ILLINOIS
School of Information Sciences

Sociotechnical Information Systems
Course Number IS504AC
CRN: 73144
Semester Year Fall 2024
Classroom and Class Time, iSchool 126, 9:00am to 11:50am on Tuesdays

Jessie Chin
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Office Hours: By appointment

Teaching Assistant

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(Week 1, 2, 8, 9, 10, 13)

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(Week 3, 4, 5, 6, 11, 15, 16)

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(Practice of Extended Discussion, Optional Exam)

Office hours: By appointment

Course Description
The character, success, and costs/benefits of information technologies are socio-technical matters. Because of this, best practice for IT design and integration relies on participants' ability to understand and create for the totality of those settings, including social and technical dimensions. This course provides students with analytic tools for examining sociotechnical settings and experience in applying that knowledge in IT modeling, design and management.

Pre- and Co-requisites
None.

4 Credit hours

Student Learning Outcomes

- Awareness of the goals of and history of thinking about analysis and design of information systems that are responsive to socio-technical dimensions of their settings of use.
- Awareness of and significant practice with at least four analysis, modeling, and design techniques/tools useful for socio-technical information systems, including conditions for employing/avoiding each technique, modeling costs etc.
- Awareness of the range of values and of ethical standpoints within which complex socio-technical design occurs, including concerns of diversity, differing knowledge domains, power.

Course Context

This course meets a number of learning outcomes connected to program objectives for the MS Information Management programs, which in turn connect to larger iSchool and University of Illinois learning goals.

Program Learning Outcomes

iSchool Goals

This course meets the following goal:

1. Apply appropriate analytic approaches to the needs of a given problem and understand how aspects of logic, statistical analysis, and broader domain knowledge can inform the interpretation and confidence in their analyses.
2. Understand some of the larger sociotechnical contexts in which information management occur.
3. Students with effectively and accurately communicate to an interdisciplinary audience in both oral and written formats.

University of Illinois Campus-Wide Learning Goals

1. Intellectual Reasoning and Knowledge
2. Creative Inquiry and Discovery
3. Effective Leadership and Community Engagement
4. Social Awareness and Cultural Understanding

Course materials

All readings will be posted on the course site.

Assignments and Methods of Assessment

1. **Peer Lecture and Panel Discussion 20%**
   - **Peer Lecture**

   Each group will lead the peer lecture (and extended discussion, see below) on **one of the 10 topics in the semester**. Students in the group can decide how to share the task loads. All students are expected to participate in either of the activities. Students will do a 30-min presentation on the **required readings** of the corresponding topic (including 5-minute Q&A with the class).
   (Note: the process of group forming/topic audit will be explained at the end of Assignments.)

   Format
   The presentation of the readings should include the following parts:
   1. The main research questions of the papers
   2. The backgrounds of the problem: What we already knew from literature
   3. The gaps authors are trying to solve: What makes this paper contribute to the existing literature
   4. The approaches authors used to solve the research questions
   5. Main results
   6. The conclusion from the papers
   7. Students' own analytical thoughts about these papers: Any limitations and strengths of the paper (e.g., the scope of research questions, the choice of data, the choice of methods, the interpretation of the results, the implications, etc.)
   8. 1-sentence take-home message
   9. Q&A from the class (5 minutes)

   - **Extended Discussion**

Followed by the peer lecture, the same group of the students will be leading a 30-minute extended discussion to apply what they have learned in the lecture to do a thorough discussion on a related topic (which has not been fully introduced in the lecture). Students can choose a topic that they are interested in learning more, such as an example in the everyday life, a case study, or a recent news/policy related to the lecture, etc. To prepare the extended discussion, each group will schedule a practice presentation with Philo (Jiaqi) Wang (jiaqi17@illinois.edu) at least 3 days before the presentation date to (1) make one practice talk, (2) review the direction, and (3) receive feedback from the TA. This is to ensure the quality and coherence of the extended discussion. Please coordinate with Philo soon to make preparation accordingly.

