GEORGIA STATE UNIVERSITY
Robinson College of Business
BA 9360— Managing AI in Business and Society

This Course Syllabus Provides a General Plan for The Course;
Deviations May Be Necessary

INSTRUCTOR:

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MATERIALS

- Articles as listed in the syllabus (and announced in class)
- Recommended books (these are popular books that discuss AI from different perspectives: economic, behavioral, design, computational, policy and legal and are useful to develop an understanding of the diversity of issues in managing AI in business and society).

  - Agrawal, A., Gans, J., & Goldfarb, A. (2018). *Prediction machines: The simple economics of artificial intelligence*. Harvard Business Press.

  - Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. WW Norton & Company.

  - Breazeal, C. L. (2002). *Designing sociable robots*. MIT press.

  - Crawford, K. (2021). *The atlas of AI: Power, politics, and the planetary costs of artificial intelligence*. Yale University Press.

  - Coeckelbergh, M. (2020). *AI ethics*. MIT Press.

  - Hosanagar, K. (2020). *A human's guide to machine intelligence: How algorithms are shaping our lives and how we can stay in control*. Penguin Books.

  - Kearns, M., & Roth, A. (2019). *The ethical algorithm: The science of socially aware algorithm design*. Oxford University Press.

  - Majchrzak, A., & Malhotra, A. (2020). *Unleashing the crowd*. Springer International Publishing.

- McAfee, A., & Brynjolfsson, E. (2017). *Machine, platform, crowd: Harnessing our digital future*. WW Norton & Company.

- O'Neil, C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. Crown.

- Russell, S. (2019). *Human compatible: Artificial intelligence and the problem of control*. Penguin.

COURSE DESCRIPTION

Students develop an understanding of the research landscape and opportunities on how AI can be managed to create value and mitigate risks in business and society. The course employs a multidisciplinary approach that integrates economic, behavioral, design, computational, policy and legal perspectives. Students learn about the future of work, learning algorithms and applications, explainable AI, ethics and fairness in developing AI systems, and human trust in AI systems. They understand how to manage AI payoffs and risks that arise from automating processes and augmenting decision-making, organizational learning, engagement, and collectives. They learn about AI strategies and governance that can be used by firms, and policy and legal implications of AI in different application domains.

COURSE OBJECTIVES

The learning objectives of the course are as follows:

1. **Overarching Objective**
    a. Describe the multidisciplinary research landscape related to managing AI in business and society, and formulate a research proposal on a topic related to managing AI.
2. **Future of Work**
    a. Describe the scope of AI applications, role of AI in automating processes and augmenting human capabilities; risks and unintended consequences arising from interactions of AI with other agents; and projected impacts on industries, labor markets, jobs, skills, and occupations.
3. **AI Technologies and Application Development**
    a. Differentiate between types of AI learning algorithms and their alignment with knowledge and learning requirements of application domains
    b. Differentiate between types of AI fairness, and evaluate the tradeoffs between the types of fairness, and between prediction accuracy and fairness.
    c. Understand the types of explainable AI (XAI) techniques and how they can be used to illuminate how AI systems make predictions, both overall and for specific instances
4. **Human-AI Hybrid Systems**
    a. Design automation, augmentation, and assemblage systems with AI and evaluate their effectiveness
    b. Understand key aspects of human appraisals and behaviors associated with AI: trust, aversion, appreciation, resistance, and control.
    c. Conceive how to design and deploy recommender systems to promote engagement of stakeholders with digital content and services in different application domains
    d. Design and evaluate conversational agents to achieve effective human-AI interaction in communication processes with different social and informational requirements.
    e. Evaluate how AI systems can augment the functioning of teams and large-scale collectives.
5. **AI Strategy**
    a. Assess how human learning and machine learning can be combined for organizational design and learning.
    b. Evaluate the effectiveness of a firm's AI strategy and governance practices in developing AI-based capabilities, promoting innovation, creating value, and mitigating risks.
    c. Explain the distinctive characteristics of AI ecosystems and the mechanisms underlying their evolutionary dynamics.
6. **Ethical, Policy, and Legal Implications of AI**
    a. Understand the ethical dilemmas posed by AI and assess how the design and implementation of AI systems are influenced by the choices of ethical approaches.
    b. Evaluate the policy and legal implications of AI in different business and societal application domains.
    c. Design and evaluate responsible AI governance policies and laws.

