



Generative AI: Technology, Business, and Society

PROGRAM

Stanford | ONLINE

Quick Facts

DELIVERY: Online, Self-Paced.

HOURS TO COMPLETE: 9-14 hours per course, 34 hours to earn the certificate.

TOTAL COURSES: Complete 3 courses to earn a certificate.

PRICING: \$2,985 Program All-Access Plan or \$995 per course.

CERTIFICATE EARNED: Stanford Certificate of Completion in Generative AI: Technology, Business, and Society.

APPLICATION/PREREQUISITES: No application or prerequisites are required to enroll in this program. A basic understanding of computer science and AI concepts may be helpful for the Technical Fundamentals of Generative AI course.

ASSESSMENT: Multiple-choice exam at the end of each course, with an 85% passing score required to pass the course.

LEARNING EXPERIENCE:

Immerse yourself in a unique conference-style learning experience featuring expert-led lectures, knowledge checks to assess understanding, and practical exercises to foster skill development.



Overview

Recent advancements in generative AI are reshaping industries, pushing technological boundaries, and revolutionizing creative processes. In this fast-changing landscape it is imperative for leaders to grasp the implications of this transformation for their businesses, technologies, and society at large.

This comprehensive program covers technical fundamentals, business implications, and societal considerations, all with a focus on putting people first. In this program you will:

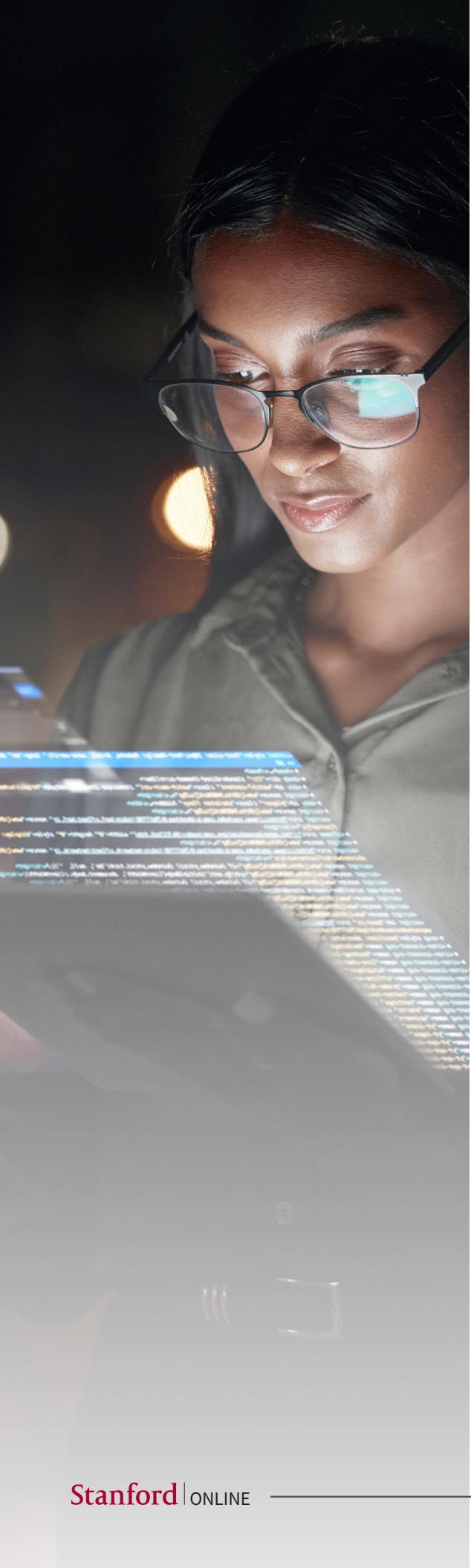
- Explore the capabilities and limitations of Generative AI.
- Learn cost-efficient approaches to building, training, and selecting foundation models.
- Discover the best ways to structure AI initiatives to boost creativity and productivity.
- Balance ethical considerations, fairness, privacy, and safety in AI projects.
- Examine real-world examples from robotics and healthcare.
- Develop business and technological solutions prioritizing human well-being.



ACADEMIC DIRECTOR

James Landay

Denning Co-Director (Acting) of Stanford HAI, Anand Rajaraman and Venky Harinarayan Professor and Senior Fellow at the Stanford Institute for HAI



Why Stanford's Generative AI Program?

Learn from Stanford University's leading experts in Generative AI.