Format
The extended discussion should include the following parts:
1. Introducing the topic (15 minutes)
2. Your own analysis of the topic (10 minutes)
3. Conclusion remarks about the topic (summarizing peer-lecture and extended discussion) (5 minutes)

Grading

The peer lecture and extended discussion will be evaluated by TA that week using the following rubrics:

- Practice presentation and preparation (5pt) – Graded by Philo
- Time management (5pt): We follow this rubric strictly. If the presentation goes longer, the points will be deducted.
- Correctness of the content (5pt)
- Analytical Thinking (5pt)

Some example topics for extended discussion: *(Feel free to find other topics that meet your interests or career goals)*

- Adaptation and Rationality
  - The mechanisms in different search algorithm
  - Rationality or Heuristics in AI
- Moral, Values and Ethics in Design
  - How to regulate ethics/morality in design
  - Ethical issues in contact tracing
- Promises and Problems in Data Sciences
  - Discuss the case study, Project Green Light
  - Discuss how we measure FAT in algorithms
- Diversity and Inclusion
  - Discuss the accessibility examples in our daily technologies
  - Discuss one case about algorithm audit (see https://www.ajl.org/)
- Misinformation and Regulations
  - Discuss the current policies of fake news/misinformation on social media platforms
  - Discuss the misinformation and debunking related to COVID-19 vaccines
- Law and Intellectual Property
  - What is data-driven policy making? Is this feasible? What are the potential risks or benefits of data-driven policies?
  - Talk about issues in data governance
- User-Centered and Participatory Design
  - Use one case to discuss the application of the user-centered and participatory design
  - Discussion on the UX methods or some existing analyses (see https://www.nngroup.com/articles/)
- Systems Modeling and Cognitive Work Analysis
  - Use one case to discuss the application of systems modeling and cognitive work analysis
  - The application of systems modeling and cognitive work analysis to data sciences

For Explainable AI and Generative AI and Music (the last two topics), feel free to contact Kexin and Ke-Rou for suggestions on extended discussions.

2. CITI Training 10%

Sociotechnical design requires understanding both technology and the social context in which it is intertwined; achieving that understanding frequently takes research. A good designer needs a thorough grounding in research ethics. For this assignment you will complete part of the official training on research ethics required of faculty and student researchers here at the University of Illinois. Online training is provided by CITI.

Please complete the Core IRB Training (https://oprs.research.illinois.edu/training/human-subjects-research-training-citi).

You will have the opportunity to generate a completion report (certificate of completion) after completing the core IRB training. You will submit your completion report through the Canvas to verify that you have completed your assignment. The IRB completion report is due by **12PM (CST) on Sep 23 (Mon)**.

Late submission will lead to deduction of 0.5pt of total points every 12 hours.

3. In-Class Activities 30%

There will be in-class activities for most of the week in the class, with the aim to provide hands-on learning experience. The activities include analyzing news articles, discussing case reports, working on data, etc. Students will perform the assigned tasks in class, and present their findings in either short video clips or paper prototypes. Every student will need to be the leader of one of the in-class activities. For the groups with less than 10 people, students can choose to be the leader for more than once.

In-class activities:

1. Moral, value, and ethics in design (Sep 10)
2. Promises and problems in data sciences (Sep 17)
3. Diversity and inclusion (Sep 24)
4. Misinformation and regulations (Oct 1)
5. Law and intellectual property (Oct 15)
6. User-centered and participatory design (Oct 22)
7. Systems modeling and cognitive work analysis (Oct 29)
8. Explainable AI (Nov 5)
9. Generative AI and Music (Nov 19)
10. Sociotechnical Issues in Health Informatics (Dec 3)

Grading

Each activity will earn up to 3 points

- Quality of presentation or writing (1pt)
- Originality (1pt)
- Contribution Statements (1pt): Contribution statements have become a norm of academia. For each activity submission, each student will need to self-report their contributions to this assignment. For video formats, students will expect to talk about

their contribution individually. For paper formats, students will need to write down their contributions with signatures. Students who did not contribute to the activity (e.g., did not attend the class) will not receive points.

