MIT | xPRO

DESIGNING AND BUILDING AI PRODUCTS AND SERVICES

Delivered in collaboration with EMERITUS

Overview

It's no surprise that Artificial Intelligence (AI) Specialist is the top-rated job on the LinkedIn Emerging Jobs Report in 2020. With an annual growth rate of 74% for this position, every industry is clamoring for AI talent to first devise a strategic plan for AI applications and then help manage and optimize them in practice.

Global revenue for the AI market, that comprises software, hardware, and services, is forecast to grow 16.4% from a year ago to about $327 billion in 2021 (IDC Worldwide Semiannual Artificial Intelligence Tracker). By 2024, the market is expected to breach the $500-billion revenue mark with a compounded annual growth rate of over 17%.

MIT xPRO's Designing and Building AI Products and Services online course has been developed specifically to help meet this demand, delivering the right mix of strategic and practical insights for a variety of technical professionals. Over the course of eight weeks, you will learn a framework for analyzing the various stages of AI product and solution design, and the specific organizational and technical requirements involved. You will also gain an understanding of various machine learning (ML) algorithms and industry applications of AI tools. The program culminates in a capstone project whereby you will develop a design proposal for an AI application of your choice.

The immersive curriculum, featuring leading-edge content from world-renowned experts, will broaden your knowledge of AI-based solutions and equip you to drive successful implementation of AI and ML technologies in your organization.

PRICE
USD 2,950

DURATION
8 weeks
6 hours/week

USD 15.7 Trillion

Potential contribution to the global economy by 2030 from AI

(Source: PwC)

Program Highlights

Earn a certificate and 5 Continuing Education Units (CEUs) from MIT xPRO

Insights and examples from renowned MIT faculty

Market-ready skills for evaluating the opportunity for AI solutions and gauging the appropriate technologies for your organization

Develop an AI project proposal to present to internal stakeholders or investors

Advance your knowledge through crowdsourcing, demos, and design-support activities

Services offered by Emeritus

Live weekly office hours with learning facilitators

Personalized feedback, support, and network development

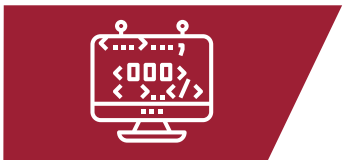
Resources and Industry Applications in the Program

Generative Pre-trained Transformer 3 (GPT-3)

Get an introduction to the most sophisticated language prediction model of our time.

Generative Adversarial Networks (GANs)

Observe how GANs, a deep learning architecture that can generate realistic image, video, and voice outputs, is applied in the media production field.



Cough Test App

Analyze the industry use case that applies artificial intelligence to detect early onset of COVID-19 and Alzheimer's disease.

Human-Computer Interaction (HCI)

Explore a real-world application where AI assists in the development or improvement of a Human-Computer Interaction interface.

Soli

Learn about Google's miniature radar used for motion sense detection.

USD 127,451

Average annual base salary of AI specialists in USA

(Source: Payscale.com)

Who Is This Program For?

This 8-week program is ideal for you if you are a technology professional who wants to enhance understanding of AI technology fundamentals and tools, and explore various design processes involved in AI-based products. Knowledge of calculus, linear algebra, statistics, and probabilities is beneficial, along with basic Python experience. The program is ideal for:

Technical Product Managers in charge of machine learning and AI-based products in their organizations looking to leverage the latest in AI technologies to add value to their organizations.

Technology Professionals who design and develop technology solutions aligned to an organization's needs in banking, financial services, healthcare, IT, and other industries, and are looking to broaden their understanding of developing AI-based solutions.

Technology Consultants who focus on the analysis, design, and development of technology solutions for clients.

Founders of AI Startups who build AI-driven applications and want to learn a proven framework for developing viable AI products, and network with other technologists.

UI/UX Designers responsible for developing and managing user experience of AI-based applications.

*Participants must be 18 or above to apply for this program.

