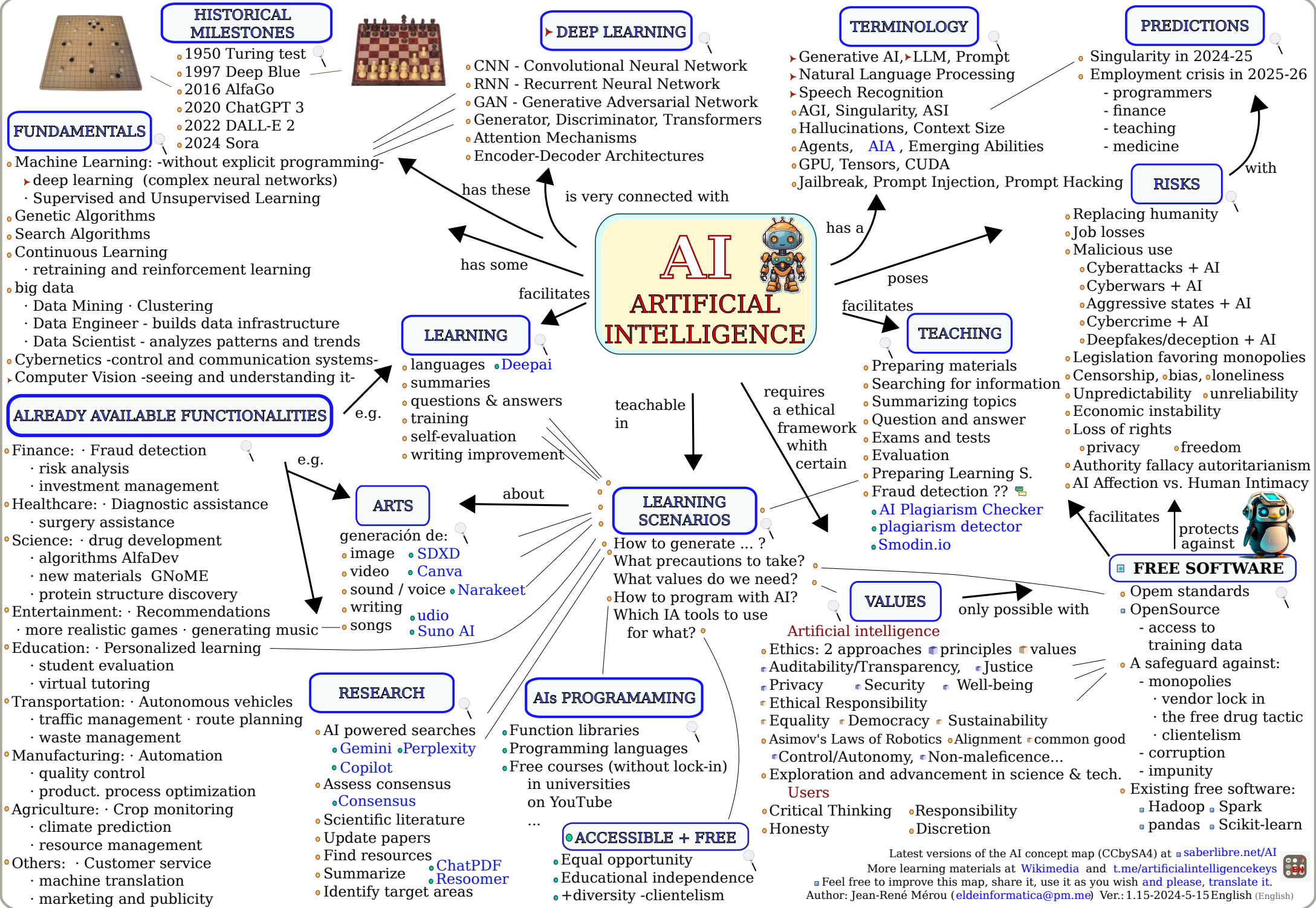


AI ARTIFICIAL INTELLIGENCE



FUNDAMENTALS

- Machine Learning: -without explicit programming-
 - ▶ deep learning (complex neural networks)
 - Supervised and Unsupervised Learning
- Genetic Algorithms
- Search Algorithms
- Continuous Learning
 - retraining and reinforcement learning
- big data
 - Data Mining · Clustering
 - Data Engineer - builds data infrastructure
 - Data Scientist - analyzes patterns and trends
- Cybernetics -control and communication systems-
- ▶ Computer Vision -seeing and understanding it-

