MIT | PROFESSIONAL EDUCATION

AI STRATEGIES AND ROADMAP:

SYSTEMS ENGINEERING APPROACH TO AI DEVELOPMENT AND DEPLOYMENT

LIVE VIRTUAL AND ON CAMPUS FORMATS AVAILABLE

Why it matters

AI tools can augment your organization's capabilities, enhancing the precision, speed, and effectiveness of your initiatives. However, without a supportive system-wide architecture, your efforts will fail to realize their full potential—reducing the value of your investment.

> "
> *Today's leaders are discovering that they can't develop AI capabilities with machine learning algorithms alone. What they really need is a holistic AI system architecture.*
> "
>
> **DAVID MARTINEZ, MIT LINCOLN LAB**

By the numbers

80%
of organizations are experimenting with or have fully embraced AI

52%
have accelerated AI adoption plans in the wake of COVID-19

HOWEVER, 76%
of organizations are barely breaking even on their AI investments

SOURCES:
https://www.pwc.com/gx/en/issues/reinventing-the-future/take-on-tomorrow/business-ai-maturity-divide.html
https://www.pwc.com/us/en/tech-effect/ai-analytics/ai-predictions.html

Maximize the value of your AI systems

Designed for the next generation of strategic leaders, this course explores the tools and frameworks required to embrace an organization-wide systems engineering approach to AI. Through experiential learning led by AI experts, you will master the holistic strategies you need to lead, develop, and deploy AI systems in responsible ways that augment human capabilities and provide greater value to your organization.

LEAD   **DEVELOP**   **DEPLOY**

Participant takeaways

- Understand an end-to-end AI architecture at the systems engineering level
- Experiment via AI exercises and review seminal AI papers
- Communicate your value proposition to stakeholders
- Learn to incorporate Responsible AI (RAI) from the beginning of the development cycle
- Acquire guidelines for successfully deploying AI system capabilities, with emphasis on DevOps, MLOps, and DevSecOps
- Receive practical experience from AI practitioners across various industries
- Formulate a strategic vision and development plan focused on AI products and services
- Master the AI pipeline building blocks

Who should attend

Systems engineers who need practical frameworks for building AI pipelines and launching new projects

Executives looking to manage change and make smart investment decisions related to AI technology

Technical leaders who require specialized knowledge to head effective AI-powered teams

Product directors who want to develop cohesive plans for product development and deployment

Team leaders who guide high-technology groups in executing complex AI initiatives

Researchers who want to explore and advance AI applications across industries

Entrepreneurs who need actionable roadmaps for building and growing AI-powered businesses

> *David Martinez and Bruke Kifle helped lay key foundations for our organization's AI strategy and approach.*
>
> *MICHAEL MOULIN-RAMSDEN, HEAD OF NEW VENTURES, VEOLIA NUCLEAR SOLUTIONS*
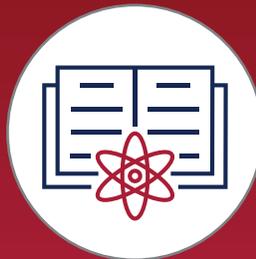
Methodology

Fireside Chats featuring AI experts

Interactive lectures from MIT instructors

Hands-on AI roadmap team project

Supplemental videos and other resources

MIT certificate of completion

Course instructor

DAVID MARTINEZ

Laboratory Fellow Cyber Security and Information Sciences Division, MIT Lincoln Laboratory

David Martinez is a Laboratory Fellow in the Cyber Security and Information Sciences Division at MIT Lincoln Laboratory and MIT Instructor. He focuses on research and technical directions in the areas of artificial intelligence (AI) and high-performance computing. Previously, Mr. Martinez served as an Associate Head in the Cyber Security and Information Sciences Division. He was also a member of Lincoln Laboratory's Steering Committee. Mr. Martinez has held many past technical leadership roles, including Leader of the Embedded Digital Systems Group and Head of the ISR Systems and Technology Division.

Mr. Martinez also served in a leadership role as President and Chairman of Mercury Federal Systems. Prior to joining Lincoln Laboratory, he was employed as a principal research engineer at ARCO Oil and Gas Company, specializing in adaptive seismic signal processing. He received the ARCO special achievement award. He holds three U.S. patents based on his work in signal processing for seismic applications. He was elected an IEEE Fellow "for technical leadership in the development of high-performance embedded computing for real-time defense systems." In 2008, he and his co-authors released a successful book titled High Performance Embedded Computing Handbook, which is highly referenced within the embedded computing research community.