Developed in collaboration with the Stanford Institute for Human-Centered Artificial Intelligence (HAI), this program features an incredible teaching team of over 25 thought leaders across various disciplines--from computer science and engineering, to law and ethics. You'll gain a broad understanding of today's AI landscape and get key insights from the leaders driving groundbreaking research and innovation in Generative AI. Each speaker brings a wealth of knowledge and experience, creating an enriching multidisciplinary educational opportunity.

Develop practical knowledge of Generative AI with hands-on learning.

While many Generative AI programs focus solely on the technology, our program takes a holistic approach, exploring the strategic, ethical, and societal implications of this transformative technology. By examining the intersection of Generative AI with technology, business, and society, our curriculum empowers you to not only understand the underlying technology but also anticipate its impact on individuals, industries, and communities.

You will gain practical insights and real-world examples to guide your decision-making and innovation efforts. Our hands-on learning approach, featuring practical exercises, ensures you're well-prepared to leverage Generative AI for your organization's success.

Balance learning when your life demands flexibility.

Our program is designed to accommodate your busy schedule, offering a fully self-paced, online learning experience. You can watch lectures, complete exercises, and engage with the material at your convenience. Whether you prefer late-night study sessions or early morning reviews, our flexible format ensures that learning fits seamlessly into your lifestyle.

Should you encounter any questions or challenges, our dedicated support team is readily available to assist you via email:

genai-questions@stanford.edu.

Who Is This Program For?

This program is designed for professionals who are passionate about the transformative potential of generative AI. It's ideal for those seeking to understand its strategic implications, explore innovative applications, and gain the knowledge to lead their organizations into the future of AI.

Since the launch of this program, over 500 people have enrolled from 43 countries.

TOP 5

- United States
- Germany
- Canada
- United Kingdom
- India

TOP 5 INDUSTRIES

- Information Technology and Software
- Banking and Financial Technology and Services
- Manufacturing
- Education
- Consulting

TOP 5 JOB TITLES

- CEO
- Product Manager
- Director
- Data Scientist
- Software Engineer

LEARNER SPOTLIGHT

The course on Technical Fundamentals of Generative AI helped me understand the basics of gen AI. With the world being abuzz with news and features about gen AI, it takes a serious commitment to understand what it means for our lives and professional services. Thankfully, this Stanford course provides a direct, comprehensive and cohesive course for those who may be busy and have no time for a face-to-face or sit in lectures.

Theoben O., Lawyer

LEARNER SPOTLIGHT

The course Business Opportunities and Applications of Generative AI provides an insightful overview of how generative AI can be leveraged in various business contexts. It effectively combines practical applications with strategic thinking, highlighting both the potential benefits and challenges associated with integrating AI technologies. The course is well-structured for professionals looking to understand how AI can create new opportunities, drive innovation, and impact decision-making in real-world scenarios.

Stanislav G., Regional Director

LEARNER SPOTLIGHT

The Human-Centered Generative AI course was thoughtfully delivered and very helpful in understanding the broader context under which AI is developing and being regulated. I enjoyed the diverse perspective.

Marissa C., Senior Customer Success Manager



Technical Fundamentals of Generative AI

Generative AI has the potential to disrupt and revolutionize virtually every field, from manufacturing to entertainment to finance. To leverage this technology effectively and ethically, leaders need a solid grasp of its fundamentals and nuances.

By the end of the course, you will be able to:

- Identify strategies for selecting, building, and training foundation models.
- Maximize LLM performance while minimizing costs through benchmarking and performance optimization.
- Refine prompt engineering using state-of-the-art tools, including instruction-following models, chain-of-thought reasoning, and logical frameworks.
- Assess the broader implications of generative AI technologies on individuals, communities, and society.
- Examine a wide range of generative AI use cases, including not just generating text, but also creating images and videos using multimodal systems.
- Explore emerging trends and the future direction of generative AI.