- Students should not help sign or report contributions for other group members who are absent from the class. This will be regarded as a violation of academic integrity resulting in 0 pt for the particular in-class activity for the whole group. **For the students who cannot attend the course, please contact the corresponding TA in advance or no later by the end of the lecture day.**

4. Final Project 40%

The class will have 10 groups. Students can choose one of two kinds of research topics for the final project, which will be introduced in the class.

Dates:
Oct 4 (Fri): Due of first draft (5pt)
Oct 8 (Tue): Group project discussion in class
Nov 8 (Fri): Due of second draft (5pt)
Nov 12 (Tue): Group project discussion in class
Dec 10 (Tue). Final in-class 15-minute group presentation (10pt)
Dec 10 (Tue): Peer evaluation (10pt)
Dec 11 (Wed): Final report (10pt)

First and Second Draft of Group Project (5pt each)
Each group will submit their drafts of group projects via Canvas, and discuss with the instructor one-by-one during the following lecture.

First Draft

The first draft is required to include the following components:

1. The sociotechnical issue in interacting with contemporary information systems
2. Why is it important?
3. Why is it relevant to us?
4. Background information on the problem (Analyzing in terms of systems, individuals, and organizations)
5. Proposed data collection plan
6. Contribution statements

Second Draft

The second draft is required to include the following components:

1. The sociotechnical issue in interacting with contemporary information systems
2. Introduction of the sociotechnical issue: Significance and relevance
3. The background of the sociotechnical issue: The systems, individuals and organizations
4. Relevant theories or concepts learned in the class and how to apply these theories to analyze the current sociotechnical issues
5. Data collected

6. Proposed data analysis plan
7. Contribution statements

Grading

The drafts will be evaluated by the Instructor using the following rubrics.

- Clarity and Significance (3pt)
- Analytical Thinking (2pt)

Final Group Presentation (10pt)

Each group will give a 15-minute talk (12-minute presentation and 3-minute Q&A) on Dec 10. The order of presentation will be decided by **a draw**. Late or missing presentations will result in zero points.

Format

The final group presentation will have the following components:

1. Introduction of the sociotechnical issue: Significance and relevance
2. The backgrounds of the sociotechnical issue: The systems, individuals and organizations
3. Relevant theories or concepts learned in the class and how to apply these theories to analyze the current sociotechnical issues
4. Data collection, design, and procedure
5. Data analysis
6. Discussion
7. Conclusions
8. One-sentence take-home message
9. Q & A with the class

Grading

The final presentation will be evaluated by both TA and Instructor using the following rubrics.

- Clarity (3pt)
- Significance (3pt)
- Analytical Thinking (4pt)

Final Paper (10pt)

Format

The final paper will follow the major components in the group presentation, including:

1. Introduction of the sociotechnical issue: Significance and relevance
2. The background of the sociotechnical issue: The systems, individuals and organizations
3. Relevant theories or concepts learned in the class and how to apply these theories to analyze the current sociotechnical issues
4. Data collection, design, and procedure
5. Data analysis

6. Discussion
    a. Summary of the results
    b. The relations between the findings and the literature
    c. Limitations of the study
    d. Suggestions on the solutions
7. Conclusions
    a. summarize what the group has learned in this final project; the difficulties or challenges analyzing or improving the sociotechnical systems)
8. Contribution statements
9. References

Style: Single-space, Margin 1 inch, 12 font size, Times New Roman, **8 Pages** (Not including References, Data, Tables or Figures)

References: American Psychological Association (APA) Style (1pt will be deducted if not following the correct style)

Submission Information: The final report is due by **12PM CST (Noon) on Dec 11 (Wed)**. Please submit the final report to the course site. **No late work will be accepted.**

Grading

The final paper will be evaluated by the Instructor using the following rubrics.

1. **How well the group has addressed the comments given by TA and Instructor during the oral presentation (5pt)**
2. Analytical Thinking (5pt)

Within-Group Peer Evaluation (10pt)

Each student will rate the teamwork performance of their teammates using the "Team Evaluation" form.

Please **submit the survey by 1PM CST on Dec 10 (Tue)**. No late work will be accepted.

No Extra Points

Students will not be given make-up assignments. No request for extra points in the last week of the semester will be granted.

