



Artificial Intelligence applied to environmental monitoring

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IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-
Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



Day 1

Time	Duration	Training Module - Topic
09:00 - 09:30	30m	Welcome & Course Objectives
09:30 - 10:30	1h	Module 1: Definitions and Key Concepts
10:30 - 10:45	15m	Coffee Break
10:45 - 11:45	1h	Module 2: Types of Learning
11:45 - 13:00	1h15m	Module 3: Datasets, Algorithms, and Models
13:00 - 14:00	1h	Lunch Break
14:00 - 15:30	1h30m	Module 4: Building a Simple ML Model
15:30 - 15:45	15m	Coffee Break
15:45 - 16:30	45m	Module 5: Final Activity + Review Quiz



Welcome & Course Objectives

- Welcome and quick ice-breaker
- Learning objectives
- Agenda overview and tools to be used

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Maybe Venice is the city that can save the world

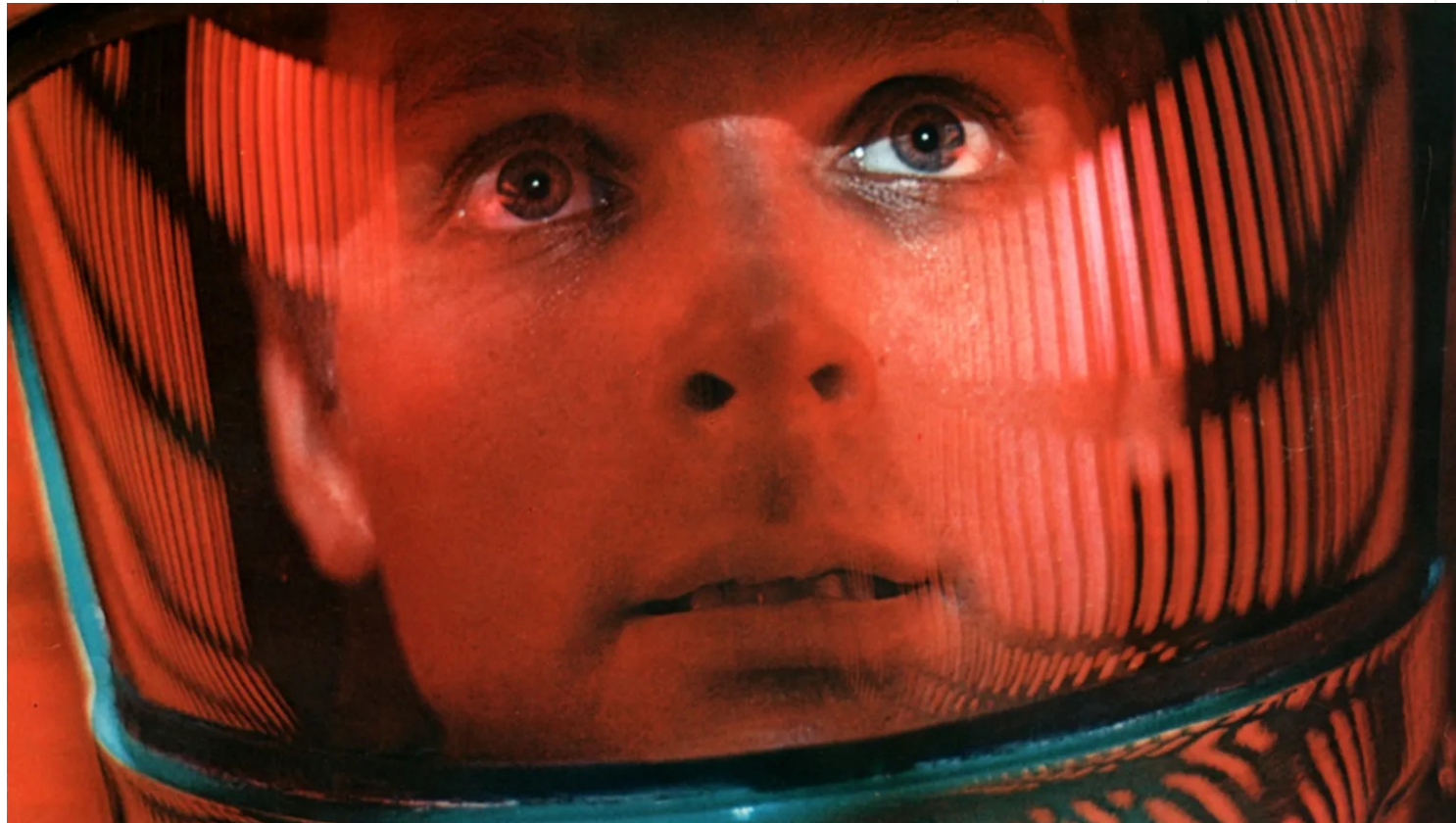


AI in Knowledge Management

- 🌐 AI is reshaping how organizations handle knowledge.
