AI in Our Lives: The Behavioral Science of Autonomous Technology

MKTG2790001: Syllabus
Spring 2024

INSTRUCTOR

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OFFICE HOURS

Mondays: 10:00 – 11:00, open door.
Office: JMHH 760

FACULTY LUNCHES

Optional lunches will be scheduled during the term. The lunches will take place on Mondays. Interested students will be able to sign up at the beginning of the course.

COURSE OUTLINE

"AI in Our Lives" takes a behavioral science perspective on the topic of artificial intelligence (AI). It reviews new behavioral and managerial insights to help companies thrive in the dawning age of intelligent machines. This is a non-technical course. No coding or data science skills are required. The course bridges two perspectives. On one side, we'll acknowledge the tremendous value that AI can provide to firms and individuals. In many ways, automation defines progress. On the other side, we'll examine emerging risks in an AI-driven economy.

The ultimate goal of the course is to help ensure that the amazing technologies currently being developed bring about positive change. The course will strive to achieve that by tackling the following UN Sustainable Development Goals: SDG9 (Innovation), SDG8 (Economic growth), SDG3 (Health and wellbeing), SDG10 (Reduced inequality), and SDG12 (Responsible consumption and production).

The course complements the activities of AI at Wharton: https://ai.wharton.upenn.edu/.

COURSE STRUCTURE AND OBJECTIVES

The course will be structured to reflect three separate but interdependent levels of analysis. Across the sections of the course, we will explore micro (i.e., individual), meso (i.e., organizational), and macro (i.e., societal) issues related to human behavior and AI. The three levels of analysis work like a ladder, each building on the preceding level of analysis.

After an introduction to the course and to the field of AI, the first part of the course takes an individual perspective to examine the psychology of AI and of human replacement. We will explore topics like perceptions of AI, adoption barriers, and consumer AI experiences.

The second part explores how human and artificial intelligence can be combined in business functions, processes, and workflows. The key element of this part is a series of frameworks about the complementarities between human and artificial intelligence. We will also discuss the role of AI in innovation, data-driven decision making, and value propositions.

The final part of the course builds on the insights from the preceding two sections to consider societal issues, including AI ethics. As a way of exploring the incentives of different stakeholders for AI adoption, we will consider a system perspective on the healthcare industry. We end by looking at the future of both carbon- and silicon-based intelligence to speculate on what's coming next.

The course uses a blend of pedagogical approaches, including interactive lectures, workshops, guest lectures, and case discussions. In addition to its many substantive insights, the course offers moments of reflection to help you understand how technology is changing our lives, and how each of us can help effect positive change in the world. The main theoretical lens will be offered by psychology, but we will also examine ideas from economics, management, history, statistics, computer science, art, sociology, and philosophy. The application contexts will be focused on marketing. While also relevant to other disciplines (e.g., entrepreneurship, operations, IT, innovation, or general management), this course is therefore especially suitable for students interested in product management, brand management, service design, and customer experience management.

The table below lists the course's learning areas and objectives:

Learning areas	Objectives
I. Content- related	O1: Students will understand the value-creating potential of AI
	O2: Students will understand the psychological processes that govern individuals' reactions to automation
II. Skills-related	O3: Students will acquire effective tools for combining human and machine intelligence in decision making
	O4: Students will learn how to design positive consumer AI experiences
III. Attitude-related	O5: Students will learn to reflect on the way AI is changing their own lives, as well as business practice

CLASSROOM EXPECTATIONS

- Unless instructed otherwise, please keep digital devices turned off during the sessions.
- Name tents displayed in every class.
- Class starts and ends on time. Arriving late is disrespectful and distracting.
- Sit according to the seating chart. (This will be created after the first couple of sessions.)
- Late entry or reentry only under exceptional circumstances.

When I created this course, it was (to the best of my knowledge) the first business school course on the behavioral science of AI offered anywhere, and the field is still in flux. The behavioral science of AI is a nascent multidisciplinary field. New research findings are continuously being generated in academic and private sector research labs around the world. In this context, it is important to approach the topic with intellectual humility. I will share what I know but I will not pretend to have all the answers—nobody does. To a larger extent than is typical in university courses, we will be learning together. I expect you to be engaged, curious, probing, and ready to explore wild ideas, even uncomfortable ones.

READINGS

The course requires a moderate amount of reading (see reference list in session outline below). The readings will comprise of cases and articles from academic and managerial journals. The readings are available freely or via library services.

The readings are not substitutes for the class content. This means that you cannot get the content of the class from the readings and that you cannot just attend a class to know the content of the readings. The purpose of the readings is to (1) complement the content discussed in class; (2) provide background to the sessions; and (3) expose you to additional relevant ideas that it is not possible to cover in class due to time limitations.