INSTRUCTORS



Dorsa Sadigh
Assistant Professor of Computer Science and of Electrical Engineering



Christopher Potts
Professor and Chair of Linguistics and of Computer Science



Serena Yeung
Assistant Professor of Biomedical Data Science, Computer Science, and of Electrical Engineering



Tatsunori Hashimoto
Assistant Professor of Computer Science



Noah Goodman
Associate Professor of Psychology, Computer Science, and of Linguistics



James Zou
Associate Professor of Biomedical Data Science and of Computer Science



Percy Liang
Associate Professor of Computer Science, Senior Fellow at the Stanford Institute for HAI, and Associate Professor of Statistics

COURSE OUTLINE

→ **Introduction to Artificial Intelligence and Generative AI**

Gain an introduction to the fundamental principles of Artificial Intelligence and Generative AI. You will learn about the history of AI and Machine Learning, including its current opportunities and risks from Professor Dorsa Sadigh. Professor Christopher Potts will then dive into the topic of Foundation Models, covering many but applying primary focus on Large Language Models (LLMs). Finally, Professor Serena Yeung will cover the applications of foundation and generative models to images and videos using multimodal systems.

→ **Overview of Instruction-Following Models**

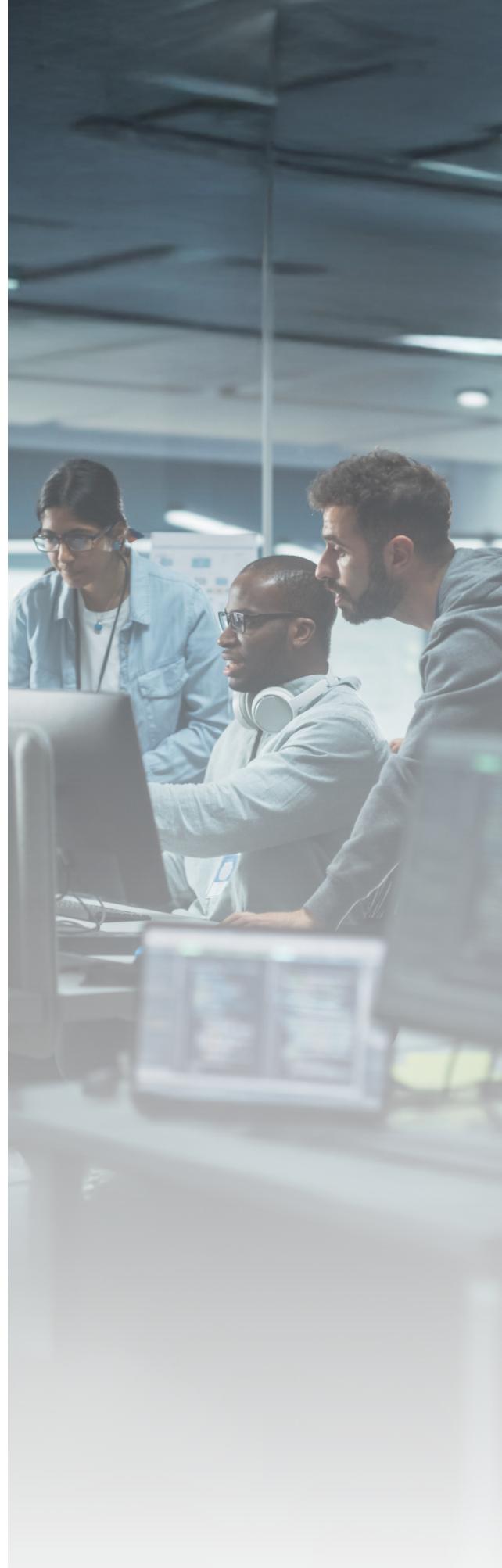
You will take an in-depth dive into learning about instruction-following models to help you understand what they are, how they came to be and how they operate with particular data. Professor Tatsu Hashimoto will shed light on popular models such as LLaMA and GPT while also discussing instruction tuning and its modern limitations.

→ **Benchmarking and Reducing Costs of LLMs**

Take a closer look at the concept and significance of benchmarking in AI as well as cost reduction strategies for Large Language Models. Professor Percy Liang will go over several types of benchmarks, their measurements, the metrics used in the procedure, and the overall objectives of the process including HELM. You will also learn about recent advancements in benchmarking, focusing on topics like generative agents, ecosystems, and transparency of models. During the latter portion of the module, Professor James Zhou will instruct on the training of cost-effective LLMs, highlighting relevant research projects such as FrugalGPT and FrugalML.

→ **Reasoning in Human and Machine Intelligence**

Learn about the foundations of reasoning in human and machine intelligence. Professor Noah Goodman will elaborate on the reasoning capacities of LLMs and their current capability in logical proof, using modern chain-of-thought reasoning and logical frameworks.