There is an optional final exam (3pt), scheduled on Dec 9 (Mon). The optional final exam will only be available for the students who receive **more than 10 points deduction** (>10pt) by the week of Dec 3. Students who would like to take optional final exam will need to contact Philo Wang by the end of Dec 3 (Tue). The optional final exam will be an in-person written exam composed of 15 items (0.2pt) covering the theories/concepts taught during the semester. Students who receive less than 10 points deduction are not eligible for the optional final exam.

General Policy

1. All assignments are required for all students. Completing all assignments is not a guarantee of a passing grade.
2. All work must be completed in order to pass this class.
3. Late or incomplete assignments will not be given full credit unless the student has contacted the instructor prior to the due date of the assignment (or in the case of emergencies, as soon as practicable). **For any late work, 0.5 point (out of the total score) will be deducted per 12 hours (till 0 points). This rule does not apply to the final paper. No late work of final paper will be accepted.**
4. Criteria for grading homework assignments include (but are not limited to) creativity and the amount of original work demonstrated in the assignment. However, students are permitted to use and adapt the work of others, provided that the following guidelines are followed:
    a. Use of other people's material must not infringe the copyright of the original author, nor violate the terms of any licensing agreement. Know and respect the principles of fair use with respect to copyrighted material.
    b. Students must scrupulously attribute the original source and author of whatever material has been adapted for the assignment. Summarize the changes or adaptations that have been made. Make plain how much of the assignment represents original work.
5. There will be **no make-up assignments or no extra assignments** for specific students to gain additional credits for this course (except the optional final exam). If students have any questions about the grading of their assignments, please discuss with the TA or instructor **within a week they receiving the grades**. The scores of previously graded assignments will not be adjusted in the final weeks.

Incomplete grades

An exceptional request for an incomplete grade is most often granted to students encountering a medical emergency or other extraordinary circumstances beyond their control. Students must request an incomplete grade from the instructor. The instructor and student will agree on a due date for completion of coursework. The student must submit an Incomplete Form signed by the student, the instructor, and the student's academic advisor to the front office: https://uofi.app.box.com/v/ISIncompleteForm
Please see the Student Code for full details: http://studentcode.illinois.edu/article3/part1/3-104/

Grading Scale

94-100 = A
90-93 = A-
87-89 = B+
83-86 = B
80-82 = B-
77-79 = C+
73-76 = C
70-72 = C-
67-69 = D+
63-66 = D
60-62 = D-
59 and below = F

Attendance/ Participation Policy
The iSchool expects students to **attend all classes** except in cases of emergency.
Student Code on Attendance: http://studentcode.illinois.edu/article1/part5/1-501/

If you have an emergency, **communicate with the TA as early as possible to prevent negatively impacting your grade**. Students missing more than one class—or who regularly arrive late or leave early—will not pass the class unless alternate arrangements are made. Students are expected to demonstrate respect for the ideas and opinions of all other members of the class at all times. Failure to observe this course requirement can result in a failing course participation grade, and may result in a failing grade for the course.

Disruptive behavior
Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office for Student Conflict Resolution (https://conflictresolution.illinois.edu; conflictresolution@illinois.edu; 333-3680) for disciplinary action.

Academic Integrity
The iSchool has the responsibility for maintaining academic integrity so as to protect the quality of education and research in our school and to protect those who depend on our integrity. Consequences of academic integrity infractions may be serious, ranging from a written warning to a failing grade for the course or dismissal from the University.
See the student code for academic integrity requirements:
http://studentcode.illinois.edu/article1/part4/1-401/

Please review and reflect on the academic integrity policy of the University of Illinois, http://studentcode.illinois.edu/article1_part4_1-401.html, to which we subscribe. By turning in materials for review, you certify that all work presented is your own and has been done by you independently, or as a member of a designated group for group assignments.

If, in the course of your writing, you use the words or ideas of another writer, proper references must be given (using APA citation style). Not to do so is to commit plagiarism, a form of academic dishonesty or plagiarism. Please be aware that the consequences for plagiarism or other forms of academic dishonesty will be severe. Students who violate university standards of academic integrity are subject to disciplinary action, including a reduced grade, failure in the course, and suspension or dismissal from the University.