GRADING

There are four components to grade assessment:

Component	Criteria	Percentage
PowerPoint "Synthesis" slides (Per Session: For the Assigned Readings)	• **Synthesis quality** • "Meets Expectation": 8.5 out of 10 • Adjustments will be made to the Meets Expectations anchor if performance is (1) exceptional or (2) below expectation.	20%
In-class Participation	• **Quality *and* quantity** of participation • "Meets Expectation": 8.5/10 (Very good performance) • Adjustments will be made to the "Meets Expectation" anchor when performance is (1) exceptional or (2) below expectation. • Quantity of participation does not substitute for quality.	20%
Final Presentation	• **Presentation content *and* style** • "Meets Expectation": 8.5 out of 10 (Very good performance) • Adjustments will be made to the Meets Expectations anchor if performance is (1) exceptional or (2) below expectation.	10%
Research Paper	• Motivation and formulation of the research question • Grounded in relevant literatures, theories, and methods • Novelty, validity, and utility of the work • Quality and professionalism of the writing	50%

Synthesis Slides Grading Rubric

The slides will be graded using the following rubric:

Excellent (10.0 out 10): (1) Key concepts in assigned materials effectively captured, (2) thoughtful integration of concepts across materials achieved, and (3) thought-provoking, well-motivated research question is identified.

Meets expectation (8.5 out of 10): Key concepts in assigned materials well captured—that is, work is well done.

Below expectation (7.5 out of 10): Significant issues or several minor flaws in conceptual understanding and the quality of work—that is, work is while effort has been invested, the work does not meet expectations.

Work not submitted (0 out of 10): Work not submitted when it was due.

Class Preparation AND Submission of "Synthesis" Slides

The course will be run in a seminar format. Students will be called upon to lead the discussion on the topic being covered and all students are expected to participate actively in the discussion. **You are expected to thoroughly read the assigned readings prior to class, prepare a synthesis of the readings followed by a research idea, and submit the PowerPoint slides by noon on the day of the class**.

The slides should include the following:

- **Title side**: Topic, Your Name
- **Synthesize the readings (8 slides):** identify the overarching concepts, themes, and insights across the articles
- **Formulate a research idea related to the readings** (2 slides)**:** specify the research question, explicate the practical and scholarly motivation
- **Total 10 slides (excluding title slide)**

Please (1) consolidate all slides for a given session into one PowerPoint file and (2) use the following file name nomenclature: **Last Name+_First Name+_Month+_Date, for example, Doe_John_January_10.**

The PowerPoint slides are to be submitted through the ***iCollege System*** using the folder for the session.

In-class Participation

A Ph.D. seminar is only effective when participants have carefully read and synthesized the assigned readings prior to class and are prepared to contribute to the class discussion. Individuals will be "cold called" to contribute to the discussion.

Both the quantity of comments (i.e., how many times a student speaks) and, more importantly, the quality of the comments are important. The quality of your comments is assessed using the following criteria:

- Does the comment represent a solid understanding of concepts or just a reiteration of what is stated in an article?
- Does the comment address the question currently on the floor, or is it way off the mark?
- Does the comment demonstrate an ability to listen to and build from what others have said?
- Is the point made concisely, or is it buried in a long, rambling, diatribe?
- Does the comment connect the discussion to an important related area or does it just rephrase what others have said?
- If "cold called," was the individual prepared?
- Does the comment reflect constructive disagreement?
- Does the comment represent regard, respect and acknowledgment of other's contributions?

The following participatory patterns will be viewed negatively:

- Lack of involvement - silence, detachment or disinterest
- Leading the discussion into unrelated topics
- Spending undue amount of time on minor points
- Long, rambling comments
- Being absent or unprepared, or passing on a cold call

Class participation will be graded as 8.5 (meets expectations). Adjustments will be made to the Meets Expectations anchor if performance is (1) exceptional or (2) below expectation.

Research Paper

You will complete a research paper that addresses a research question related to *Managing AI*. Given the interdisciplinary approach of the course, students can develop different types of papers, focusing on different topics, theoretical perspectives, and methods that align with their interests and expertise. Types of papers that you can develop include, but are not limited to, the following:

- Synthesizing the literature on a topic to generate theoretical and empirical insights
- Developing a research proposal for an empirical study that is grounded in the relevant literatures and theoretical perspectives
- Replicating an empirical study
- Developing and evaluating an AI and/or a XAI system in an application domain that is informed by the characteristics of the application domain and the current methods that are used

Proposal for the Research Paper (Stage 1): Due March 1, 2023 at 12 PM

As a first step toward developing your research paper, you will formulate and submit a 3-page proposal, plus references, **by March 1**. The proposal should include the following:

- Problem and research question, with the motivation explicating the value in answering the question
- Relevant scholarly literatures and how the research seeks to add to them
- Planned research approach (theoretical, methodological, empirical)
- What are the key sources of uncertainty in conducting the research
- What will be included in the final deliverable, what will be done later after the course
- References (APA style)

The proposal should be named as follows: **Last Name+_First Name+_"BA 9360 Stage 1 Paper", for example, Doe_John_BA 9360 Stage 1 Paper.**

Submit your proposal through iCollege.

