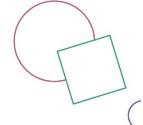
Elements of Al



FREE ONLINE COURSE TO DEMYSTIFY ARTIFICIAL INTELLIGENCE

Opening session 28/01/2025	ORGANIZER'S INTRODUCTIONS Dr. Sana NOUZRI Complementary course overview presentation Program and schedule Software demonstration Q&A
Session 1 04/02/2025	 CHAPTER 1: UNDERSTANDING AI IN TODAY'S WORLD Speaker: Dr Amro Najjar Content Overview: Introduction to AI: Clear definitions of AI and its core principles. Differentiating between Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), and Artificial Superintelligence (ASI). Historical Context: Key milestones in AI development. Evolution from rule-based systems to machine learning. The rise of AI in educational contexts Al in Everyday Life: Virtual Assistants (Siri, Alexa, Google Assistant): Help with tasks like reminders, answering queries, and controlling smart home devices via voice commands. Chatbots: Used in customer support, providing instant answers and troubleshooting on websites and apps (e.g., ChatGPT, customer service bots). Education: AI enables personalized learning (Duolingo) and automated grading systems. Debunking Myths: Addressing common misconceptions (e.g., AI will replace all jobs). Clarifying what AI is capable of reasoning and what it cannot reason Latest Developments: Overview of GPT-4 and its capabilities.
Session 2 11/02/2025	 Case studies of Al implementation in classrooms CHAPTER 2: AI PROBLEM SOLVING - HOW MACHINES LEARN TO THINK Speaker: Dr Sukriti BHATTACHARYA Content Overview: Understanding Al Problem Solving: Explanation of how Al approaches problems differently than humans. Search Algorithms: Introduction to search algorithms and optimization. Real-world applications of search algorithms.



	Concepts of agents, environments, and rewards.
	 Case study: OpenAI's advancements in game-playing agents.
	Case Studies:
	 Deep dive into AlphaGo and AlphaZero.
	Or
	Al-powered adaptive learning platform.
Session 3	CHAPTER 3: REAL-WORLD AI: PRACTICAL APPLICATIONS IN THE
18/02/2025	EDUCATIONAL SECTOR
10/02/2023	Speaker: Dr Rafael Ferreira Mello
	Content Overview:
	<u>What is Natural Language Processing (NLP)?</u>
	• Definition of NLP as a branch of AI that enables machines to
	understand, interpret, and generate human language.
	Probabilities and Odds in NLP
	How the next word in a sentence is predicted using probabilities.
	• How likely two different words are to follow a given word based on
	their odds.
	Al Technologies in Practice:
	NLP for language learning
	 NLP in interactive learning materials
	Case Studies:
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	NLP for Language Learning Apps (e.g., Duolingo, Babbel)
	NLP-based Writing Assistance Tools (e.g., Grammarly)
	Challenges and Considerations:
	Bias in NLP Algorithms Affecting Language Learning
	 Accuracy and Reliability of NLP in Assessing Open-ended
	Responses
	 Balancing Human Feedback with Automated NLP Responses
	Future Trends in NLP for Education:
	Advances in Multimodal NLP (text, speech, image integration)
Session 4	CHAPTER 4: MACHINE LEARNING UNVEILED-THE DRIVING FORCE
25/02/2025	BEHIND AI
,,	Speaker: Dr Luis Leiva
	Content Overview:
	Fundamentals of Machine Learning:
	 Definitions and key concepts.
	 Discriminative vs. generative modeling
	 Classification vs. regression tasks
	Learning paradigms
	Supervised learning
	Unsupervised and self-supervised learning
	Semi-supervised learning
	Reinforcement learning
	Some learning algorithms
	Decision trees
	Support Vector Machines
	 K-means clustering
	Challenges in Machine Learning
	Data quality: volume, variability, velocity
	 Data preprocessing and feature engineering



04/03/2025	• Overfitting CHAPTER 5: NEURAL NETWORKS-THE BRAIN BEHIND INTELLIGENT SYSTEMS Speaker: Dr Shiwei Liu
04/03/2025	SYSTEMS
04/03/2025	
	Speaker: Dr Shiwei Liu
	Content Overview:
	Introduction to Neural Networks:
	Biological inspiration and mathematical foundations.
	How neural networks learn from data.
	Training Neural Networks:
	Concepts of backpropagation and gradient descent.
	Overfitting and regularization techniques. <u>Advanced Architectures:</u>
	 Convolutional Neural Networks (CNNs) for image processing. Recurrent Neural Networks (RNNs) and LSTMs for sequential data.
	Large Language Models:
	 In-depth look at GPT-4 and its capabilities.
	Generative Models:
	Introduction to GANs and VAEs.
	 Creative applications like DALL-E for image generation.
	Current Developments:
	 Multimodal AI combining text, image, and audio data.
	• The rise of transformer models in various domains.
	Educational Innovations:
	Speech recognition and AI language tutors
	CHAPTER 6: THE SOCIETAL IMPACT OF AI: ETHICAL, LEGAL, AND
11/0.5/2025	FUTURE CONSIDERATIONS IN EDUCATION
	Speaker: Dr Christian M. Stracke
	Content Overview:
	Ethical Frameworks:
	The Ethics of AI and Education (AI&ED)
	Human Rights, Democracy and AI&EDResponsible AI use in education
	 Responsible AI use in education Addressing biases and ensuring inclusion, equity and fairness
	Legal Perspectives:
	Regulatory Considerations for AI in Education
	• Why Should AI in Education (AI&ED) Be Regulated?
	• What Should Be Regulated in Al&ED?
	 Protecting Human Rights, Democracy, and the Rule of Law
	 What Regulations Should Be Put in Place to Protect Human
	Rights, Democracy, and the Rule of Law Whenever AI is
	Applied or Taught in Educational Contexts?
	 Intellectual Property and AI-Generated Content
	• The Need for Al Literacy
	 How Should Education and Learning About AI (AI Literacy)
	Be Initiated?
	 Intellectual Property and Al-Generated Content <u>Societal Implications:</u> Al's Role in Shaping Future Job Markets Lifelong Learning and Al as an Educational Necessity Starting Al Literacy Education



	 How AI is Developed, Trained, and Applied in Educational
	Contexts
	 Who Does AI Target and Who are the Real Beneficiaries?
	Educational Applications and Pedagogy:
	 Al Applications in Teaching and Learning
	 Learning Objectives and Design for Quality Education with
	Al
	Balancing Human Interaction and AI in Learning Environments
	 Strategies for educators to adapt and thrive with AI
Final test	Multiple choice question test to evaluate the understanding and
24/03/2025 to 29/03/2025	involvement of participants, by doing the test, every participant should be
	able to:
	 identify the basic concepts of Al
	 select the best AI technique for a given problem
	 understand the use and limitations of Al
	 Identify some of the major societal implications of AI
	Recognize ethical considerations and responsibilities in the
	development and deployment of AI systems.