KEY TAKEAWAYS

This program is designed to equip you with the skills to broaden your understanding of AI-based solutions. The program will help you to:

- **Build a foundation**
  - Learn the four stages of AI product design
  - Identify applicable AI technologies to improve organizational processes
  - Analyze technical and operational requirements to build AI models
- **Expand your knowledge**
  - Differentiate between various machine learning algorithms
  - Design AI products to solve organizational issues
  - Learn about challenges you may encounter when designing AI products
- **Apply learnings**
  - Learn to apply machine learning methods to practical problems
  - Design intelligent human-machine interfaces
  - Assess AI opportunities in various fields such as healthcare and education
- **Become proficient**
  - Identify an operational challenge and propose a technical solution for it
  - Implement the Lawler Model for defining an AI problem and identify key steps to build an organization case
  - Design and construct an executive summary of an AI product or process using the AI design process model

MODULES

Week 1:

Introduction to the Artificial Intelligence Design Process

Get acquainted with the stages involved in designing an AI-based product with a focus on specifics such as the cost metrics and technical requirements of an AI software development plan.

Week 2:

Artificial Intelligence Technology Fundamentals – Machine Learning

Identify various machine learning algorithms and study the different approaches such as Bayesian and regression models. Learn about unsupervised and semi-supervised methods of machine learning algorithms. Run and analyze the results from various machine learning algorithms.

Week 3:

Artificial Intelligence Technology Fundamentals – Deep Learning

Building on the knowledge of machine learning fundamentals gained in Week 2, explore the basics of deep learning. The topics include neural networks, artificial neurons, and simulation of complex networks.

Week 4:

Designing Artificial Machines to Solve Problems

Identify superhuman intelligence used in an AI product. Compare and contrast the advantages and disadvantages of using an AI technology.

Week 5:

Designing Intelligent Human-Computer Interaction (HCI)

Use the resources provided in this module to understand the techniques, application areas, benefits, and drawbacks of HCI. Learn to define an appropriate level of machine involvement in interactions with humans and computers. Seek ways to use artificial intelligence to your advantage.

Week 6:

Superminds: Designing Organizations That Combine Artificial and Human Intelligence

Get an introduction to the concept of superminds, and compare and contrast the different types of superminds. Analyze how humans and machines can work together to surpass the sum of their parts. Apply cognitive processes to various organizational and community problems.

Week 7:

Marketplace Frontiers of AI Design: Research

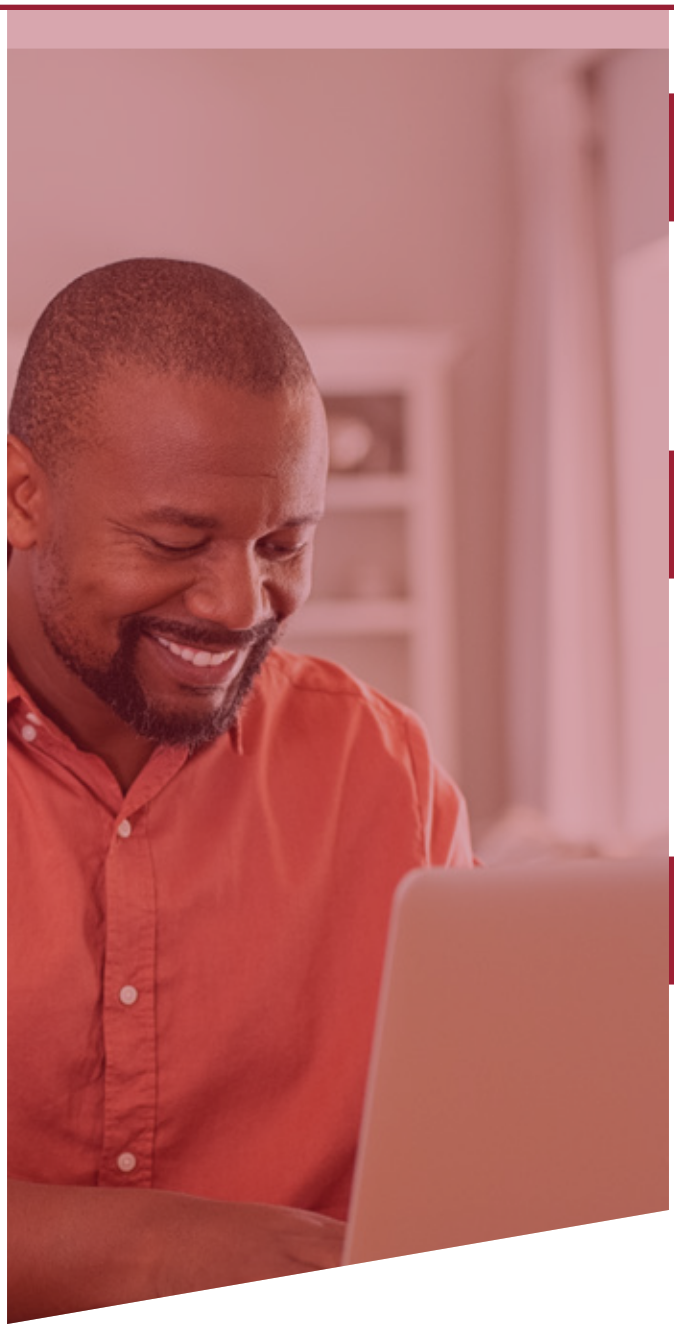
Learn how artificial intelligence and Generative Adversarial Networks (GANs) can be used to generate fake images and videos from real data. Assess the technical, social, and economic impact of AI technologies.