Note on Large Language Models (LLMs) (ChatGPT, etc.)
You are welcome to use LLMs to aid with your written work as long as they are properly cited. Please include a footnote/endnote that gives your prompt and a summary of changes you made to the output. To be specific, LLMs can be used to improve your writing, but not writing for

you from scratch. LLMs have its limitations. Your written work will be read closely. Please use LLMs appropriately.

Statement of Inclusion
http://www.inclusiveillinois.illinois.edu/mission.html
As the state's premier public university, the University of Illinois at Urbana-Champaign's core mission is to serve the interests of the diverse people of the state of Illinois and beyond. The institution thus values inclusion and a pluralistic learning and research environment, one which we respect the varied perspectives and lived experiences of a diverse community and global workforce. We support diversity of worldviews, histories, and cultural knowledge across a range of social groups including race, ethnicity, gender identity, sexual orientation, abilities, economic class, religion, and their intersections.

Religious Observances
In keeping with our Statement of Inclusion and Illinois law, the University is required to reasonably accommodate its students' religious beliefs, observances, and practices regarding admissions, class attendance, and the scheduling of examinations and work requirements.

If you would like an absence letter, then you must fill out the Religious Observance Accommodation Request form is available at http://odos.illinois.edu/community-of-care/resources/docs/Religious-Observance-Accommodation-Request-Form.pdf. Other accommodations may also be available. If you anticipate the need for an accommodation, please communicate with your instructor at the first week of the semester.

Week-by-Week Topics
Week 1. Aug 27. Introduction & Sociotechnical Challenges (TA: Ke-Rou)

- Introduction
- Overview of Courses
- Lecture: Sociotechnical Challenges
- How to read and write in graduate school (by Ke-Rou)
- Ice-breaking and group-forming (designed by Ke-Rou)

Week 2. Sep 3. Adaptation and Rationality (TA: Ke-Rou)
Lecture: Adaptation and Rationality
Required Readings:
(1) Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *science*, *211*(4481), 453-458.
(2) Gigerenzer, G., & Goldstein, D. G. (1996). Reasoning the fast and frugal way: models of bounded rationality. *Psychological review*, *103*(4), 650.
(3) Todd, P. M., & Gigerenzer, G. (2007). Environments that make us smart: Ecological rationality. *Current directions in psychological science*, *16*(3), 167-171.

- Library resource (Christopher Bailey)
- Group discussion in class (continued facilitating group-forming, led by Ke-Rou)

Week 3. Sep 10. Moral, Values and Ethics in Design (TA: Kexin)

Lecture: Morals, Values and Ethics in Design

Required Readings:

(1) Manders-Huits, N. (2011). What values in design? The challenge of incorporating moral values into design. *Science and engineering ethics*, *17*(2), 271-287.

(2) Malle, B. F. (2016). Integrating robot ethics and machine morality: the study and design of moral competence in robots. *Ethics and Information Technology*, *18*(4), 243-256.

(3) Arnold, T., & Scheutz, M. (2016). Against the moral Turing test: accountable design and the moral reasoning of autonomous systems. *Ethics and Information Technology*, *18*(2), 103-115.

- In-class activity 1 (30 minutes, led and graded by Kexin)
- Peer Lecture 1. Adaptation and Rationality

Week 4. Sep 17. Promises and Problems in Data Sciences (TA: Kexin)

Lecture: Promises and Problems in Data Sciences

Required Readings:

(1) Hargittai, E. (2015). Is bigger always better? Potential biases of big data derived from social network sites. *The ANNALS of the American Academy of Political and Social Science*, *659*(1), 63-76.

(2) Lazer, D., Kennedy, R., King, G., & Vespignani, A. (2014). The parable of Google Flu: traps in big data analysis. *Science*, *343*(6176), 1203-1205.