- 🌐 Focus on driving efficiencies and innovation.
- 🌐 Retention of institutional memory.
- 🌐 Inspiring Case Studies



2001: A Space Odyssey [1968] Stanley Kubrick



The Terminator [1984] James Cameron



The Matrix [1999] Lana & Lilly Wachowski



Minority Report [2002] Steven Spielberg



Wall-E [2008] Andrew Stanton



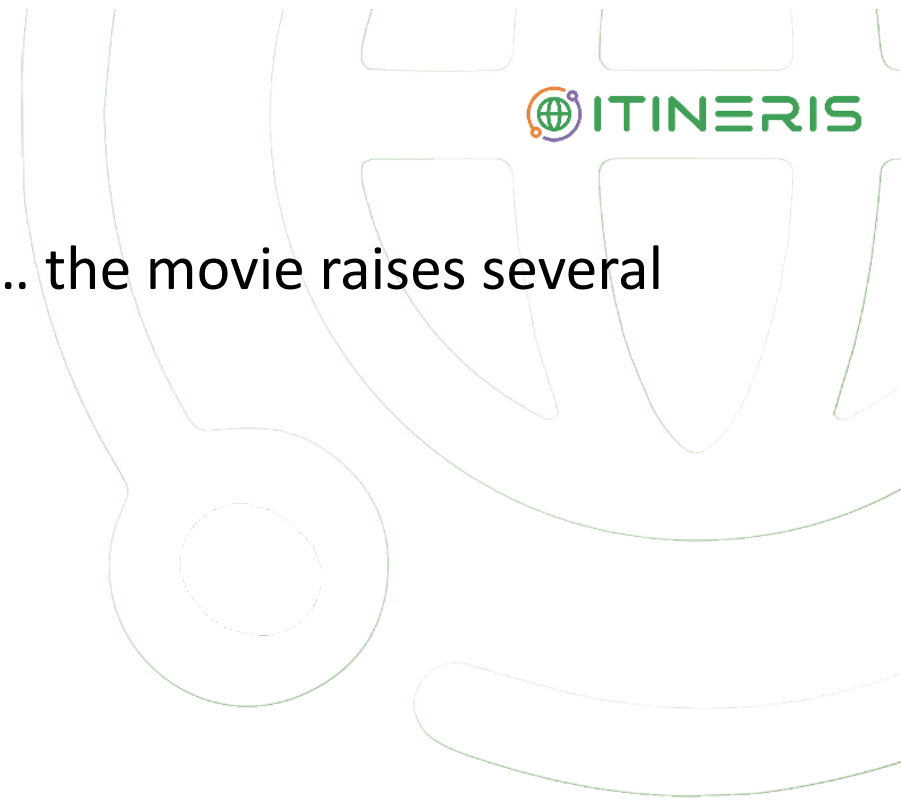
What is the Matrix ?



The Matrix

🌐 Even if we are a bit far from this scenario 😊 ... the movie raises several thematic and philosophical considerations:

- Artificial Intelligence Dominance
- Simulation and Reality
- Human-Machine Interface
- Existential Threat




Artificial Intelligence Dominance

- 🌐 The narrative depicts a scenario where AI achieves dominance over humanity, leading to a dystopian world.



Simulation and Reality

-  The concept of a simulated reality, where humans are unaware that their perceived world is not real, prompts contemplation on the nature of reality and the challenges of distinguishing between what is artificial and what is genuine.