Week 8:

Marketplace Frontiers of AI Design: Practice

Implement the Lawler Model to define an AI problem. Design and construct a summary of an AI product or process using learnings from the previous modules of the program.

Assignments and Projects



Coding Exercises

Basic coding exercises are integrated into various modules through simple activities using Jupyter Notebook.

Program Workbook

Workbooks provided at the end of certain modules require participants to apply insights from program content to formulate solutions to assigned problems.

Capstone Project

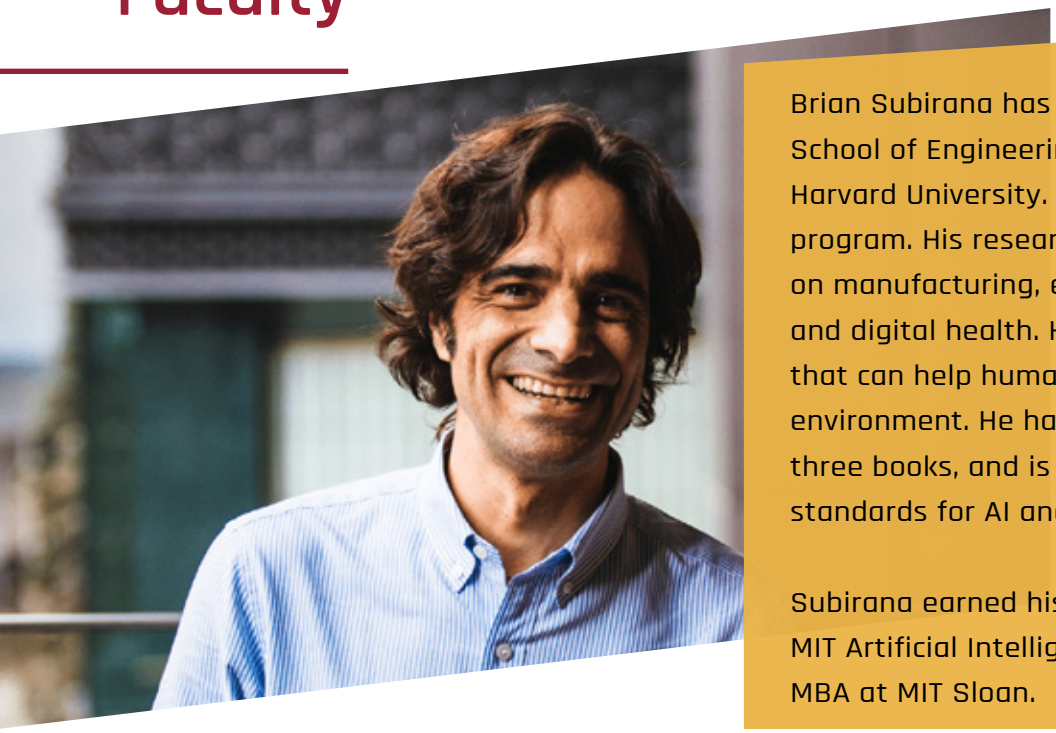
This program culminates with the creation of an AI design process model. Based on the knowledge gained throughout the program, you will develop a plan for an AI-based product or service.