Final Research Paper (Stage 2): Due April 24, 2023 at 12 PM

The final research paper should be a maximum of 15-pages (double-spaced, 12-point font), plus references and appendices.

In addition, please include a brief response (maximum 2 pages, double-spaced, 12-point font) on how the feedback to the research proposal was addressed.

Organize the final consolidated document as follows:

(i) Title page (title of the paper, student name, abstract)
(ii) Response document (max. 2 pages)
(iii) Main paper (max. 15 pages)
(iv) References (follow APA style)
(v) Appendices

The paper should be named as follows: **Last Name+_First Name+_"BA 9360 Final Paper", for example, Doe_John_BA 9360 Final Paper.**

Submit your final paper through iCollege.

Research Presentation

You will have 8 minutes for the presentation, followed by 7 minutes for discussion. Your presentation should cover the following:

- The problem and the question, with the motivation
- How you are positioning your work in scholarly conversations and seek to contribute to them
- Research approach (theoretical, methodological, empirical)
- Findings, contributions, and next steps

Limit to 10 PowerPoint slides (plus the title slide).

The presentation slide deck should be named as follows: **Last Name+_First Name+_"BA 9360 Presentation", for example, Doe_John_BA 9360 Presentation.**

Submit your PowerPoint slide deck through iCollege by 4/24 at 12 PM.

POLICY ON UNAUTHORIZED PUBLIC POSTING AND DISTRIBUTION OF COURSE MATERIALS

All content created in this course, including videos, handouts, etc., may be used only by students enrolled in the course for purposes relating to the course. No materials may be shared with students outside of the class or posted in any external forum. Failure to abide by these limitations constitutes a violation of the Policy on Academic Honesty and will be treated accordingly.

ACADEMIC HONESTY POLICY

As members of the academic community, students are expected to recognize and uphold standards of intellectual and academic integrity. The University Policy on Academic Honesty assumes as a basic and minimum standard of conduct in academic matters that students be honest and that they submit for credit only the products of their own efforts. The ideals of scholarship and the need for fairness require that all dishonest work be rejected as a basis for academic credit. They also require that students refrain from any and all forms of dishonorable or unethical conduct related to their academic work.

The policy represents a core value of the university, and all members of the university community are responsible for abiding by its tenets. Lack of knowledge of this policy is not an acceptable defense to any charge of academic dishonesty. Members of the academic community, students, faculty and staff, are expected to report violations of these standards of academic conduct in accordance with the procedures articulated in this Policy.

Students are required to understand the Academic Conduct Policies and Procedures, including cases that constitute unacceptable behavior.

Click here for details on Academic Conduct Policies and Procedures.

POLICY ON AI SOFTWARE TO WRITE THE PAPER

Use of artificial intelligence software or word mixing software to write your paper or disguise plagiarized work is considered unauthorized assistance in this course. Such use is prohibited and will result in an academic dishonesty charge and a grade of F for the course.

UNIVERSITY COVID-19 RESOURCES AND UPDATES

The University has put together a web site with COVID-19 resources including answers to frequently asked questions at https://covidinfo.gsu.edu. Please refer to this site for information and updates.

SCHEDULE
Adjustments may be made; Additional readings are for future reference

MODULE 1: Future of Work (2 sessions)	
1/10	**AI Characteristics, Benefits, Risks**
	Berente, N., Gu, B., Recker, J., and Santhanam, R. (2021). Managing artificial intelligence. *MIS Quarterly*, 45(3) 1433-1450. Brynjolfsson, E., Rock, D., & Syverson, C. (2019). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In *The economics of artificial intelligence: An agenda* (pp. 23-57). University of Chicago Press. Littman, M.L., Ajunwa, I., Berger, G.,… &Walsh T. (2021). *Gathering strength, gathering storms: The one hundred year study on artificial intelligence (AI100) 2021 study panel report*. Stanford University, Stanford, CA, September 2021. Accessed: September 16, 2021. Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Wellman, M. (2019). Machine behaviour. *Nature*, *568*(7753), 477-486. Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of Management Review*, 46(1), 192-210.
1/17	**AI Impacts on Labor Markets, Occupations and Jobs, Skills**
	Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In *The economics of artificial intelligence: An agenda* (pp. 197-236). University of Chicago Press. Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives*, 29(3), 3–30. Brynjolfsson, E., & Mitchell, T. (2017). What can machine learning do? Workforce implications. *Science*, *358*(6370), 1530-1534. Brynjolfsson, E., Rock, D., & Syverson, C. (2019). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In *The economics of artificial intelligence: An agenda* (pp. 23-57). University of Chicago Press Felten, E., Raj, M., & Seamans, R. (2021). Occupational, industry, and geographic exposure to artificial intelligence: A novel dataset and its potential uses. *Strategic Management Journal*, *42*(12), 2195-2217. Frank, M., Autor, D., Bessen, J., Brynjolfsson, E., Cebrian, M., Deming, D., ... & Rahwayn, Y. (2019). Toward understanding the impact of artificial intelligence on labor. *Proceedings of the National Academy of Sciences*, 116(14), 6531–6539.