Human-Machine Interface

- 🌐 The film explores the interface between humans and machines, portraying a direct connection between the human brain and computer systems.
- 🌐 This concept raises questions about the potential integration of AI with the human mind and the ethical considerations surrounding such advancements.

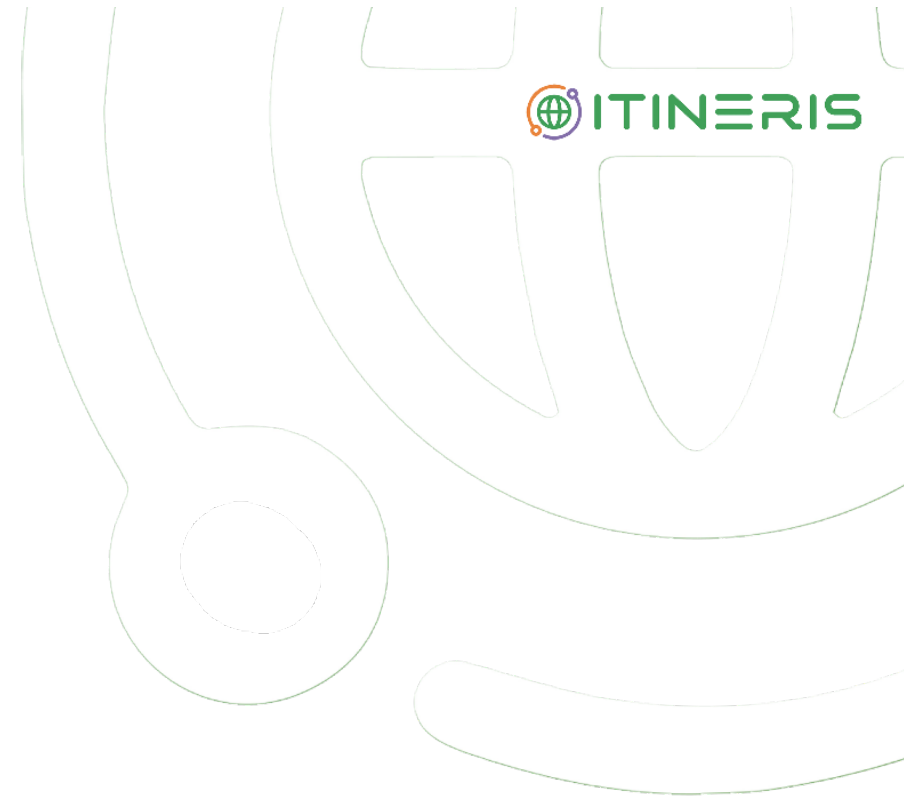
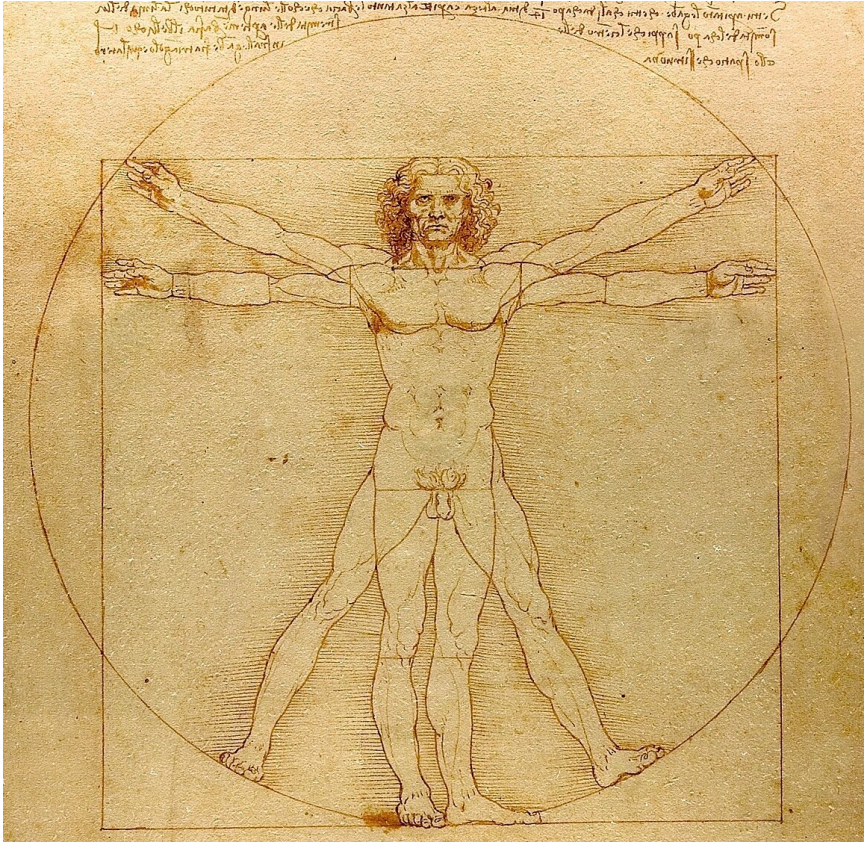