I will post on Canvas all the slides used in the sessions (except those from guest speakers). The slides will be posted after each session. Additional relevant readings may also be posted after the sessions.

GENERATIVE AI

Generative AI tools are allowed in this course without restriction. However, keep in mind the following:

- Generative AI models are not always producing output that is accurate and/or appropriate. For example, Large Language Models can make up facts and fake citations. You will be responsible for any inaccurate, biased, offensive, or otherwise unethical content you submit.
- If you use generative AI, its contribution must be acknowledged in the assignment; you will be penalized for using an AI program without acknowledgement.
- The university's policy on plagiarism still applies to any uncited or improperly cited use of work by other human beings, or submission of work by other human beings as your own.

SUMMARY OF ASSESSMENT

Assessment will entail a mix of individual (60%) and group (40%) assignments. The course will feature the following grade components:

- A1 In-class participation (10%)
- A2 Individual assignment: Consumer AI experiences (20%)
- A3 In-class individual assessment (30%)
- Main group project: Industry Audit
    - A4 Report (25%)
    - A5 Presentation (15%)

Note the following:

- Each assignment will be graded on a scale from 0 to 10. The overall course score will be computed using the weights above. The final grade will be computed from the overall score by applying customary cut-off points. More information about each assignment is provided below.
- For the group assignments, you will work in groups of 5 or 6. You will be free to form the groups. If you struggle to find teammates, reach out to the course's TA who will help you find a team. To ensure fairness, all students will be asked to grade the relative contribution of their team members at the end of the course.

SUMMARY OF SESSIONS

All classes: 3:30 – 5:00 PM // Room: SHDH 107

Date	Topic	Readings	Assignments
Overture			
Tue 1/16	**Welcome** Introduction to the course. Why a behavioral science course on AI?	This course syllabus	
Thu 1/18	**LLMs and Business**	Korst, Puntoni (2023), "5 Ways Marketing and Sales Leaders Can Embrace GenAI," *Harvard Business Review*, https://hbr.org/2023/11/5-ways-marketing-and-sales-leaders-can-embrace-genai Mitchell (2023), "How do we know how smart AI systems are?", *Science*, https://www.science.org/doi/10.1126/science.adj5957	
Tue 1/23	**Glossary and basics** Introduction to AI techniques.		
Me, Myself, and AI (Micro Perspectives)			
Thu 1/25	**Consumer AI experiences** A framework to understand the consumer experience of AI.	Puntoni et al. (2021), "Consumers and Artificial Intelligence: An Experiential Perspective," *Journal of Marketing*, https://journals.sagepub.com/doi/abs/10.1177/0022242920953847	Briefing for A2
Tue 1/30	**Replace and enhance, Part 1** A research program on the psychology of human replacement	Williams, Puntoni (2023), "How AI Affects Our Sense of Self," *Harvard Business Review*, https://hbr.org/2023/09/how-ai-affects-our-sense-of-self	
Thu 2/1	**Replace and enhance, Part 2** Guest lecture by Jake Hofman, Dan Goldstein, and David Rothschild, Microsoft Research	Hofman, Goldstein, Rothschild (2023), "A Sports Analogy for Understanding Different Ways to Use AI," *Harvard Business Review*, https://hbr.org/2023/12/a-sports-analogy-for-understanding-different-ways-to-use-ai	
Tue 2/6	**Synthetic consumers** Using LLMs for market insights	Hutson (2023), "Guinea Pigbots" *Science*, https://www.science.org/doi/pdf/10.1126/science.adj6791	

Thu 2/8	**AI in Our Social World, Part 1** Research on algorithm aversion and relational AI	De Freitas et al. (2023), "Chatbots and Mental Health: Insights into the Safety of Generative AI," *Journal of Consumer Psychology*, https://doi.org/10.1002/jcpy.1393.	
Tue 2/13	**AI in Our Social World, Part 2** Guest lecture by Ceci Dones, Founder, Founder, 3 Standard Deviations (and formerly Head of Data Science at Moët Hennesy)		On 2/14: Submit A2
Integrating AI in Business Processes (Meso Perspectives)			
Thu 2/15	**There is no Y in AI** A framework for understanding intelligence, human and artificial.		
Tue 2/20	**Integration Archetypes** How can we integrate AI into business processes?	De Cremer, Kasparov (2021), "AI Should Augment Human Intelligence, Not Replace It," *Harvard Business Review*, https://hbr.org/2021/03/ai-should-augment-human-intelligence-not-replace-it	
Thu 2/22	**The TomTom case** Managing brands in the age of AI disruption.	The TomTom case (see Canvas)	
Tue 3/12	**Putting Machines to Work** A framework to help us think about how to leverage the strengths of humans and machines.	Agrawal et al. (2016), "The Simple Economics of Machine Intelligence," *Harvard Business Review*, https://hbr.org/2016/11/the-simple-economics-of-machine-intelligence	
Thu 3/14	**Decision-driven Analytics** A decision-oriented framework for making decisions with data and algorithms.	De Langhe, Puntoni (2021), "Leading With Decision-Driven Data Analytics," *MIT Sloan Management Review*, https://sloanreview.mit.edu/article/leading-with-decision-driven-data-analytics/	
Business & Societal Impact (Macro Perspectives)			
Tue 3/19	**The Big Picture** Deploying General Purpose Technologies. Impact on jobs. What problems can AI help us solve?		
Thu 3/21	**AI Ethics and AI Bias** Ethical issues emerging as an interaction between human	Awad et al. (2018), "The Moral Machine Experiment," *Nature*, https://www.nature.com/articles/s41586-	