Additional Readings

Acemoglu, D., Autor, D., Hazell, J., & Restrepo, P. (2022). Artificial intelligence and jobs: Evidence from online vacancies. *Journal of Labor Economics*, *40*(S1), S293-S340.

Autor, D. H., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration. *The Quarterly Journal of Economics*, *118*(4), 1279-1333.

Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., ... & Trench, M. (2017). *Artificial intelligence–The next digital frontier*. McKinsey Global Institute, 47, 3–6. Acccessed September 29, 2021

Colangelo, M. (2020). Mass adoption of AI in financial services expected within two years. *Forbes*. Accessed: September 29, 2021.

Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, *21*(2), 155-172.

Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, *49*(1), 30-50.

Mirbabaie, M., Stieglitz, S., & Frick, N. R. (2021). Artificial intelligence in disease diagnostics: A critical review and classification on the current state of research guiding future direction. *Health and Technology*, 1-39.

	MODULE 2: AI Technologies and Development (3 sessions)
1/24	**Deep Learning, AI Development Methods**
	Alzubaidi, Laith, Jinglan Zhang, Amjad J. Humaidi, Ayad Al-Dujaili, Ye Duan, Omran Al-Shamma, José Santamaría, Mohammed A. Fadhel, Muthana Al-Amidie, and Laith Farhan. Review of deep learning: Concepts, CNN architectures, challenges, applications, future directions. *Journal of Big Data*, no. 1 (2021): 1-74. LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, *521*(7553), 436-444. Lebovitz, S., Levina, N., & Lifshitz-Assaf, H. (2021). Is AI ground truth really true? The dangers of training and evaluating AI tools based on experts' know-what. *MIS Quarterly*, *45*(3), 1501–1525. Topol, E. J. (2019). High-performance medicine: The convergence of human and artificial intelligence. *Nature Medicine*, 25(1), 44-56. **Additional Readings** Baracaldo, N., Chen, B., Ludwig, H., Safavi, A., & Zhang, R. (2018, July). Detecting poisoning attacks on machine learning in IoT environments. *In 2018 IEEE International Congress on Internet of Things* (pp. 57–64). Davenport, T., and Mittal, N., How Generative AI is Changing Creative Work, *Harvard Business Review*, November 2022. Sequoia: Generative AI: A Creative New World, Accessed January 5, 2023. Goodfellow, I. J., Shlens, J., & Szegedy, C. (2015). Explaining and harnessing adversarial examples. *arXiv preprint arXiv:1412.6572*. Lakkaraju, H., Kleinberg, J., Leskovec, J., Ludwig, J., & Mullainathan, S. (2017). The selective labels problem: Evaluating algorithmic predictions in the presence of unobservables. In *Proceedings of the 23rd ACM SIGKDD international conference on knowledge discovery and data mining* (pp. 275–284). Pouyanfar, S., Sadiq, S., Yan, Y., Tian, H., Tao, Y., Reyes, M. P., Shyu, M-L., Chen, S-C. & Iyengar, S. S. (2018). A survey on deep learning: Algorithms, techniques, and applications. *ACM Computing Surveys (CSUR)*, *51*(5), 1-36. Shrestha, A., & Mahmood, A. (2019). Review of deep learning algorithms and architectures. *IEEE Access*, 7, 53040-53065.

	Sengupta, S., Basak, S., Saikia, P., Paul, S., Tsalavoutis, V., Atiah, F., Ravi, V., & Peters, A. (2020). A review of deep learning with special emphasis on architectures, applications and recent trends. *Knowledge-Based Systems*, *194*, 105596. Tenenbaum, J. B., Kemp, C., Griffiths, T. L., & Goodman, N. D. (2011). How to grow a mind: Statistics, structure, and abstraction. *Science*, *331*(6022), 1279-1285.
1/31	**AI Accuracy and Fairness**
	Corbett-Davies, S., & Goel, S. (2018). The measure and mismeasure of fairness: A critical review of fair machine learning. http://arxiv.org/abs/1808.00023. Cowgill, B., & Tucker, C. E. (2020). Economics, fairness and algorithmic bias. *Journal of Economic Perspectives*. Fu, R., Huang, Y., & Singh, P. V. (2020). Artificial intelligence and algorithmic bias: Source, detection, mitigation, and implications. In *Pushing the Boundaries: Frontiers in Impactful OR/OM Research* (pp. 39-63). INFORMS. Teodorescu, M. H. M., Morse, L., Awwad, Y., & Kane, G. C. (2021). Failures of fairness in automation require a deeper understanding of human–ML augmentation. *MIS Quarterly*, *45*(3), 1–18. **Additional Readings** Chouldechova, B. Y. A., & Roth, A. (2020). A snapshot of the frontiers of fairness in machine learning. *Communications of the ACM*, *63*, 82–89. Dastin, J. (2018). *Amazon scraps secret AI recruiting tool that showed bias against women. Reuters*. Accessed: September 29, 2021. Lambrecht, A., & Tucker, C. (2019). Algorithmic bias? An empirical study of apparent gender-based discrimination in the display of STEM career ads. *Management Science*, *65*(7), 2966–2981. Osoba, O. A., & Welser IV, W. (2017). *An intelligence in our image: The risks of bias and errors in artificial intelligence*. Rand Corporation. Rai, A., Tian, J., & Xue, L. (2021) AI fairness in organizational decisions: Conceptualization, measurement, and attainment from a justice theory lens. Working paper.