Existential Threat

- 🌐 In The Matrix, the human race is harvested by machines for energy. Because humans are resistant by nature, The Machines run the risk of the humans rebelling against them.
- 🌐 To counter this problem, they came up with a brilliant plan ...

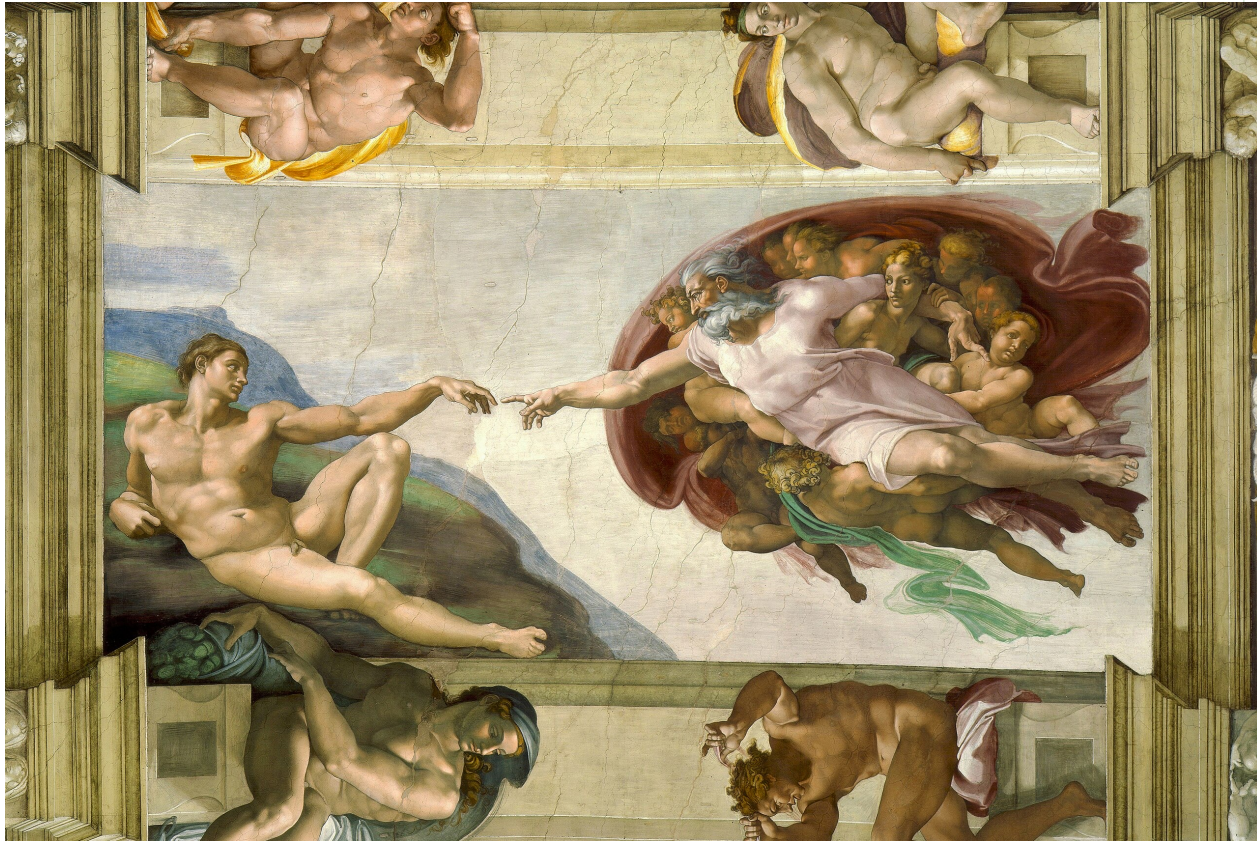


Quantify & Optimize



Vitruvian Man
Leonardo da Vinc (c 1490)