ALREADY AVAILABLE FUNCTIONALITIES

- Finance: · Fraud detection
 - risk analysis
 - investment management
- Healthcare: · Diagnostic assistance
 - surgery assistance
- Science: · drug development
 - algorithms AlfaDev
 - new materials GNoME
 - protein structure discovery
- Entertainment: · Recommendations
 - more realistic games · generating music
- Education: · Personalized learning
 - student evaluation
 - virtual tutoring
- Transportation: · Autonomous vehicles
 - traffic management · route planning
 - waste management
- Manufacturing: · Automation
 - quality control
 - product. process optimization
- Agriculture: · Crop monitoring
 - climate prediction
 - resource management
- Others: · Customer service
 - machine translation
 - marketing and publicity

HISTORICAL MILESTONES

- 1950 Turing test
- 1997 Deep Blue
- 2016 AlfaGo
- 2020 ChatGPT 3
- 2022 DALL-E 2
- 2024 Sora

DEEP LEARNING

- CNN - Convolutional Neural Network
- RNN - Recurrent Neural Network
- GAN - Generative Adversarial Network
- Generator, Discriminator, Transformers
- Attention Mechanisms
- Encoder-Decoder Architectures

TERMINOLOGY

- Generative AI, ▶LLM, Prompt
- Natural Language Processing
- Speech Recognition
- AGI, Singularity, ASI
- Hallucinations, Context Size
- Agents, AIA, Emerging Abilities
- GPU, Tensors, CUDA
- Jailbreak, Prompt Injection, Prompt Hacking

PREDICTIONS

- Singularity in 2024-25
- Employment crisis in 2025-26
 - programmers
 - finance
 - teaching
 - medicine

RISKS

- Replacing humanity
- Job losses
- Malicious use
 - Cyberattacks + AI
 - Cyberwars + AI
 - Aggressive states + AI
 - Cybercrime + AI
 - Deepfakes/deception + AI
- Legislation favoring monopolies
- Censorship, bias, loneliness
- Unpredictability · unreliability
- Economic instability
- Loss of rights
 - privacy
 - freedom
- Authority fallacy authoritarianism
- AI Affection vs. Human Intimacy

LEARNING

- languages · Deepai
- summaries
- questions & answers
- training
- self-evaluation
- writing improvement

TEACHING

- Preparing materials
- Searching for information
- Summarizing topics
- Question and answer
- Exams and tests
- Evaluation
- Preparing Learning S.
- Fraud detection ??
 - AI Plagiarism Checker
 - plagiarism detector
 - Smodin.io

LEARNING SCENARIOS

- How to generate ... ?
- What precautions to take?
- What values do we need?
- How to program with AI?
- Which IA tools to use for what?

VALUES

- Artificial intelligence
- Ethics: 2 approaches principles values
 - Auditability/Transparency, Justice
 - Privacy Security Well-being
 - Ethical Responsibility
 - Equality Democracy Sustainability
 - Asimov's Laws of Robotics Alignment common good
 - Control/Autonomy, Non-maleficence...
 - Exploration and advancement in science & tech.
- Users
- Critical Thinking Responsibility
 - Honesty Discretion

FREE SOFTWARE

- Open standards
- OpenSource
 - access to training data
- A safeguard against:
 - monopolies
 - vendor lock in
 - the free drug tactic
 - clientelism
 - corruption
 - impunity
- Existing free software:
 - Hadoop · Spark
 - pandas · Scikit-learn

RESEARCH

- AI powered searches
 - Gemini · Perplexity
 - Copilot
- Assess consensus
 - Consensus
- Scientific literature
- Update papers
- Find resources
 - ChatPDF
 - Resoomer
- Summarize
- Identify target areas

AI'S PROGRAMMING

- Function libraries
- Programming languages
- Free courses (without lock-in) in universities on YouTube

ACCESSIBLE + FREE

- Equal opportunity
- Educational independence
- +diversity -clientelism