	and machine behavior.	018-0637-6.	
Tue 3/26	**The Proteus Case** Discuss a new case on AI and health.	The Proteus case (see Canvas)	
Thu 3/28	**The Proteus Case, Redux** You'll meet the founders of Proteus: Andrew Thompson, CEO, and George Savage, Head of R&D. They will draw light on technology's potential to improve society—and our failure to often do so.		
Tue 4/2	**In-class Assessment** We will look back at what we've learned in the course.		A3 will be taken in class
Thu 4/4	**Human-Centered AI Design** Guest lecture by Sohit Karol, UX Manager at Google, and Alex Norton, Product Design at DeepMind		On 4/8: Submit A4
Tue 4/9	**Industry Audit Presentations**		Agenda TBA
Thu 4/11	**Industry Audit Presentations**		Agenda TBA
Tue 4/16	**Industry Audit Presentations**		Agenda TBA
Thu 4/18	**Conclusions** Reflections on the time we live in, and goodbyes.	Bostrom (2019), "The Vulnerable World Hypothesis," *Global Policy*, https://www.nickbostrom.com/papers/vulnerable.pdf [To be skimmed] Morris (2010), "Social Development". http://pzacad.pitzer.edu/~lyamane/ianmorris.pdf [To be skimmed]	

ASSIGNMENTS AND ASSESSMENT

A1: Class participation (10%)

A poorly prepared class invariably leads to an unrewarding experience for all involved. Thus, the long-term benefits from this course will be proportional to the extent that you make this course *your* project. This means that you are expected to come to class prepared and to actively participate.

Specifically, you are expected to contribute to an informed exchange about the topic of the class and to have well-developed points of view about the cases and other reading materials. Your participation will be judged based on four criteria (in decreasing order of importance): (a) your ability to facilitate a constructive and insightful discussion during the semester, (b) the quality of your comments, (c) regular contributions to the conversation, (d) your attentiveness in class. Obviously, to perform on any of these dimensions it is necessary to attend the sessions.

A2: Consumer AI experiences, Individual assignment (20%)

In this individual report, for each of the four consumer AI experiences discussed in the course you will consider an AI-driven consumer solution of your choice and analyze how to best design the consumer experience to maximize benefits and minimize downsides for users. The experiences are data capture, classification, delegation, and social, see Puntoni et al. (2021) in the session outline above. More information about this assignment will be provided on January 25.

After a cover page with your name and student id, you should analyze one case for each of the four AI experiences listed above (750 words max per experience). For each, make sure to include the link to the company's website (or to some other source of information). You are allowed to explore different products/services for each experience, or leverage the same example for multiple experiences. In the latter case, make sure to carefully separate the discussion of the various experiences.

You will complete the assignment (almost) entirely using a generative AI tool of your choice. Options include ChatGPT, Claude, Bing, Bard, Pi, and more. Your task will be to prompt a Large Language Model (LLM) and refine the output via additional prompts. You are allowed to edit/finetune the text, but only at the end of the process. The deliverable is a Word document. When finetuning the text, you must use track changes in the Word file to show me how you edited the AI-generated text. You are free to pursue the prompting strategy of your choice. My recommendation however is to work on the four experiences one at the time (vs. trying to get the LLM to write the whole assignment at once).

In the final section of the assignment (750 words max), you will explain the prompting strategies you tried/used, and generally how you leveraged generative AI to complete the assignment. Part of the grade will be based on the insights you gained on effectively integrating generative AI in your writing. There is no expectation that you will use generative AI to complete this part of the assignment (although that's not forbidden). In this part, please mention which LLM you used and how you accessed it.

When working on the assignment, be cognizant of privacy issues. You should assume that the information you include in the prompts will not be protected. Do not enter any personal information

in your prompts to the LLM. Note that this is the first time I am trying an assignment of this sort. If you have feedback or suggestions (e.g., I may be ignoring a potential problem or opportunity to make the assignment more insightful or interesting), please get in touch.