2/7	**Explainable AI**

Fernandez, C., Provost, F., & Han, X. (2022). Explaining data-driven decisions made by AI systems: the counterfactual approach. *MIS Quarterly*, 1635-1660.

Molnar, C. (2022). Chapter 3. Interpretability. In *Interpretable machine learning.* https://christophm.github.io/interpretable-ml-book/interpretability.html, accessed: January 3, 2023.

Molnar, C. (2022). Chapter 8. Global Model-Agnostic Methods. In *Interpretable machine learning.* https://christophm.github.io/interpretable-ml-book/counterfactual.html, accessed: January 3, 2023.

Molnar, C. (2022). Chapter 9. Local Model-Agnostic Methods. In *Interpretable machine learning.* https://christophm.github.io/interpretable-ml-book/counterfactual.html, accessed: January 3, 2023.

Rai, A. (2020). Explainable AI: from black box to glass box. *Journal of the Academy of Marketing Science*, 48(1), 137–141.

Ribeiro, M. T., Singh, S., & Guestrin, C. (2016, August). "Why should I trust you?" Explaining the predictions of any classifier. In *Proceedings of the 22nd ACM SIGKDD international conference on knowledge discovery and data mining* (pp. 1135-1144).

Additional Readings

Doshi-Velez, F., & Kim, B. (2017). Towards a rigorous science of interpretable machine learning. *arXiv preprint arXiv:1702.08608*.

Guidotti, R., Monreale, A., Ruggieri, S., Turini, F., Giannotti, F., & Pedreschi, D. (2018). A survey of methods for explaining black box models. *ACM Computing Surveys*, 51(5).

Goodman, B., & Flaxman, S. (2017). European Union regulations on algorithmic decision-making and a "right to explanation". *AI magazine*, *38*(3), 50-57.

Lundberg, S. M., & Lee, S. (2017). A unified approach to interpreting model predictions. In *Proceedings of the 31st international conference on neural information processing systems* (pp. 4768-4777).

Martens, D., & Provost, F. (2014). Explaining data-driven document classifications. *MIS Quarterly*, 38(1), 73–100.

Mateusz Garbacz, Model Explainability - How to choose the right tool?

	Satell, G., and Sutton, J. (2019). We Need AI That Is Explainable, Auditable, and Transparent. *Harvard Business Review*. Accessed September 29, 2021. Verma, S., Dickerson, J., & Hines, K. (2020). *Counterfactual explanations for machine learning: A review*. Available at https://arxiv.org/abs/2010.10596.

	MODULE 3: Human-AI Hybrid Systems (4 sessions)
2/14	**Automation, Augmentation, and Assemblages**

Baird, A., & Maruping, L. M. (2021). The next generation of research on IS use: A theoretical framework of delegation to and from agentic IS artifacts. *MIS Quarterly*, *45*(1).

Fügener, A., Grahl, J., Gupta, A., & Ketter, W. (2021). Will humans-in-the-loop become borgs? Merits and pitfalls of working with AI. *MIS Quarterly*, 45(3).

Fügener, A., Grahl, J., Gupta, A., & Ketter, W. (2022). Cognitive challenges in human–artificial intelligence collaboration: Investigating the path toward productive delegation. *Information Systems Research*, *33*(2), 678-696.

Rai, A., Constantinides, P., & Sarker, S. (2019). Editor's comments: Next-generation digital platforms: toward human–AI hybrids. *MIS Quarterly*, *43*(1), iii-x.

Tschang, F. T., & Almirall, E. (2021). Artificial intelligence as augmenting automation: Implications for employment. *Academy of Management Perspectives*, *35*(4), 642-659.

Additional Readings

Brin, D., AI, human augmentation, and the future of intelligence on earth, Google Talks

Brynjolfsson, E. (2022). The Turing Trap: The promise & peril of human-like artificial intelligence. *Daedalus*, *151*(2), 272-287.

