



Designing and Building AI Products and Services for Regulated Industries

Unlocking the value of AI for Financial Services, Insurance, Healthcare, and other highly regulated industries.

With modules from



Overview

Deploying the right AI technologies in your organization can help you automate routine tasks, gain insights through data analytics, and deliver greater value to customers. However, scaling AI and machine learning initiatives also comes with unique challenges for professionals in regulated industries who want to design products in a transparent and responsible way.

The Emeritus course Designing and Building AI Products and Services for Regulated Industries is for technology, design, and data professionals involved in building AI products. In this course, learners will get the opportunity to advance their understanding of AI fundamentals and ethics. This will ensure that their practices for designing AI products in regulated industries are compliant and responsible.

Upon successful completion of this course, participants will receive a certificate from Emeritus.

Advance understanding of AI and machine learning concepts by:

- Learning from content and AI experts from regulated industries and MIT xPRO
- Engaging in discussions with learners, course facilitators, and AI experts who hold similar roles in regulated industries
- Exploring AI and ML concepts that you can use to inform your work in your role
- Applying your knowledge to assignments and a final graded capstone project

Program Details

Starts:

Summer 2022

Duration:

6 Weeks

8 Hours Per Week

Program Fee:

\$2,600 USD Per Participant

Group rates and private cohorts available

Applicable Industries:

Financial Services & Banking

Insurance

Oil, Gas, & Energy

Healthcare

Life Sciences



What Participants Will Learn

If you're a technology professional, data analyst, or data scientist in a regulated industry working in the field of AI, this program will help you understand design principles and applications of AI. The goal is for you to create an AI-based product proposal that can be presented to your internal stakeholders or investors. You will learn the various stages involved in the design of AI-based products and the fundamentals of machine and deep learning algorithms. Then, you can apply the insights to solve practical problems.

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, are 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.





Who Is This Program For?

This six-week program is ideal for professionals who work in regulated industries (specifically financial services, insurance, healthcare, life sciences, oil and gas, and energy) who want to enhance their 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, as is basic Python experience.

Technical Product Managers in charge of machine learning and AI-based products in their organizations and 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.

Data Analysts who ingest and analyze data and want to make sure their insights are equitable and fair.

Technology Consultants in charge of machine learning and AI-based products in their organizations who are looking to leverage the latest in AI technologies to add value to their organizations.

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

Data Science Professionals who develop and train models and who want to understand key implications for AI-related regulations and design responsible products.



Program Experience

This program is designed to help the participants get most out of the learning experience with a mix of theory, interactive tools, and learning methodologies. With a mix of breakout room exercises, case discussions, polls, and demos, the participants will have an in-depth learning experience with their cohort.



Teaching From AI Experts

Leverages research, perspectives, and content from MIT xPRO and thought leaders in regulated industries.



Real-Time and Real-World Application

Practical assignments and projects where learners can apply skills to current industry challenges and regulatory considerations for AI.



Collaborate With Your Peers

Support, feedback, and networking from fellow professionals who are building AI products in regulated industries.



Special Topics Covered In the Program

Regulatory Compliance in Action

Experts predict that AI in 2022 will bring intensifying regulatory scrutiny, with implications across regulated industries. Learn how to interpret regulations through critical checkpoints of the AI lifecycle and what actions your organization can take to help ensure current and future compliance.

Note: This course will touch on regulatory topics such as: GDPR, CCPA, CDPA.

The Role of Model Governance

Examine use cases of AI algorithms and machine learning models gone wrong, the major risks posed to the companies that created them, and what organizations can do to manage the potential downside of AI technologies.

Ethical and Responsible AI by Design

Examine the unique challenges that AI presents to trust and ethics, and learn what you can do to combat the problems that AI creates and properly mitigate these new risks through ethical practices.

Program Topics



Week 1

Introduction to the Artificial Intelligence Design Process for Regulated Industries

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 for Regulated Industries

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 for Regulated Industries

Building on the knowledge of machine learning fundamentals gained in Week 2 and 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 for Regulated Industries

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) for Regulated Industries

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

Capstone: Designing an AI Product for a Regulated Industry

Design and construct a summary of an AI product or process for a regulated industry, using learnings from the previous modules of the program.

Content From World-Class Thought Leaders

With content from faculty at MIT xPRO, along with insights and perspectives from guest speakers with relevant industry expertise, you'll learn how to apply key concepts and applications to your specific industry.



Brian Subirana

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

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.



Stefanie Mueller

X-Career Development Assistant Professor, MIT Electrical

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.



Duane Boning

Clarence J. Lebel Professor, Electrical Engineering and Computer Science

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.



Bruce Lawler

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

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.



Questions?

Visit <https://enterprise.emeritus.org/designing-building-ai-products-services-for-regulated-industries>
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