(3) Brown, A., Chouldechova, A., Putnam-Hornstein, E., Tobin, A., & Vaithianathan, R. (2019, May). Toward algorithmic accountability in public services: A qualitative study of affected community perspectives on algorithmic decision-making in child welfare services. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-12). https://doi.org/10.1145/3290605.3300271

- Peer Lecture 2: Moral, Values and Ethics in Design
- In-class activity 2 (30 minutes, led and graded by Kexin)
- **Completion of CITI Training: Due by 12PM (CST) Noon on Sep 23 (Mon)**

Week 5. Sep 24. Diversity and Inclusion (TA: Kexin)

Lecture: Diversity and Inclusion

Required Readings:

(1) Sandvig, C., Hamilton, K., Karahalios, K., & Langbort, C. (2016). Automation, algorithms, and politics| when the algorithm itself is a racist: Diagnosing ethical harm in the basic components of software. *International Journal of Communication*, *10*, 19.

(2) Sandvig, C., Hamilton, K., Karahalios, K., & Langbort, C. (2014). Auditing algorithms: Research methods for detecting discrimination on internet platforms. *Data and discrimination: converting critical concerns into productive inquiry*, *22*.
(3) Hajian, S., Bonchi, F., & Castillo, C. (2016, August). Algorithmic bias: From discrimination discovery to fairness-aware data mining. In *Proceedings of the 22nd ACM SIGKDD international conference on knowledge discovery and data mining* (pp. 2125-2126).

- Peer Lecture 3: Promises and Problems in Data Sciences
- In-class activity 3 (30 minutes, led and graded by Kexin)

Week 6. Oct 1. Misinformation and Regulations (TA: Kexin)

Lecture: Misinformation and Regulations
Required Readings:

(1) Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, *359*(6380), 1146-1151.
(2) Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological science in the public interest*, *13*(3), 106-131.
(3) Bessi, A., Coletto, M., Davidescu, G. A., Scala, A., Caldarelli, G., & Quattrociocchi, W. (2015). Science vs conspiracy: Collective narratives in the age of misinformation. *PloS one*, *10*(2), e0118093.

- Peer Lecture 4: Diversity and Inclusion
- In-class activity 4 (30 minutes, led and graded by Kexin)
- **The first draft of the group project: Due by 12PM (CST) Noon on Oct 4 (Fri)**

Week 7. Oct 8. Group project discussion and mentoring – Part 1

- Each group will discuss the group project draft 1 with the instructor one by one
- Zoom meetings

Week 8. Oct 15. Law and Intellectual Property (TA: Ke-Rou)

Lecture: Law and Intellectual Property
Required Readings:

(1) Philips, Mar (Aug 2018). "International data-sharing norms: from the OECD to the General Data Protection Regulation (GDPR)." Human Genetics 137(8), pp. 575-582. https://doi.org/10.1007/s00439-018-1919-7
(2) Mauthner, Natasha Susan and Odette Parry (2013). "Open access digital data sharing: Principles, policies and practices." Social Epistemology: A Journal of Knowledge, Culture and Policy 27(1). https://doi.org/10.1080/02691728.2012.760663
(3) Diesner, J., & Chin, C. L. (2016, May). Gratis, libre, or something else? Regulations and misassumptions related to working with publicly available text data. In Actes du Workshop on Ethics In Corpus Collection, Annotation & Application (ETHI-CA2), LREC

- Peer Lecture 5: Misinformation and Regulations
- In-class activity 5 (30 minutes, led and graded by Ke-Rou)

Week 9. Oct 22. User-Centered and Participatory Design (TA: Ke-Rou)
Lecture: User-Centered and Participatory Design
Required Readings:

(1) Luo, Y., Liu, P., & Choe, E. K. (2019, May). Co-Designing food trackers with dietitians: Identifying design opportunities for food tracker customization. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-13). https://doi.org/10.1145/3290605.3300822
(2) Flórez-Aristizábal, L., Cano, S., Collazos, C. A., Solano, A. F., & Brewster, S. (2019, May). Designability: Framework for the design of accessible interactive tools to support teaching to children with disabilities. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-16). https://doi.org/10.1145/3290605.3300240
(3) Vorvoreanu, M., Zhang, L., Huang, Y. H., Hilderbrand, C., Steine-Hanson, Z., & Burnett, M. (2019, May). From gender biases to gender-inclusive design: An empirical investigation. In *Proceedings of the 2019 CHI Conference on human factors in computing systems* (pp. 1-14). https://doi.org/10.1145/3290605.330028