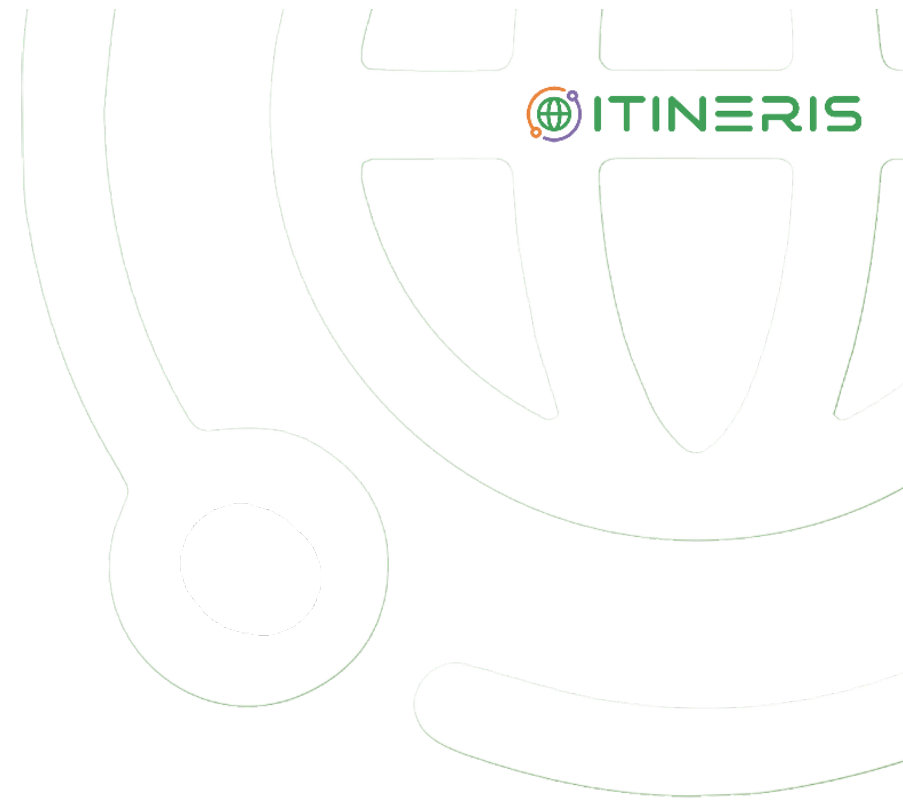
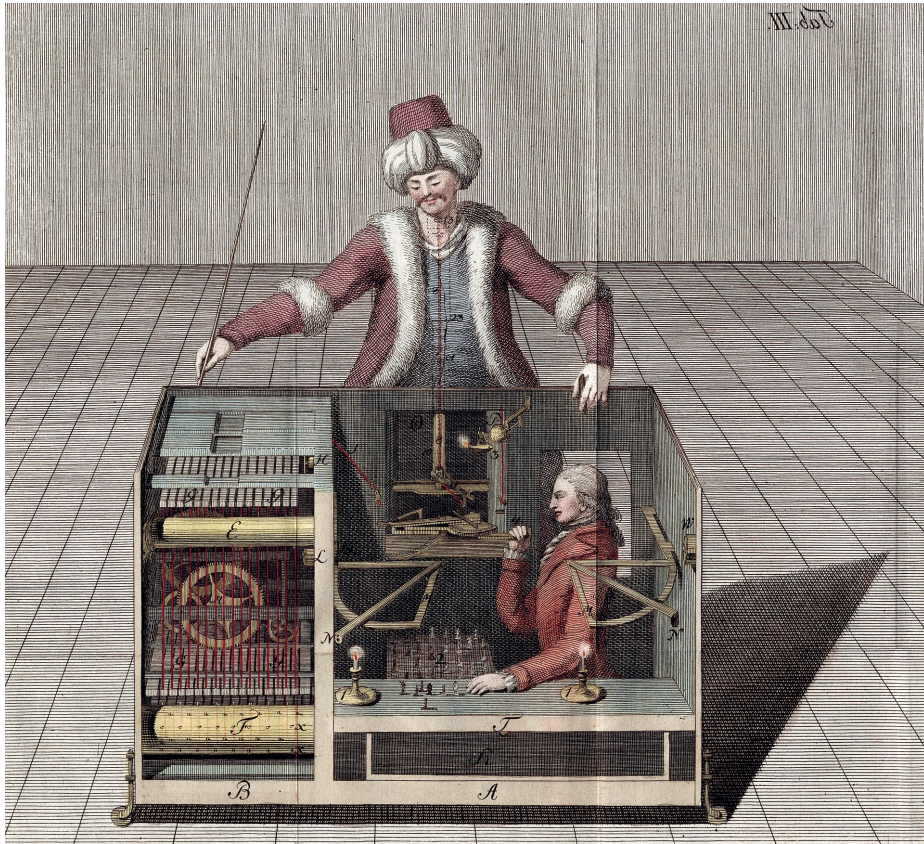
The Transfer



