Deploying AI for Strategic Impact

DEPLOYING AI FOR STRATEGIC IMPACT

Items marked with a "*" are graded activities

Getting Started

This week you'll become familiar with the platform, course design and content.

- **Introduction to Deploying AI for Strategic Impact**
- **Note for Pilot Participants**
- **Course Guide**
- **Course Team**
- **Discussion Forum: Introduce Yourself**
- **Software Requirements and Accessibility**
- **Connect with Us**

WEEK 1 | Introduction and Overview | 4-6 hrs

This week, you'll learn how data, compute power, and model design are essential for organizations aiming to use AI strategically and effectively in today's competitive landscape.

- **Introduction to Week 1**
- **Introduction to Deploying AI**
- **Discussion: AI Gone Wrong**
  - *** Put into Practice: Precision vs. Flexibility**
  - *** Reflection: Precision vs. Flexibility**
- **Reading: The Shift from Traditional AI Systems**
  - *** Reflection: The Shift from Traditional AI Systems**

- **Applying AI**
- **Reading: The Importance of Data Quality**
  - *** Put into Practice: Exploring the Impact of Model Scale and Data**
  - *** Put into Practice: Exploring the Limits of AI**
- **Discussion: OpenAI and the Associated Press Licensing Deal**
  - *** Reflection: Financial Risks of Using AI**
  - *** Assignment: Designing a Responsible AI Integration Strategy**

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WEEK 2 | The Landscape of Models | 4-6 hrs

This week, you will learn how model selection and customization to your organization is paramount.

- **Introduction to Week 2**
- **Technical Properties of AI Models**
  - *** Put into Practice: The Evolution of AI in Your Organization**
- **Reading: Transformers and BERT Architectures**
  - *** Put into Practice: How do Transformers Work?**
  - *** Knowledge Check: Transformers, BERT and Generative AI**

- **Technical Properties of AI Models: Review**
- **Discussion: Supervised Learning vs. Self-Attention Mechanisms**
  - *** Reflection: Supervised Learning vs. Self-Attention Mechanisms**
- **Reading: Generative AI Doesn't Have a Coherent Understanding of the World**

- **Generative AI in Practice**
- **Discussion: Impact Use Cases for Generative AI Integration**
  - *** Reflection: Core benefits of Generative AI**
  - *** Put into Practice: Testing a Generative AI Model**

- **Selecting and Evaluating Models**
  - *** Reflection: Incorporating Generative AI in your Workflows**
- **Reading: Hallucinations of ChatGPT-4**
- **Reading: Explained: Generative AI's Environmental Impact**
  - *** Knowledge Check: Choosing the Right Generative AI Model**
  - *** Assignment: Simulating Model Selection for a Real-World AI Use Case**

WEEK 3 | Compute: Realities of Training Models Yourself, Running Inference, and Training APIs | 4-6 hrs

This week, you will be equipped to critically evaluate the trade-offs of compute strategies in real-world AI development and deployment.

- **Introduction to Week 3**
- **Technical Foundations of Scaling AI**
- **Discussion: The Power and Price of Scaling AI**
  - *** Scenario: Choose Your AI Strategy – The Compute Trade-Off**
  - *** Reflection: Reflecting on "The Bitter Lesson"**
- **Discussion: Rethinking AI Development in the Era of Scaling Laws**
  - *** Reflection: Choosing the Right Hardware for Your AI Model**

- **Case Study: LLMs and Financial Intelligence**
  - * **Reflection: The Role of AI in Personal Finance**
  - * **Knowledge Check: Understanding AI Chips and Deployment Trade-offs**

- **Infrastructure and Business Impact**
- **Reading: AI Has High Data Center Energy Costs — But There Are Solutions**
  - * **Reflection: Reducing Energy Consumption**
  - * **Scenario: Choosing the Right AI Model for Sustainable Business**
  - * **Assignment: Designing a Sustainable AI Hardware Strategy**

WEEK 4 | From Data to Insights: Embeddings, Curation, Multi-Modality, Explainability | 4-6 hrs

This week, you will have a conceptual and practical grasp of how data becomes intelligence through principled design, thoughtful representation, and transparent AI systems.

- **Introduction to Week 4**
- **Foundations of Cognitive Cartography and Business Analytics**
- **Reading: You May Not Need Big Data After All**
  - * **Reflection: Reducing Energy Consumption**
  - * **Put Into Practice: From Business Problem to Data Strategy**

- **From Data to Insights**
- **Reading: A Showcase of Real-Time Enterprise-Scale Generative AI Architecture**
- **Discussion: Reflecting on Prompt Engineering**
- **Discussion: Evaluating Data Quality for AI in Your Organization**
- **Knowledge Check: Foundations of Modern AI: Models, Learning, and Multimodal Data**

- **AI-Driven Representation**
- **Reading: Feature engineering vs. Cognitive Cartography**
  - * **Put into Practice: Data Representation for Humans and Machines**
  - * **Put into Practice: Exploring Hierarchical Representation Learning**
  - * **Put into Practice: Design and Launch Your AI Agent**
  - * **Assignment: Practical Applications of Cognitive Cartography**

WEEK 5 | Organizational Keys to AI Success | 4-6 hrs

This week, you will have a conceptual and practical grasp of how data becomes intelligence through principled design, thoughtful representation, and transparent AI systems.