- Peer Lecture 6: Law and Intellectual Property
- In-class activity 6 (30 minutes, led and graded by Ke-Rou)

Week. 10. Oct 29. Systems Modeling & Cognitive Work Analysis (TA: Ke-Rou)
Lecture: Systems Modeling & Cognitive Work Analysis
Required Readings:

(1) Seamster, T. L., Redding, R. E., Cannon, J. R., Ryder, J. M., & Purcell, J. A. (1993). Cognitive task analysis of expertise in air traffic control. *The international journal of aviation psychology*, *3*(4), 257-283.
(2) Lane, R., Stanton, N. A., & Harrison, D. (2006). Applying hierarchical task analysis to medication administration errors. *Applied ergonomics*, *37*(5), 669-679.
(3) Bourne, R. S., Phipps, D. L., Jennings, J. K., Boxall, E., Wilson, F., March, H., & Ashcroft, D. M. (2022). Medication safety for intensive care patients transferring to a hospital ward: a hierarchical task analysis. *Human Factors in Healthcare, 2,* 100030

- Peer Lecture 7: User-Centered and Participatory Design
- In-class activity 7 (30 minutes, led and graded by Ke-Rou)

Week 11. Nov. 5. Explainable AI (TA: Kexin)
Lecture: Explainable AI (TA: Kexin)
Required Readings:

- Hoffman, R. R., Mueller, S. T., Klein, G., & Litman, J. (1812). Metrics for explainable AI: Challenges and prospects. arXiv 2018. *arXiv preprint arXiv:1812.04608*, *10*.

- Wang, D., Yang, Q., Abdul, A., & Lim, B. Y. (2019, May). Designing theory-driven user-centric explainable AI. In *Proceedings of the 2019 CHI conference on human factors in computing systems* (pp. 1-15).
- Sheu, R. K., & Pardeshi, M. S. (2022). A Survey on Medical Explainable AI (XAI): Recent Progress, Explainability Approach, Human Interaction and Scoring System. *Sensors*, *22*(20), 8068.

- Peer Lecture 8: Systems modeling and Cognitive Work Analysis
- In-class activity 8 (30 minutes, led and graded by Kexin)
- **The second draft of the group project: Due by 12PM CST Noon on Nov 8 (Fri)**

Week 12. Nov. 12. Group project discussion and mentoring – Part 2

- Each group will discuss the group project draft 2 with the instructor one by one
- Zoom meetings

Week 13. Nov 19. Special Topic: Generative AI and Music (TA: Ke-Rou)

Lecture: Generative AI and Music

Required Readings:

(1) Suh, M., Youngblom, E., Terry, M., & Cai, C. J. (2021, May). Ai as social glue: Uncovering the roles of deep generative AI during social music composition. In Proceedings of the 2021 CHI conference on human factors in computing systems (pp. 1-11). https://dl.acm.org/doi/fullHtml/10.1145/3411764.3445219

(2) Louie, R., Coenen, A., Huang, C. Z., Terry, M., & Cai, C. J. (2020, April). Novice-AI music co-creation via AI-steering tools for deep generative models. In Proceedings of the 2020 CHI conference on human factors in computing systems (pp. 1-13). https://dl.acm.org/doi/abs/10.1145/3313831.3376739

(3) Agostinelli, A., Denk, T. I., Borsos, Z., Engel, J., Verzetti, M., Caillon, A., ... & Frank, C. (2023). Musiclm: Generating music from text. arXiv preprint arXiv:2301.11325. https://arxiv.org/abs/2301.11325

- In-class activity 9 (30 minutes, led and graded by Ke-Rou)
- Peer Lecture 9: Explainable AI

Week 14. Nov. 26. Fall Break

Week 15. Dec 3. Special Topic: Sociotechnical Issues in Health Informatics (TA: Kexin)

Lecture: Sociotechnical Issues in Health Informatics (TA: Kexin)

Required Readings:

(1) Chassin, M.R. & Becher, E.C. (2002). The wrong patient. *Annals of Internal Medicine*, *136*, 826-833.