Business Opportunities and Applications of Generative AI

Generative AI has opened up previously unimaginable possibilities for businesses and organizations. In order to make the most of these opportunities and drive innovation, leaders must have a solid grasp of this rapidly evolving technological landscape. This course will equip you with the strategies and techniques to effectively leverage this powerful technology and navigate potential pitfalls.

By the end of the course, you will be able to:

- Explore what generative AI can and cannot do for your organization.
- Identify best practices for designing generative AI interfaces and agents.
- Learn effective strategies for structuring AI-powered organizations and initiatives.
- Examine what generative AI means for productivity and future of work.
- Evaluate how generative AI disrupts trust and mitigates legal risks of generative AI.
- Assess the broader implications of generative AI technologies on individuals, communities, and society.

INSTRUCTORS



Andrew Ng
Adjunct Professor of Computer Science



Michael Bernstein
Associate Professor of Computer Science



Maneesh Agrawala
Forest Baskett Professor of Computer Science and of Electrical Engineering



Amir Goldberg
Associate Professor of Organizational Behavior



Melissa Valentine
Associate Professor of Management Science and Engineering



Nigam Shah
Professor of Medicine (Biomedical Informatics) and of Biomedical Data Science



Jeff Hancock
Harry and Norman Chandler Professor of Communication



Mark Lemley
William H. Neukom Professor of Law at Stanford Law School



Erik Brynjolfsson
Jerry Yang and Akiko Yamazaki Professor of Economics and of Operations, Information and Technology

COURSE OUTLINE

→ Opportunities and Limitations of Generative AI

Explore the growing range of opportunities enabled by recent developments in AI, particularly in relation to Large Language Models (LLMs) and AI agents. Professor Andrew Ng will discuss industry trends, use cases for generative AI, the startup landscape and opportunities, as well as the automation, augmentation, and risks associated with generative AI. Professor Michael Bernstein will share insights on some of the most pressing and in-demand questions related to the current capabilities and future potential of artificial intelligence.

→ Generative Agents and Human-Centric Design

Learn about modeling human behavior and how it can be understood through AI agents. Professor Andrew Ng will introduce the topic of agentic AI and agentic reasoning, while Professor Michael Bernstein will discuss the intricacies of accurately simulating human behavior, its applications in AI agents, and the insights gained from the SmallVille experiment conducted at Stanford University. Finally, Professor Maneesh Agrawala will apply lessons from design to identify current issues in AI interfaces, and outline principles to consider going forward in the design of human-centered AI interfaces that work for everyone.

→ Deploying AI in Organizations

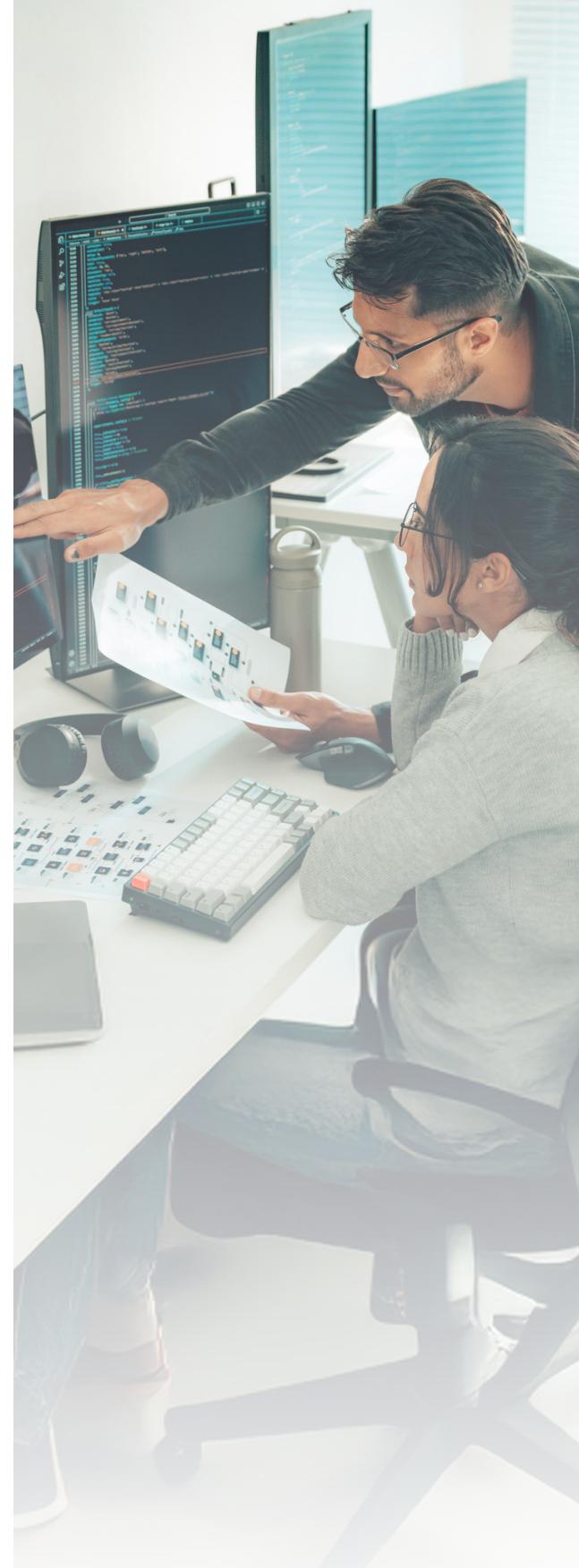
Take a closer look at the deployment of AI in organizations. Professor Amir Goldberg will guide you through how data-driven technology has fundamentally reshaped organizations. He will discuss the potential impact of AI and generative AI on organizations and decision-making, presenting various use cases and strategies for maximizing these benefits as a leader. Professor Melissa Valentine will share strategies, perspectives, and systematic approaches to implementing AI initiatives within organizations.