Mr. Martinez was awarded a bachelor's degree from New Mexico State University, an MS degree from MIT, and the EE degree jointly from MIT and the Woods Hole Oceanographic Institution in Electrical Engineering and Oceanographic Engineering. He completed an MBA from the Southern Methodist University.

Course experience

- ✓ *Interactive lectures*
- ✓ *Hands-on activities*
- ✓ *Knowledge tests and exercises*
- ✓ *Fireside chats with AI practitioners*
- ✓ *Asynchronous supplemental videos*
- ✓ *AI roadmap team project*
- ✓ *Faculty office hours*

"
The course was a truly unique experience. I've worked with AI for several years, but the faculty provided a comprehensive picture of the field that I haven't seen anywhere else.

RAINER HOFFMANN, SENIOR MANAGER OF DIGITAL TRANSFORMATION, ENBW ENERGIE BADEN-WÜRTTEMBERG AG
"

DAY 1	
8:45–10:10 am	**Course Introduction and Lecture 1:** AI background and building blocks
10:20–11:30 am	**Lecture 2:** AI strategic vision and project roadmap
11:30 am–12:15 pm	**Fireside Chat**
1:00–2:10 pm	**Lecture 3:** Data conditioning
2:20–3:40 pm	**Team Proposals**
3:40–5:00 pm	**Team Presentations**

DAY 2	
8:45–9:00 am	**Day 2 Introduction**
9:00–10:10 am	**Lecture 4:** Machine learning
10:20–11:30 am	**Hands-On Exercise:** Multi-Layer Perceptron (MLP) machine learning model
11:30 am–12:15 pm	**Lecture 4 Takeaways**
1:00–2:10 pm	**Lecture 5:** Modern computing
2:20–5:00 pm	**Team Project**

DAY 3	
8:45–9:00 am	**Day 3 Introduction**
9:00–10:10 am	**Lecture 6:** Human-machine teaming
10:20–11:30 am	**Lecture 7:** Responsible AI
11:30 am–12:15 pm	**Fireside Chat**
1:00–2:10 pm	**Lecture 8:** Guidelines for deployment
2:20–5:00 pm	**Team Project**

DAY 4	
8:45–9:00 am	**Day 4 Introduction**
9:00–10:10 am	**Lecture 9:** Development, security, and operations
10:20–11:30 am	**Lecture 10:** Fostering an innovative team environment
11:30 am–12:15 pm	**Fireside Chat**
1:00–2:10 pm	**Lecture 11:** Leadership and resilience
2:20–5:00 pm	**Team Project**

DAY 5	
8:45–9:00 am	**Day 5 Introduction**
9:00–10:10 am	**Lecture 12:** Putting it all together
10:20 am–12:00 pm	**Team Presentations**
12:45–1:45 pm	**Team Presentations (continued)**
2:00–3:00 pm	**Course Wrap-Up**

Designed for your needs

INDIVIDUALS

Fill specific skills gaps and acquire the tools and knowledge you need to advance your career.

TEAMS OR GROUPS

Learn alongside colleagues and work together to implement new approaches back at your organization.

CORPORATE PROGRAMS

Contact MIT Professional Education to learn how this course can be customized for your organization.

REGISTRATION INFORMATION

FEES: $4,200

REQUIREMENTS: Participants are not required to have a deep technical background, but having some familiarity with AI concepts will be helpful.

HOW TO APPLY: To apply, complete the online application located on **professional.mit.edu/aisr**. As admission is open on a rolling basis and dependent on space-availability, you should apply early to reserve your place. You will be notified via email whether your application has been accepted within five business days. If you are accepted, you will receive an invoice for the program fee. Full payment must be made prior to the course start date to reserve your place.

PROFESSIONAL CERTIFICATE PROGRAM IN MACHINE LEARNING & ARTIFICIAL INTELLIGENCE

This course may be taken as a standalone program or as part of the *Professional Certificate Program in Machine Learning & Artificial Intelligence*. In the certificate program, you'll acquire the latest technical approaches for natural language processing, predictive analytics, deep learning, and more—and learn how to customize these techniques to solve your unique challenges.

ABOUT MIT PROFESSIONAL EDUCATION

For more than 70 years, MIT Professional Education has been providing technical professionals worldwide a gateway to renowned MIT research, knowledge, and expertise, through advanced education programs designed specifically for them. In addition to industry-focused, two-to-five-day live virtual and on-campus courses through Short Programs, MIT Professional Education offers professionals the opportunity to take online and blended learning courses through Digital Plus Programs, attend courses abroad through International Programs, enroll in regular MIT academic courses through the Advanced Study Program, or attend Custom Programs designed specifically for their companies. For more information, please visit **professional.mit.edu**.