150 Million

Technology jobs – mainly in the area of digital transformation – to be added globally over five years

(Source: LinkedIn Jobs on the Rise, 2021)

Faculty



Brian Subirana has taught at MIT Sloan and the MIT School of Engineering, and he is also on the faculty of Harvard University. He is the faculty director for this program. His research centers on IoT and AI, and focuses on manufacturing, e-learning, the creative industries, and digital health. He is developing a voice name system that can help humans talk to any object in an IoT environment. He has over 200 publications, including three books, and is currently researching open standards for AI and IoT.

Subirana earned his doctorate in computer vision at the MIT Artificial Intelligence Laboratory (now CSAIL) and his MBA at MIT Sloan.

BRIAN SUBIRANA

Director, Auto-ID Labs
Director, MIT and Accenture Convergence Initiative for Industry and Technology

Andrew Lippman heads the Viral Communications research group at MIT Media Lab. His work has ranged from digital video and entertainment to graphical interfaces, networking, and blockchains. In the 1980s, Lippman developed the Movie Map that presaged Google's Street View. He helped pioneer visual imaging and communications systems such as MPEG and digital HDTV. He has written both technical and mainstream articles about our digital future, and given over 250 presentations throughout the world on the future of information and its commercial and social impacts.

Lippman received his bachelor's and master's degrees in science at MIT and doctorate at École Polytechnique Fédérale (EPFL) in Lausanne, Switzerland.

ANDREW LIPPMAN

Senior Scientist
Associate Director, MIT Media Lab

Stefanie Mueller is the head of the Human Computer Interaction Communities of Research (HCI CoR) at MIT CSAIL. In her research, she develops novel hardware and software systems that advance personal fabrication technologies. Mueller has received an NSF CAREER Award, an Alfred P. Sloan Fellowship, a Microsoft Research Faculty Fellowship, and was also named one of Forbes 30 under 30 in Science. She publishes her work at the most selective human-computer interaction forums of CHI and UIST and has received a best paper award and two best paper nominations in the past.

Mueller earned her Ph.D. in computer science at Hasso Plattner Institute in Germany.