 ITINERIS

The Creation of Adam
Michelangelo (c. 1511-1512)

Hoax or Autonomy ?



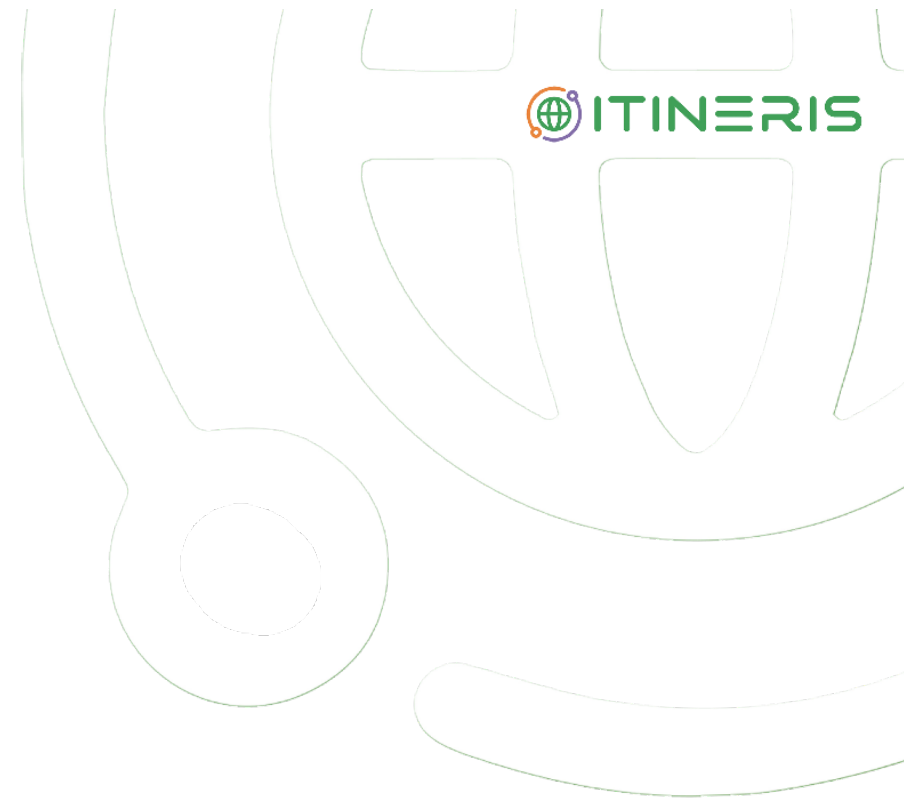
The Mechanical Turk
Philip James de Louthembourg (1770)