Brynjolfsson, E., Hui, X., & Liu, M. (2019). Does machine translation affect international trade? Evidence from a large digital platform. *Management Science*, *65*(12), 5449–5460.

Halford, G.S., Baker, R., McCredden, J.E. & Bain, J.D. (2005). How many variables can humans process?. *Psychological Science*, *16*(1), 70-76.

Kleinberg, J., Lakkaraju, H., Leskovec, J., Ludwig, J., & Mullainathan, S. (2018). Human decisions and machine predictions. *The Quarterly Journal of Economics*, 133(1), 237-293.

van der Aalst, W. M., Bichler, M., & Heinzl, A. (2018). Robotic process automation. *Business & Information Systems Engineering*, 60(4), 269-272.

Zhang, Z., Yoo, Y., Lyytinen, K., & Lindberg, A. (2021). The unknowability of autonomous tools and the liminal experience of their use. *Information Systems Research*.

2/21	**Human Appraisal of AI**
	Castelo, N., Bos, M. W., & Lehmann, D. R. (2019). Task-dependent algorithm aversion. *Journal of Marketing Research*, *56*(5), 809-825. Dietvorst, B. J., Simmons, J. P., & Massey, C. (2018). Overcoming algorithm aversion: People will use imperfect algorithms if they can (even slightly) modify them. *Management Science*, 64(3), 1155–1170. Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*, 14(2), 627–660. Logg, J. M., Minson, J. A., Moore, D. A., & States, U. (2019). Algorithm appreciation: People prefer algorithmic to human judgment. *Organizational Behavior and Human Decision Processes*, 151, 90–103. Longoni, C., Bonezzi, A., & Morewedge, C. K. (2019). Resistance to medical artificial intelligence, *Journal of Consumer Research*, 46(4), 629–650. **Additional Readings** Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*, 144(1), 114–126. (reliance on algorithms in focasting the success of applicants) Leung, E., Paolacci, G., & Puntoni, S. (2018). Man versus machine: Resisting automation in identity-based consumer behavior. *Journal of Marketing Research*, 55(6), 818–831.
2/28	**Human Engagement with AI**
	Chandra, S., Shirish, A., & Srivastava, S. C. (2022). To Be or Not to Be… Human? Theorizing the Role of Human-Like Competencies in Conversational Artificial Intelligence Agents. *Journal of Management Information Systems*, *39*(4), 969-1005. Diederich, S., Brendel, A. B., Morana, S., & Kolbe, L. (2022). On the design of and interaction with conversational agents: An organizing and assessing review of human-computer interaction research. *Journal of the Association for Information Systems*, Forthcoming. Luo, X., Tong, S., Fang, Z., & Qu, Z. (2019). Frontiers: Machines vs. humans: The impact of artificial intelligence chatbot disclosure on customer purchases. *Marketing Science*, *38*(6), 937–947.

	Miao, F., Kozlenkova, I. V., Wang, H., Xie, T., & Palmatier, R. W. (2021). An emerging theory of avatar marketing. *Journal of Marketing*. **Additional Readings** Breazeal, C. (2004). Social interactions in HRI: The robot view. *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews)*, 34(2), 181-186. Breazeal, C: IROS 202, Plenary Talk, Social Robots Guo, Y., Liu, D., Yin, X., & Xu, S. X. (2021). "She is not just a computer": Gender role of AI chatbots in debt collection. In *International Conference on Information Systems*, 0–17. Luo, X., Qin, M. S., Fang, Z., & Qu, Z. (2021). Artificial intelligence coaches for sales agents: caveats and solutions. *Journal of Marketing*, *85*(2), 14–32. Qiu, L., & Benbasat, I. (2009). Evaluating anthropomorphic product recommendation agents: A social relationship perspective to designing information systems. *Journal of Management Information Systems*, *25*(4), 145-182. Mende, M., Scott, M. L., van Doorn, J., Grewal, D., & Shanks, I. (2019). Service robots rising: how humanoid robots influence service experiences and elicit compensatory consumer responses. *Journal of Marketing Research*, *56*(4), 535–556. Shum, H. yeung, He, X. dong, & Li, D. (2018). From Eliza to XiaoIce: Challenges and opportunities with social chatbots. *Frontiers of Information Technology and Electronic Engineering*, *19*(1), 10–26. Wang, L., Huang, N., Hong, Y., Liu, L., Guo, X., & Chen, G. (2020). Effects of voice-based AI in customer service: Evidence from a natural experiment. In *International Conference on Information Systems*. Wang, W., Xu, J., & Wang, M. (2018). Effects of recommendation neutrality and sponsorship disclosure on trust vs. distrust in online recommendation agents: Moderating role of explanations for organic recommendations. *Management Science*, *64*(11), 5198–5219.
3/1	**Proposal for Research Paper Due**
3/7	**Human-AI Collectives**
	Brinkmann, Levin, et al. (2022). Hybrid social learning in human-algorithm cultural transmission. *Philosophical Transactions of the Royal Society* A 380.2227 (2022): 20200426.

