

PREPARATION

Before each class, read any assigned articles and watch any assigned videos. Please plan to research our guest speakers and be prepared to ask questions during class.

Guests. We are fortunate to have great guest speakers joining us for each class. You and your fellow classmates will introduce our guests. In addition to their professional biography, we encourage you to find one interesting additional fact about them. Please keep your introductions to no more than two paragraphs (one minute) and prepare a question for the speaker that ties into the theme of the class to help start off the Q&A portion of class.

To Do: Sign up to introduce a guest speaker by our first class on 2/25/19. Use the Guest Speaker and Question Sign Up Form in Canvas, which you can find under "Assignments" for Session 1.

Questions. We would like you to prepare four questions to ask the guests during the quarter. You are not limited to asking these prepared questions, but these questions will help us to understand what the key areas of interest are prior to the class. Also, for those of you less likely to talk spontaneously in class, this provides a prepared question to ask.

To Do: Sign up to ask questions for the first class. Use the Guest Speaker and Question Sign Up Form found above under Guest Speakers. The form where you will submit the actual questions, Question Form, is also in Canvas under Assignments and Modules. Questions are due by 11:59pm before each class.

Takeaways. At the end of each class we will take three minutes to share key takeaways. This may be a quote from the speakers, readings, or an insight you gleaned from the overall class discussion. We will upload these and share with the class at the end of the quarter.

GRADING

Your pass/fail grade will be composed of the following components class participation and your final project. Due to the compressed nature of our course, we expect you to be present for each class. Please let the teaching team know if you will be gone (only one excused absence in the class will be allowed but can be made up for with an extra assignment).

FINAL PROJECT [Due Friday, March 8 at 2:59pm uploaded on Canvas]

We have outlined some significant societal challenges that span across the four industries we will cover in class (healthcare, transportation, logistics, and education). In teams of four (2 GSB / 2 Non-GSB students), your goal is to consider ways for AI to collaborate with or enhance the capabilities of humans (so that it's not a mutually exclusive relationship) to help solve one of the 10 problems - with the ultimate goal of cultivating human well-being.

You will submit **two deliverables as a team; a 2-3 page white paper** and a **5-7 minute team presentation**. Your white paper should explore your solutions in detail. Try to address the following questions:

How would you use AI to solve this problem? Be as specific as possible, while being realistic.

What type of algorithms (identification, classification, regression, etc.) and AI tools (computer vision, NLP, etc.) would you need to solve this problem?

What types of data sources are already available? What additional data sources would you need?

How might these data sources be biased?

Are there any ethical concerns about the collection of these data?

What positive unintended consequences might occur from your solution?

What negative unintended consequences might occur from your solution?

Your presentation should outline the potential solution and findings you highlighted in your paper. You and your team will present to your class and industry experts on the last day of class.

DESIGNING AI TO CULTIVATE *HUMAN* WELL-BEING

CO-CAPTAINS

Fei-Fei Li
Jennifer Aaker

TIME

M, W, F 3:00 - 6:00 pm PST

FACULTY ASSISTANT

Keala Alvarez

PLACE

NGP CoLab, GSB Knight Management Center, M101

COURSE TEAM

Wendy de la Rosa
Jolena Ma
Lamia Youseff

SESSIONS

Feb 25, 27, March 1, 4, 6, 8

WEBSITE

designing-ai.stanford.edu

01 // feb 25

AI & HUMAN THRIVING

We explore what it means to improve human well-being and how AI can (and can't) help

PREP

Required

- How We Teach Computers to Understand Pictures [video [link](#)]
- Pursuit of Happiness [video [link](#)]
- How I'm Fighting Machine Bias [video [link](#)]
- Forget Killer Robots - Bias is the Real AI Danger [[link](#)]
- What AI Can and Can't Do Right Now [[link](#)]
- Better Together: Humanity + Machine Learning [video [link](#)]

Suggested

- The AI Revolution [[link](#)]
- Common AI Buzzwords [[link](#)]
- Machine Bias [[link](#)]

LECTURE

We'll dive into the current state of AI as well as the behavioral science of happiness, meaning, and purpose. Next, we'll have a rapid-fire session on how to prevent our biases from our creation process. Finally, you'll dive in with your teams to start researching the societal problem you've been tasked on solving.

LAB

With your group, start brainstorming ideas on how to use AI to solve your chosen societal problem.