The Horror



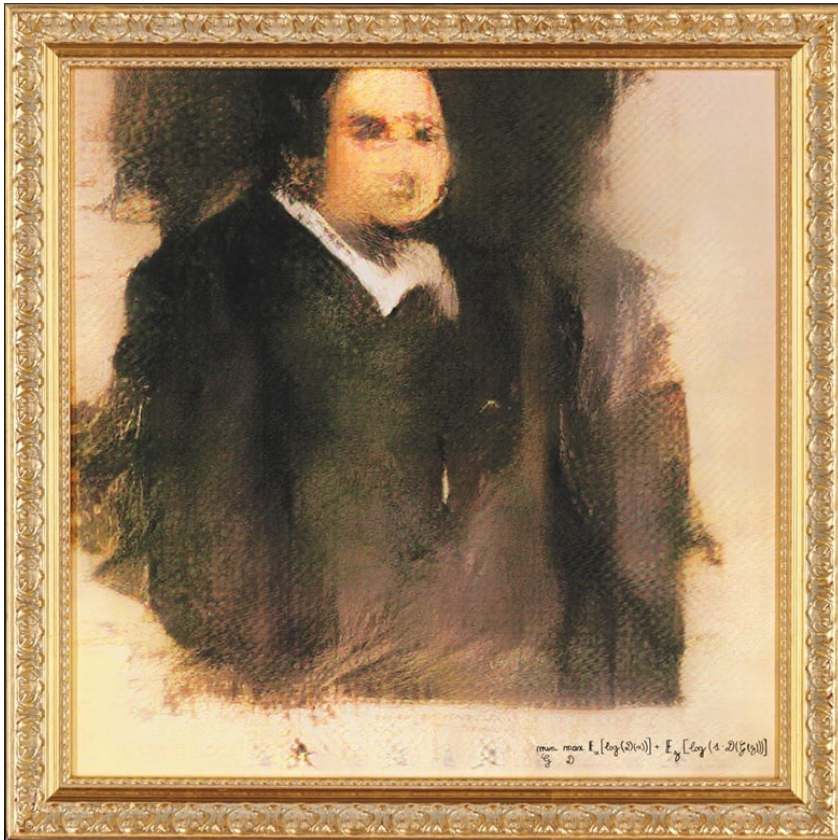
Guernica
Pablo Picasso (1937)

Concerns

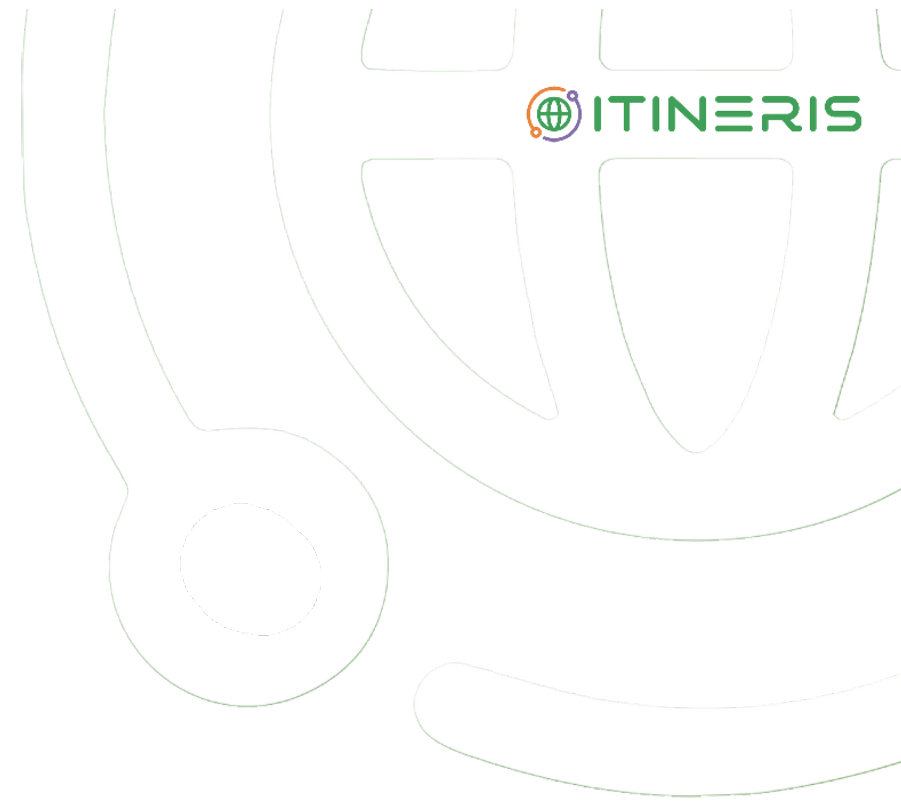


The Son of Man
René Magritte (1964)