	Sergeeva, A. V., Faraj, S., & Huysman, M. (2020). Losing touch: An embodiment perspective on coordination in robotic surgery. *Organization Science*, *31*(5), 1248-1271. Teodoridis, F. (2017). Understanding team knowledge production: The interrelated roles of technology and expertise. *Management Science*, 64(8), 3625–3648. Tsvetkova, M., García-Gavilanes, R., Floridi, L., & Yasseri, T. (2017). Even Good Bots Fight: The Case of Wikipedia. *PloS one*, *12*(2), e0171774. You, S., & Robert, L. P. (2018). Emotional attachment, performance, and viability in teams collaborating with embodied physical action (EPA) robots. *Journal of the Association for Information Systems*, *19*(5), 377–407.
3/14	**Spring Break**

	MODULE 4: AI Strategy (3 sessions)
3/21	**Organizational Design and Learning**
	Balasubramanian, N., Ye, Y., & Xu, M. (2022). Substituting human decision-making with machine learning: Implications for organizational learning. *Academy of Management Review*, 442-465. Murray, A., Rhymer, J., & Sirmon, D. G. (2021). Humans and technology: Forms of conjoined agency in organizations. *Academy of Management Review*, 46(3), 552-571. Choudhury, P., Starr, E., & Agarwal, R. (2020). Machine learning and human capital complementarities: Experimental evidence on bias mitigation. *Strategic Management Journal*, 41(8): 1381-1411. Sturm, T., Gerlach, J. P., Pumplun, L., Mesbah, N., Peters, F., Tauchert, C., Nan, N., & Buxmann, P. (2021). Coordinating human and machine learning for effective organizational learning. *MIS Quarterly*, *45*(3).
3/28	**AI Governance and Competitive Advantage**
	Krakowski, S., Luger, J., & Raisch, S. (2022). Artificial intelligence and the changing sources of competitive advantage. *Strategic Management Journal.* Li, J., Li, M., Wang, X., & Thatcher, J. B. (2021). Strategic directions for AI: The role of CIOs and boards of directors. *MIS Quarterly*, *45*(3), 1–2. Miric, M., Jia, N., & Huang, K. G. (2022). Using supervised machine learning for large-scale classification in management research: The case for identifying artificial intelligence patents. *Strategic Management Journal*. Harrison, J. S., Josefy, M. A., Kalm, M., & Krause, R. (2022). Using supervised machine learning to scale human-coded data: A method and dataset in the board leadership context. *Strategic Management Journal*.
4/4	**AI Ecosystems and Network Effects**
	Gregory, R. W., Henfridsson, O., Kaganer, E., & Kyriakou, H. (2021). The role of artificial intelligence and data network effects for creating user value. *Academy of Management Review*, 46(3), 534-551. *Academy of Management Review*, *46*(3), 534–551. Jacobides, M. G., Brusoni, S., & Candelon, F. (2021). The evolutionary dynamics of the artificial intelligence ecosystem. *Strategy Science*, 6(4), 412-435. Kittur, A., Yu, L., Hope, T., Chan, J., Lifshitz-Assaf, H., Gilon, K., Ng, F., Kraut, R., & Shahaf, D. (2019). Scaling up analogical innovation with crowds and AI. *Proceedings of the National Academy of Sciences*, *116*(6), 1870-1877.

	Lou, B., & Wu, L. (2021). AI on drugs: Can artificial intelligence accelerate drug development? Evidence from a large-scale examination of bio-pharma firms. *MIS Quarterly*, *45*(3), 1–32.
	Additional Readings Abadi, H. H. N., & Pecht, M. (2020). Artificial intelligence trends based on the patents granted by the United States patent and trademark office. *IEEE Access*, *8*, 81633-81643. Cockburn, I. M., Henderson, R., & Stern, S. (2018). The impact of artificial intelligence on innovation: An exploratory analysis. In *The economics of artificial intelligence: An agenda* (pp. 115-146). University of Chicago Press. Fleming, N. (2018). How artificial intelligence is changing drug discovery. *Nature*, 557(7707), S55–S57. Giczy, A. V., Pairolero, N. A., & Toole, A. A. (2022). Identifying artificial intelligence (AI) invention: A novel AI patent dataset. *The Journal of Technology Transfer*, *47*(2), 476-505. Shrestha, Y. R., Ben-Menahem, S. M., & Von Krogh, G. (2019). Organizational decision-making structures in the age of artificial intelligence. *California Management Review*, *61*(4), 66-83. Tarafdar, M., Beath, C. M., & Ross, J. W. (2019). Using AI to enhance business operations. *MIT Sloan Management Review*, 60(4), 37–44. Tong, S., Jia, N., Luo, X., & Fang, Z. (2021). The Janus face of artificial intelligence feedback: Deployment versus disclosure effects on employee performance. *Strategic Management Journal*, *42*(9), 1600–1631. Wu, L., Lou, B., & Hitt, L. (2019). Data analytics supports decentralized innovation. *Management Science*, *65*(10), 4863–4877.