(2) Gigerenzer, G., Gaissmaier, W., Kurz-Milcke, E., Schwartz, L. M., & Woloshin, S. (2007). Helping doctors and patients make sense of health statistics. *Psychological science in the public interest*, *8*(2), 53-96.

(3) Cai, C. J., Reif, E., Hegde, N., Hipp, J., Kim, B., Smilkov, D., ... & Terry, M. (2019, May). Human-centered tools for coping with imperfect algorithms during medical decision-making. In *Proceedings of the 2019 chi conference on human factors in computing systems* (pp. 1-14). https://doi.org/10.1145/3290605.3300234

- In-class activity 10 (30 minutes, led and graded by Kexin)
- Peer Lecture 10: Ke-Rou's topic

Week 16. Dec 10. Group Presentation on Final Paper (TA: Kexin)

- **Within-Group peer evaluation: Due by 2PM (CST) on Dec 10 (Tue)**
- **Final paper: Due by 12PM (CST) Noon on Dec 11 (Wed)**

Accessibility Statement

To obtain accessibility-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@uiuc.edu.

To insure disability-related concerns are properly addressed from the beginning of the semester, I request that students with disabilities who require assistance to participate in this class contact me as soon as possible to discuss your needs and any concerns you may have. The University of Illinois may be able to provide additional resources to assist you in your studies through the office of Disability Resources and Educational Services (DRES). This office can assist you with disability-related academic adjustments and/or auxiliary aids. Please contact them as soon as possible by visiting the office in person: 1207 S. Oak St., Champaign; visiting the website: http://disability.illinois.edu; calling (217) 333-4603 (V/TTY); or via e-mail disability@illinois.edu. NOTE: I do not require a letter from DRES in order to discuss your requested accommodations.

Emergency Planning Statement

Plan for emergency situations in the classroom by reviewing the important material found athttp://police.illinois.edu/emergency-preparedness/. The more prepared you are, the safer you will be.

Land acknowledgement Statement

Adopted by the University of Illinois in 2018

More information: https://chancellor.illinois.edu/land_acknowledgement.html

> *As a land-grant institution, the University of Illinois at Urbana-Champaign has a responsibility to acknowledge the historical context in which it exists. In order to remind ourselves and our community, we will begin this event with the following statement. We are currently on the lands of the Peoria, Kaskaskia, Peankashaw, Wea, Miami,*

Mascoutin, Odawa, Sauk, Mesquaki, Kickapoo, Potawatomi, Ojibwe, and Chickasaw Nations. It is necessary for us to acknowledge these Native Nations and for us to work with them as we move forward as an institution. Over the next 150 years, we will be a vibrant community inclusive of all our differences, with Native peoples at the core of our efforts.

Land Acknowledgement Statement Suggested by Native American House:
I/We would like to begin today by recognizing and acknowledging that we are on the lands of the Peoria, Kaskaskia, Piankashaw, Wea, Miami, Mascoutin, Odawa, Sauk, Mesquaki, Kickapoo, Potawatomi, Ojibwe, and Chickasaw Nations. These lands were the traditional territory of these Native Nations prior to their forced removal; these lands continue to carry the stories of these Nations and their struggles for survival and identity. As a land-grant institution, the University of Illinois has a particular responsibility to acknowledge the peoples of these lands, as well as the histories of dispossession that have allowed for the growth of this institution for the past 150 years. We are also obligated to reflect on and actively address these histories and the role that this university has played in shaping them. This acknowledgement and the centering of Native peoples is a start as we move forward for the next 150 years.

Library Resources
https://www.library.illinois.edu/infosci/

Writing and Bibliographic Style Resources

The campus-wide Writers Workshop provides free consultations. For more information see http://www.cws.illinois.edu/workshop/

The iSchool sponsors a Writing Resources course site
https://courses.ischool.illinois.edu/course/view.php?id=3389
And provides access to writing coaches who offer free consultations here:
https://publish.illinois.edu/ischoolwritingresources/