneider.**

Readings

Louis, T. (2013). How much is a user worth? `http://www.forbes.com/sites/tristanlouis/2013/08/31/how-much-is-a-user-worth/print/`

Scholz, T. (2014). Platform Cooperativism vs. the Sharing Economy. `https://medium.com/@trebors/platform-cooperativism-vs-the-sharing-economy-2ea737f1b5ad#.mce1v31yx`

31 – Wrap-up
Wednesday, December 7

Discuss final project preparations, reflect on themes from the course, overflow time if there are topics we missed or want to dive into greater depth.