GUESTS

Jon Levin, Dean @ GSB
Margaret Mitchell, Sr. Researcher @ Google

02 // feb 27

THE DOCTOR, PATIENT, & AI TRIANGLE

We explore how AI can improve both patient outcomes as well as doctor-patient interactions

PREP

Required

- AI Can't Replace Doctors. But It Can Make Them Better. [[link](#)]
- Compassionate Intelligence [[link](#)]
- 10 Promising AI Applications in Health Care [[link](#)]
- To Get Consumers to Trust AI, Show Them Its Benefits [[link](#)]

Suggested

- Bedside Computer Vision — Moving Artificial Intelligence from Driver Assistance to Patient Safety [[link](#)]
- Improving Healthcare Using AI With Guest Nigam Shah [audio [link](#)]

LECTURE

We examine the role of AI and machine learning in transforming healthcare globally and in the US. Specifically, we investigate how AI can change the doctor-patient interactions, and as a result, how can AI help drive patient behavioral changes.

LAB

We'll use the d.school framework to start brainstorming possible solutions to your societal problem. You'll learn what machine learning (ML) can (and can't do) and how to use ML as a prototyping tool in an analog setting. Finally, you'll identify and reach out to key individuals in your network whom you can interview for your project.

GUESTS

Carissa Carter, Director of Teaching + Learning @ Stanford d.school
DJ Patil, Head of Tech @ Devoted Health
Amir Rubin, CEO @ One Medical Group

03 // mar 01

TEAM WORK SESSION

This is your main work session for the class

PREP

Required

- Divide and conquer amongst your team to conduct at least five interviews

Suggested

- How to Test Prototypes with Customers: The Five-Act Interview [[link](#)]
- Use Stories to Highlight Purpose [[link](#)]

[NO] LECTURE

Meet with your team to draft your potential solution and building on the insights and learnings you gained from the d.school workshop.

Start pushing on your ideas using a variety of frameworking tools, like mind-maps and user journey maps. What assumptions are you making? What are the long-term societal impacts and potential consequences, both intended and unintended, of your idea? Start testing and getting feedback on your prototype through your interviews. Finally, brainstorm specific questions you have about your project for our upcoming guests.

GUESTS

None scheduled

04 // mar 04

MORAL DILEMMAS IN TRANSPORTATION

We explore how AI is transforming how we move, and the ethical challenges associated with it

PREP

Required

- The Moral Machine [[link](#)]
- Never Mind the Trolley [[link](#)]
- We're Asking The Wrong Question [[link](#)]
- Driver Crash Risk Factors [[link](#)]
- The Ethics Of Artificial Intelligence [[link](#)]

Suggested

- Can We Improve Our Transportation Network Using...Biology? [video [link](#)]
- Using Deep Learning And Google Street View [[link](#)]

LECTURE

We'll start at SAIL (The Stanford Artificial Intelligence Laboratory) to take a tour of the robotics facility. We'll then walk over to CARS (Center for Automotive Research at Stanford) to learn about AI in the transportation space and wrangle with challenging ethical questions.

FIELD TRIP

We will meet at 3:00 pm at SAIL:
416 Escondido Mall, MC 4021
Bldg 550, Rm 133
Stanford, CA 94305

We will meet at 4:30 pm at CARS:
473 Oak Road
Stanford, CA 94305

GUESTS

Stefan Heck, CEO & Co-Founder @ Nauto
Stephen Zoepf, Executive Director @ CARS at Stanford

05 // mar 06

CO-CREATING WITH AI

We explore how humans can learn to co-create with AI, ensuring that AI is used to benefit all, not just a few

PREP

Required

- Will AI Diversify Human Thinking Or Replace It? [video [link](#)]
- Cognitive Diversity: AI and the Future of Work [[link](#)]
- The Workforce Needs AI, but AI Needs Human Workers, Too [[link](#)]

Suggested

- Multiplicity: Are AI and Robots a Threat... or an Opportunity? [[link](#)]

LECTURE

We'll discuss humans and AI can come together to co-create products, art, and even ideas. Additionally, we'll focus on how to educate future generations on co-creation, ensuring diversity and inclusion in the field.

LAB

Choose the prototype you want to showcase and plan the presentation. What are the key elements of your idea? How will you showcase its impact both in the short-term and the long-term? What do you want viewers to walk away from your presentation understanding and feeling?

GUESTS

Tess Posner, CEO @ AI4All
Ken Goldberg, Robotics Professor @ UC Berkeley

06 // mar 08

CHANGING HOW WE LEARN

We explore how AI is changing how we store and interpret information

PREP

Required

- Put the finishing touches on your presentations and reports
- Intelligence Unleashed: An Argument for AI in Education [[link](#)]
- The Role Of Education In AI (And Vice Versa): A McKinsey Report [[link](#)]

Suggested

- The Future of AI Will Be About Less Data, Not More [[link](#)]
- AI in 2019: The Good, The Bad — And the Unknown [[link](#)]

LECTURE

We'll discuss how AI is transforming our education system and how we learn.

PRESENTATIONS + FIELD TRIP

We will meet at 3:00 pm at Denning House:

580 Lomita Drive
Stanford, CA 94305

GUESTS

Rick Levin, Senior Advisor @ Coursera