STEFANIE MUELLER

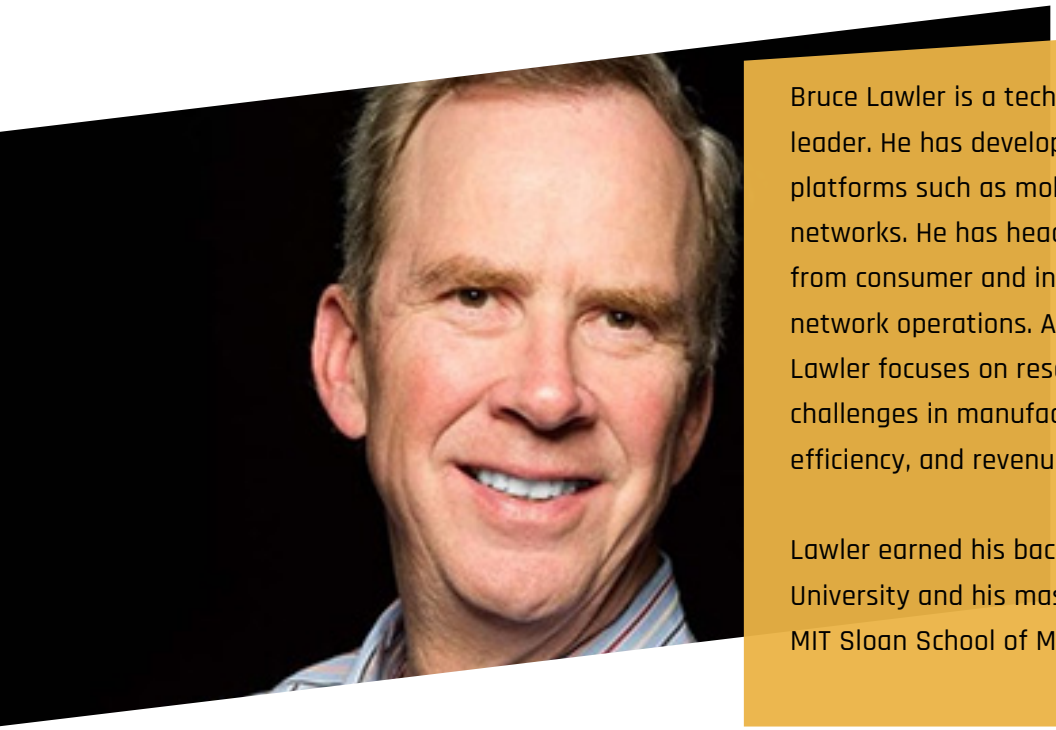
X-Career Development Assistant Professor, MIT Electrical Engineering and Computer Science, joint with Mechanical Engineering

Duane Boning is affiliated with the MIT Microsystems Technology Laboratories and serves as associate director, machine learning and statistical methods for modeling, and control of variation in manufacturing. His work is centered on statistical characterization and design for manufacturing of devices and circuits in advanced technologies, and the modeling of chemical mechanical polishing, spin-on coatings, plasma etch, and nano-imprint/embossing processes. His work has appeared in over 280 journals and conference publications.

Boning earned his bachelor's and master's in science, and doctorate in electrical engineering and computer science at MIT.

DUANE BONING

Clarence J. Lebel Professor, Electrical Engineering and Computer Science



Bruce Lawler is a technology entrepreneur and an executive leader. He has developed several applications across platforms such as mobile, SaaS, AI, and video distribution networks. He has headed multiple ventures in fields ranging from consumer and industrial hardware to wireless and video network operations. As the managing director MIT MIMO, Lawler focuses on resolving the data and operational challenges in manufacturing with measurable and impactful efficiency, and revenue improvement.

Lawler earned his bachelor's in engineering at Purdue University and his master's in engineering and MBA from MIT Sloan School of Management.

BRUCE LAWLER

Managing Director, MIT Machine Intelligence for Manufacturing and Operations (MIMO)

Thomas W. Malone is the professor of information technology and a professor of work and organizational studies at MIT. In his research over the years, Malone rightly predicted major business and technology trends decades before they happened. For instance, he first wrote about video games and the concept of "gamification" as early as 1980, and in an article in 1987, he predicted many of the major developments in e-commerce, which we have seen in the last 25 years. Malone has published over 100 articles, research papers, and book chapters, and has co-written four books.

Malone earned his Ph.D. at Stanford University and an honorary doctorate from the University of Zurich.

THOMAS W. MALONE

Patrick J. McGovern Professor of Management, MIT Sloan
Founding Director, MIT Center for Collective Intelligence