→ Economic Impacts of Generative AI

Learn about the economic impacts of generative AI in the workplace. Professor Erik Brynjolfsson will discuss the economic history of technological revolutions from a productivity perspective and share his insights on the future of work. Examine the ‘Turing Trap’ and explore the societal choices between automating and augmenting work, as well as setting the right market incentives.

→ Generative AI Trust and Legal Risks

Hear from Professor Jeff Hancock as he explains the role of trust in implementing AI systems, examining potential breaches of trust and their connection to possible fraud. Professor Mark Lemley will discuss current copyright law as it pertains to building and training AI systems. He will detail what the law currently covers, what it excludes, and the gray areas that emerge.



Case Studies

How can we apply broad concepts covered in the course to the fields of medicine and robotics? Professor Nigam Shah will discuss the use of AI models in the medical field, highlighting their limitations and the critical questions to consider.



**PROFESSOR
Nigam Shah**

Professor of Medicine
(Biomedical Informatics)
and of Biomedical Data Science

Professor Dorsa Sadigh will explain the application of AI in robotics, providing research findings and examples to illustrate these points.



**PROFESSOR
Dorsa Sadigh**

Assistant Professor of
Computer Science and of
Electrical Engineering



Human-Centered Generative AI

While generative AI has the potential to transform industries and organizations, that transformation may pose considerable risks to individuals, communities, and society at large. To navigate these risks, leaders must apply a human-centered approach to the development and deployment of generative AI systems.

By the end of the course, you will be able to:

- Understand the fundamentals and nuances of human-centered AI and generative AI.
- Explore human-centric approaches to natural language processing.
- Evaluate the fairness, ethics, privacy, and robustness of your solutions and develop strategies to strengthen them.
- Examine modern generative AI governance frameworks, policies, and professional norms and standards.
- Assess regulatory and policy trends in generative AI.
- Ponder what you really want from generative AI.

INSTRUCTORS



Peter Norvig
Distinguished Education Fellow, Stanford HAI



Diyvi Yang
Assistant Professor of Computer Science



Sanmi Koyejo
Assistant Professor of Computer Science



Rob Reich
Professor of Political Science



Rishi Bommasani
Society Lead at the Stanford Center for Research on Foundation Models



Jennifer King
Privacy and Data Policy Fellow, Stanford HAI



Mykel Kochenderfer
Associate Professor of Aeronautics and Astronautics



Daniel Ho
Professor of Law and Political Science



Ge Wang
Associate Professor of Music and Computer Science

COURSE OUTLINE

→ Human-Centered Artificial Intelligence

Gain a comprehensive overview to navigate the rapidly changing AI landscape. Peter Norvig will address critical areas such as challenges in AI projects, ethical dilemmas, privacy concerns, and specific issues like adversarial attacks and data manipulation. Professor James Landay will delve into Human-Centered AI, breaking down its fundamental layers and providing a detailed explanation of its integration into our daily lives and the potential outcomes it may bring.