The grading criteria will focus on, in decreasing order of importance, (a) insightfulness of the analysis (e.g., reliance on logical arguments, conceptual coherence, novelty and usefulness of the insights), (b) insights into the effectiveness of prompting strategies, (c) interestingness (novelty and importance) of the chosen examples, and (d) clarity and structure of the document.

Primary learning objectives: O1, O2, O3, O4
Deadline: Wednesday February 14 at 6:00 PM (on Canvas)

A3: In-class assessment (30%)

This will be a mix of multiple choice and open questions to assess your level of preparedness and understanding of the course materials. The test will be a relatively brief, closed book paper-and-pen questionnaire.

Primary learning objectives: O1, O2, O3, O4
The start and end will coincide with the class time, on Tuesday April 2.

A4: Industry Audit, Group assignment (Report: 25%)

In this assignment, you will work in teams of 5 or 6 to identify new business opportunities by leveraging the recording and matching capabilities of AI discussed in the course. You will write the report about one industry. How can AI be used to improve processes and products in this industry?

You will choose a business context from a set of industries that will be announced at the beginning of the course (first come, first served) and analyze the innovation potential of AI capabilities. More information about this assignment will be provided in class.

The deliverable is a pdf document (max. 2.000 words). The cover page should list the team members' names and student ids. You are free to organize the rest of the document the way you prefer.

Make sure to use evidence and literature as much as possible to support your claims. That may include desk research (e.g., academic literature, industry reports) and primary research (e.g., interviews with managers, surveys of consumers). You are free to add as many appendices and references as you like. These are not included in the word count.

The grading criteria will focus on, in decreasing order of importance, (a) analysis quality (reliance on logical arguments, conceptual coherence, use of literature, originality of the ideas), (b) interestingness and innovativeness of the proposed applications/chosen examples, and (c) clarity and structure of the document.

Part of your grade for this assignment will be determined by your contribution to the group, as evaluated by your fellow group members. You will each evaluate your fellow group members using the following scale:

10: Contributed to the group's project fully – this group member was fully engaged, responsive, thoughtful, constructive and collaborative.

5: Participated in the development of the group project, but did not do so to the extent that other group members did. This might mean that this group member did not contribute novel insights to the project and/or offered only minimal feedback to others.

0: Failed to contribute. This may mean that they missed meetings, did not respond to communications, offered little in the way of feedback, or were destructive or divisive within the group.

The contribution scores should reflect contribution to the whole industry audit project, including both report and presentation. The contribution scores given by your teammates will be averaged and will constitute 20% of the grade for the report.

Primary learning objectives: O1, O3
Deadline: Monday April 8 at 6:00 PM (on Canvas)

A5: Industry Audit, Group assignment (Presentation: 15%)

All teams will be asked to present their project to the rest of the class. The presentations will be peer-graded. Students are required to attend all presentation sessions and to rate all presentations.

The groups will be allotted a fixed time, which will be strictly enforced. The presentations should cover the content of the written report with the goal of maximizing your fellow students' learning.

Maximizing learning doesn't just mean maximizing the amount of information communicated. That typically leads to poor understanding, attention, and retention. Maximizing learning instead means taking the audience's perspective to figure out how to best communicate novel, complex, and important ideas in a way that students will understand them and remember them.

In line with this overall objective, peer grading should reflect a subjective assessment of learning.

The groups will present in random order during predetermined sessions. The schedule will be communicated a few weeks prior to the presentation sessions.

Primary learning objectives: O1, O3
Deadline: Date of presentation, TBC

ASSESSMENT PLAN AND SUMMARY OF DEADLINES

The table below contains the course's assessment plan. It links each assignment with the course's objectives and summarizes the key features of the assignments. It includes also as a summary of the assignment deadlines.

Course: AI in Our Lives	Assessment information					
After following this course,	A1: Class participation	A2: AI experiences	A3: In-class assessment	A4: Audit report	A5: Audit presentation	Total
O1: Students will understand the value-creating potential of AI for products	X	X	X	X	X	30%
O2: Students will understand the psychological processes that govern individuals' reactions to automation	X	X	X			20%
O3: Students will acquire effective tools for combining human and machine intelligence in decision making	X		X	X	X	20%
O4: Students will learn how to design positive consumer AI experiences	X	X	X			20%
O5: Students will learn to reflect on the way AI is changing their own lives, as well as business practice	X	X		X	X	10%
SUBMISSION DEADLINES	NA	February 14	April 2	April 8	TBA	
Percentage grade	10%	20%	30%	25%	15%	100%
Deliverable	NA	Word file (on Canvas)	Test	Pdf file (on Canvas)	NA (Peer-graded)	
Assignment type (Group/Individual)	Individual	Individual	Individual	Group	Group	