Featured Guest Faculty

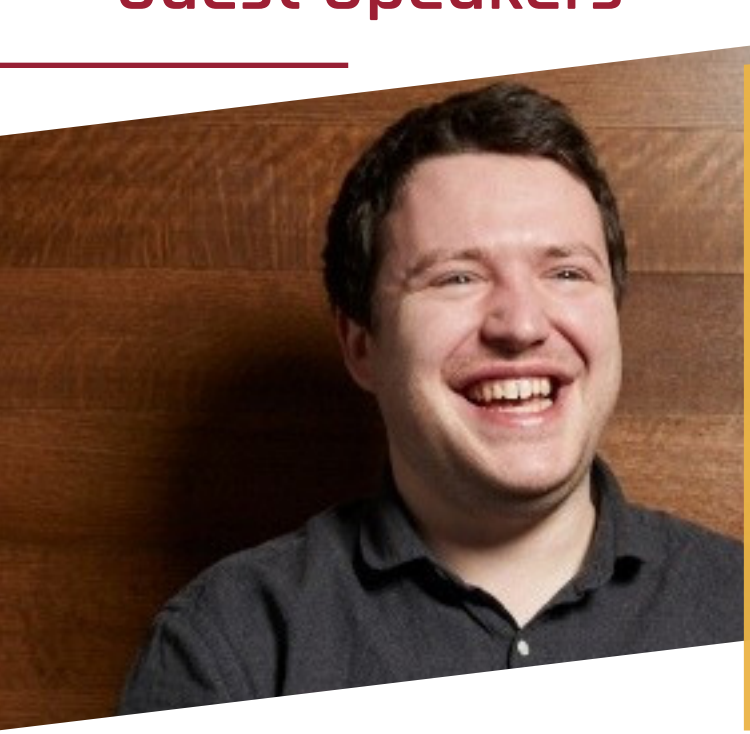
Wixom leads the MIT CISR Data Research Advisory Board, comprised of data and analytics executives from CISR organizations. Her research explores how organizations generate business value from data assets. She has deep expertise in data and analytics techniques and technologies, with particular interest in data and analytics strategy, capabilities, and success.

Prior to joining MIT CISR, Wixom enjoyed a 15-year academic career at the University of Virginia.

BARBARA H. WIXOM

Principal Research Scientist, MIT Center for Information Systems Research (CISR)

Guest Speakers



David Anderton-Yang heads the startup Voomer, which helps users build confidence in video interviews. The service uses an AI-enhanced video analysis technique to give users feedback on their videos.

Anderton-Yang is a recipient of the Forbes 30 Under 30. He completed his research at the MIT Media Lab and teaches big data, IoT, and cybersecurity in the research organization. He is also a faculty mentor in online teaching and engagement at Harvard.

DAVID ANDERTON-YANG

Chief Executive Officer, Voomer
Researcher, MIT Media Labs

Aruna Sankaranarayanan works at the Viral Communications group at the MIT Media lab. Her research looks at the ways in which deep learning and computer vision techniques can manipulate media to modify perception and inspire creativity. The lab also studies how such manipulation can create misinformation. In the past, she has built server infrastructure for maps at Mapbox, designed science games, and contributed to free and open-source software communities.

ARUNA SANKARANARAYANAN

Research Assistant, MIT Media Lab

Certificate

Get recognized! Upon successful completion of this program, MIT xPRO grants a certificate of completion to participants and 5 Continuing Education Units (CEUs). This program is graded as a pass or fail; participants must receive 75% to pass and obtain the certificate of completion.

After successful completion of the program, your verified digital certificate will be emailed to you, at no additional cost, in the name you used when registering for the program. All certificate images are for illustrative purposes only and may be subject to change at the discretion of MIT.

About MIT xPRO

MIT xPRO's online learning courses leverage vetted content from world-renowned experts to make learning accessible anytime, anywhere. Designed using cutting-edge research in the neuroscience of learning, MIT xPRO courses are application focused, helping professionals build their skills on the job.

To explore the full catalog of MIT xPRO courses and programs, visit: xpro.mit.edu.

About Emeritus

MIT xPRO is collaborating with online education provider Emeritus to deliver this online course through a dynamic, interactive, digital learning platform. This course leverages MIT xPRO's thought leadership in engineering and management practice developed over years of research, teaching, and practice.

Easily schedule a call with a program advisor from Emeritus to learn more about this MIT xPRO program.

SCHEDULE A CALL

You can apply for the program here

APPLY

MIT xPRO

CONNECT WITH A PROGRAM ADVISOR

Email: mit@emeritus.org

Phone: +1 (617) 855 1045 (US)
+44 19 0295 3584 (UK)
+65 3129 7982 (Singapore)
+971 8000321201 (Dubai)

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