	MODULE 5: Ethical, Policy, and Legal Implications (2 sessions)
4/11	**AI Ethics**

Binns, R. (2018). Fairness in machine learning: Lessons from political philosophy. *Conference on Fairness, Accountability and Transparency*, 149–159. http://arxiv.org/abs/1712.03586

Bench-Capon, T. J. M. (2020). Ethical approaches and autonomous systems. *Artificial Intelligence*, *281*, 103239.

Gal, U., Jensen, T. B., & Stein, M. K. (2020). Breaking the vicious cycle of algorithmic management: A virtue ethics approach to people analytics. *Information and Organization*, *30*(2), 100301.

Kane, G. C., Young, A. G., Majchrzak, A., & Ransbotham, S. (2021). Avoiding an oppressive future of machine learning: A design theory for emancipatory assistants. *MIS Quarterly, 45(1), 371-396.*

Additional Readings

Burton, E., Goldsmith, J., Koenig, S., Kuipers, B., Mattei, N., & Walsh, T. (2017). Ethical considerations in artificial intelligence courses. *AI magazine*, *38*(2), 22-34.

Govindarajulu, N. S., Bringsjord, S., Ghosh, R., & Sarathy, V. (2019). Toward the engineering of virtuous machines. In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society* (pp. 29-35).

Hermann, E. (2022). Leveraging artificial intelligence in marketing for social good—An ethical perspective. *Journal of Business Ethics*, *179*(1), 43-61.

McLennan, S., Fiske, A., Celi, L. A., Müller, R., Harder, J., Ritt, K., Haddadin, S. & Buyx, A. (2020). An embedded ethics approach for AI development. *Nature Machine Intelligence*, *2*(9), 488-490.

Milano, S., Taddeo, M., and Floridi, L. (2020). Recommender systems and their ethical challenges. *AI & SOCIETY*, *35*(4), 957-967.

Leidner, D. E., & Tona, O. (2021). The CARE theory of dignity amid personal data digitalization. *MIS Quarterly*, *45*(1), 343-370.

Polonski, V. (2018). AI is convicting criminals and determining jail time, but is it fair?. *World Economic Forum*.

Robinson, D., & Koepke, L. (2016). Stuck in a pattern: Early evidence on 'predictive policing' and civil rights. Upturn.

	Sweeney, L. (2013). Discrimination in online ad delivery. *Communications of the ACM, 56*(5), 44-54. Žliobaitė, I. (2017). Measuring discrimination in algorithmic decision making. *Data Mining and Knowledge Discovery,* 31(4), 1060-1089.
4/18	**AI Policy and Legal Implications**
	Calo, R. (2017). Artificial intelligence policy: A primer and roadmap. *UC Davis Law Review*, 51, 399. Abu-Elyounes, D. (2020). Contextual fairness: A legal and policy analysis of algorithmic fairness. *Journal of Law, Technology & Policy*, *20*(1). Kim, P. T. (2016). Data-driven discrimination at work. *William & Mary Law Review*, *58*(3), 857. Kim, P. T. (2017). Auditing algorithms for discrimination. *University of Pennsylvania Law Review*, 166, 189. Maas, M. M. (2021). Aligning AI regulation to sociotechnical change. *Oxford Handbook on AI Governance (Oxford University Press, forthcoming). Section*, *3*. Richardson, R., Schultz, J. M., & Crawford, K. (2019). Dirty data, bad predictions: How civil rights violations impact police data, predictive policing systems, and justice. *New York University Law Review*, *94*, 15. **Additional Readings** Clarke, Y. D. (2019). H.R.2231 - 116th Congress (2019-2020). Algorithmic Accountability Act of 2019. Executive Office of the President. (2016). Preparing for the future of artificial intelligence. Washington, D.C.: Executive Office of the President. Houser, K. A. (2019). Can AI solve the diversity problem in the tech industry: Mitigating noise and bias in employment decision-making. *Stanford Technology Law Review*, *22*, 290. Taeihagh, A. (2021). Governance of artificial intelligence. *Policy and Society*, 1-21. Theodorou, A., & Dignum, V. (2020). Towards ethical and socio-legal governance in AI. *Nature Machine Intelligence*, *2*(1), 10-12.
	Final Research Papers and Presentation Slides Due on 4/24 at noon **Research Presentations (2 sessions: 4/25; one other day that week TBD)**