→ Technical Approaches in Human-Centered AI: NLP and Fairness

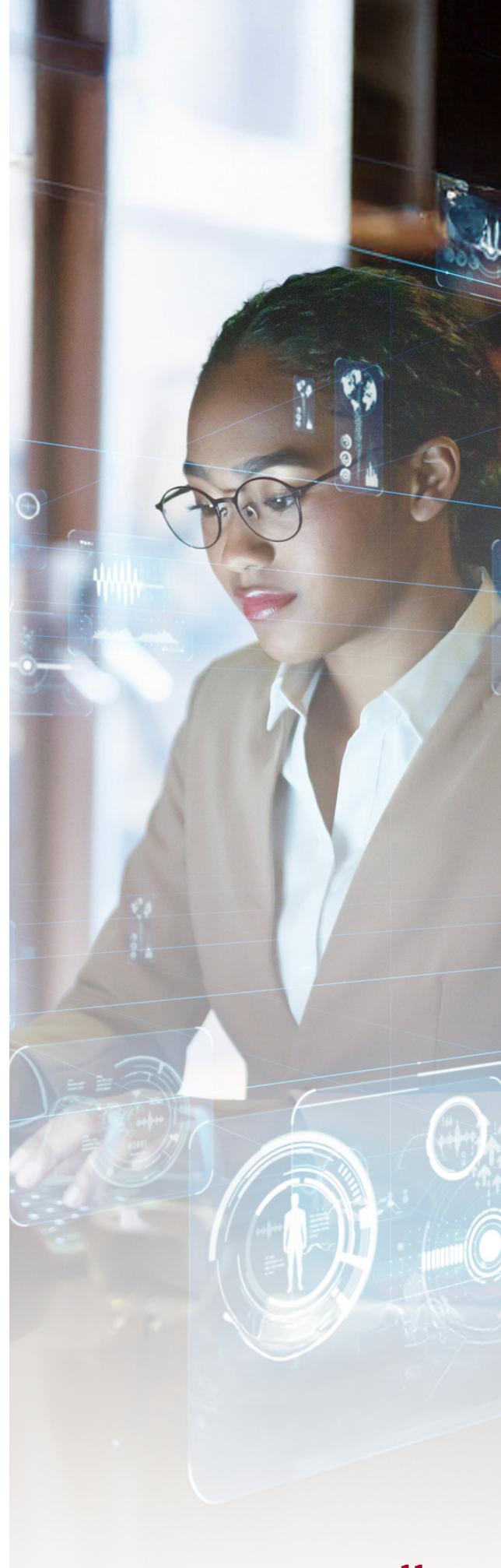
Learn about Human-Centered NLP, data bias, and algorithmic fairness in AI systems. Professor Diyi Yang introduces Human-Centered Natural Language Processing (NLP), covering human feedback/data collection, evaluation principles, and the social impact of this approach. Next, Professor Sanmi Koyejo shifts the focus to understanding data bias and algorithmic fairness in generative AI systems, using frameworks to demonstrate real-world fairness approaches and discussing post-deployment considerations such as metrics and benchmarks.

→ AI Governance and Professional Norms

Hear from Professor Rob Reich as he discusses the gray area between policy and innovation, discussing government regulation in the rapidly developing AI industry. He examines how professional norms are established in these environments and the motivations behind governance.

→ Generative AI Policies and Privacy Concerns

Learn about the intersection of foundation models and AI policy in global governments and explore data privacy challenges and legal trends in generative AI. Rishi Bommasani examines the intersection of foundational AI modules and policy across global governments, with a detailed exploration of their integration in the United States and Europe, referencing recent research and the AI Act. Professor Jennifer King concludes this module by exploring the complexities of data privacy in relation to generative AI, addressing new challenges posed by these systems and their implications for emerging trends, current laws, and regulations.



COURSE OUTLINE (CONTINUED)

→ AI Safety and Responsible Innovation in Government

Understand the focus of AI safety, emphasizing robust, trustworthy systems and handling uncertainty, and conclude with a discussion of AI governance challenges through case studies. Professor Mykel Kochenderfer will emphasize AI safety and building robust systems, using real-life examples to highlight historical issues, uncertainty management, and the importance of trust. Next, Professor Dan Ho will focus on AI governance, using case studies to highlight challenges in governmental AI policies.

→ What Do We Really Want from AI?

Listen to Professor Ge Wang reflect on our aspirations for AI and explore them through the perspective of artful design. He initiates a discussion on AI FOMO and illustrates with student examples how art and artificial intelligence can synergize to create meaningful and impactful technologies.



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