- Introduction to Week 5
- AI as a General Purpose Technology
- Discussion: The Transformative Power of Generative AI

- The Role of AI and Productivity
- Reading: How generative AI can boost highly skilled workers' productivity
  * Reflection: AI and Productivity
  * Scenario: Applying the Clerk–Colleague–Coach Framework
- Discussion: How Is Generative AI Transforming Specific Job Roles?

- Staying Competitive and Agile with Generative AI
- Reading: Notion AI
  * Case Study: Navigating Uncertainty and Innovation with Notion AI
- Discussion: Agility within Organizations
  * Put into Practice: Apply the Four-Step Agile Process to Your Organization

- Generative AI for Design and Manufacturing
  * Reflection: Generative AI in Design and Manufacturing
  * Knowledge Check: Agile Intelligence: Adapting to Generative AI in a Rapidly Evolving World
  * Assignment: Strategic Roadmap for Generative AI Adoption

WEEK 6 | Exploring AI: Transformative Applications and Case Studies Across Industries | 4-6 hrs

This week, through real-world case studies and applied analysis, learners will develop a comprehensive understanding of AI's transformative potential and the ethical, practical, and organizational considerations that accompany its deployment.

- Introduction to Week 6
- Discussion: The Three A's of AI: Augmentation, Automation

- AI Applications to Transportations and Logistics
- Discussion: Navigating the Roadblocks to Full Autonomy
  * Reflection: Autonomous Vehicles

- LLMs for Cybersecurity
- Discussion: Customizing Language Models for Cybersecurity
- Reading: CyberPal.AI: Empowering LLMS with Expert-Driven Cybersecurity Instructions
  * Reflection: Reflecting on the IBM Case Study

- AI for Radiology
- Discussion: Designing AI for Impact in Healthcare
  * Reflection: Trust and Transparency in Healthcare AI

- **Generative AI for Drug Discovery**
- **Reading: The Role of AI in Drug Discovery: Challenges, Opportunities, and Strategies**
  - *** Reflection: AI and the Future of Drug Development**

- **Leveraging Beneficial Friction for Human-First AI**
- **Discussion: The Role of Beneficial Friction**
  - *** Assignment: Designing a Responsible AI System for a Real-World Domain**

WEEK 7 | Productivity, Labor Automation, and Workforce Implications | 4-6 hrs

This week, you will gain a nuanced understanding of how AI is redefining productivity and workforce structures in the digital age.

- **Introduction to Week 7**
- **AI Productivity and Augmentation**
- **Discussion: Preparing for an AI-Augmented Future**
  - *** Reflection: Complementarity, Trust, and Effective AI Integration**
- **Reading: When combinations of humans and AI are useful: A systematic review and meta-analysis**
  - *** Reflection: When Are Humans and AI Better Together?**

- **The Agentic Age**
  - *** Reflection: Collaborating with Agentic AI**
  - *** Reflection: Shaping Effective Human–AI Collaboration**
- **Reading: Collaborating with AI Agents: Field Experiments on Teamwork, Productivity, and Performance**

- **AI, Automation, and the Workforce**
- **Discussion: AI and the Shifting Nature of Work**
  - *** Scenario: Choose Your AI Workforce Strategy: Planning for Displacement or Augmentation**
  - *** Assignment: Designing Your Ideal AI Teammate**

- **Introduction to the Capstone Project I**
  - *** Reflection: Capstone project: Introduction and Use Case Identification**

WEEK 8 | The Pulse Of Ethical Machine Learning in Health | 4-6 hrs

This week, you will examine the ethical risks and responsibilities associated with AI-driven recommendations, particularly in sensitive health contexts, and how trust is cultivated through transparency and accountability.

- **Introduction to Week 8**

- AI Recommendations, Trust, and Ethical Risk
- Discussion: Ethical Risks of Generative AI in Healthcare
- Reading: Identifying Implicit Social Biases in Vision-Language Models
  * Reflection: Designing Safeguards for Generative AI
  * Case Study: Label with Care: Training AI to Understand the Difference
  * Reflection: Human-AI Collaboration and the Weight of Recommendations

- AI for Entertainment and the Arts
- Discussion: Rethinking AI's Role in Creativity and Expression
  * Put into Practice: Creating with AI: From Prompt to Persona
  * Reflection: Redefining Creativity with AI

- AI and Computer Vision
  * Reflection: Reflecting on Computer Vision and Human-AI Collaboration
  * Assignment: Exploring Risk in Real-World AI Systems

- Introduction to the Capstone Project II
  * Reflection: Capstone project: Stakeholder Engagement and Success Criteria

WEEK 9 | Leveraging AI for Strategic Impact and ROI | 4-6 hrs

This week explores how organizations can strategically deploy AI to maximize impact and return on investment (ROI).

- Introduction to Week 9
- Deploying AI Products: Factors and Implications
  * Reflection: AI at Scale: Reflecting on Opportunities, Challenges, and Human Roles

  * The Capstone Project