Creativity






Portrait of Edmond de Belamy
AI (2018)

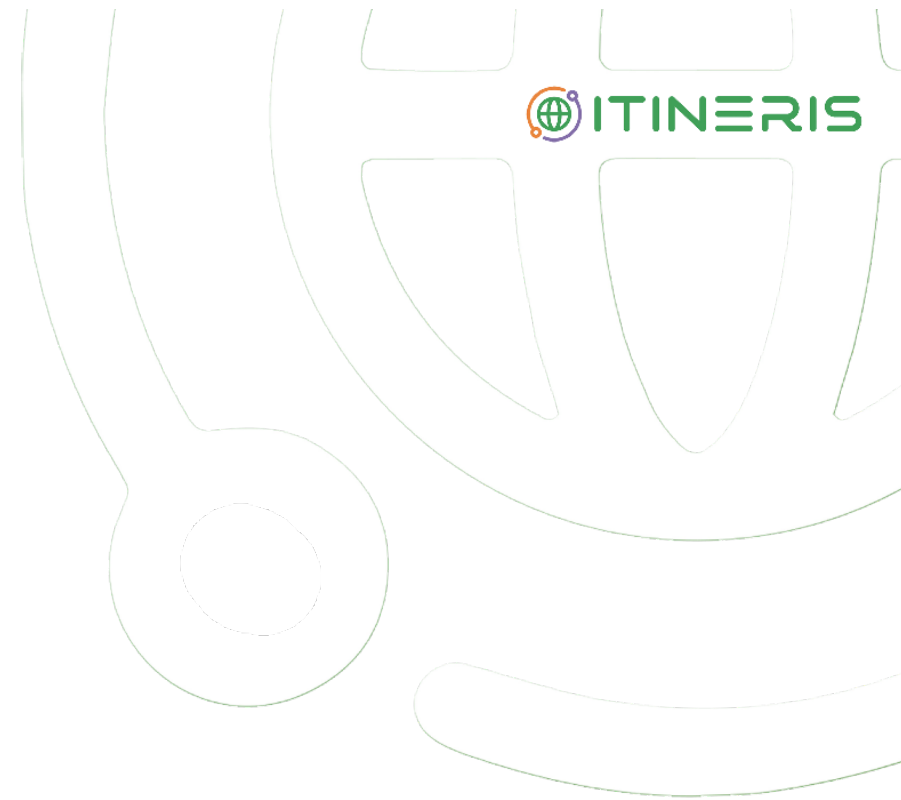


Some tool available

Tool	Best For	Code Needed	Type	Dataset Support	UI Style
Teachable Machine	Quick, fun AI experiments	✗ No	No-code	Image/Audio	Web GUI
Orange	Visual ML with real algorithms	✗ No	Drag & drop	Tabular/Image	Desktop GUI
R	Real ML pipelines	✓ Yes	Code	Any format	Desktop GUI
Colab (Python)	Real ML pipelines (with help)	✓ Yes	Code	Any format	Notebook
ML for Kids	Kids & creative learners	✗ No	Blocks	Image/Text	Web GUI (Scratch)
KNIME	Advanced workflows (no code)	✗ No	Drag & drop	Tabular/SQL/etc	Desktop GUI

Materials & Tools

-  Google Colab: for Python-based demos
-  Teachable Machine: for quick, visual demo
-  Kahoot: for quizzes and interaction



Materials & Tools

- 🌐 Google Earth Engine
- 🌐 QGIS + ML Plugins
- 🌐 Python (Colab) + libraries: Scikit-learn, TensorFlow, PyTorch
- 🌐 LLMs: ChatGPT, Elicit, SciSummary
- 🌐 Datasets: Copernicus, NOAA, GBIF, OpenAQ, Global Forest Watch