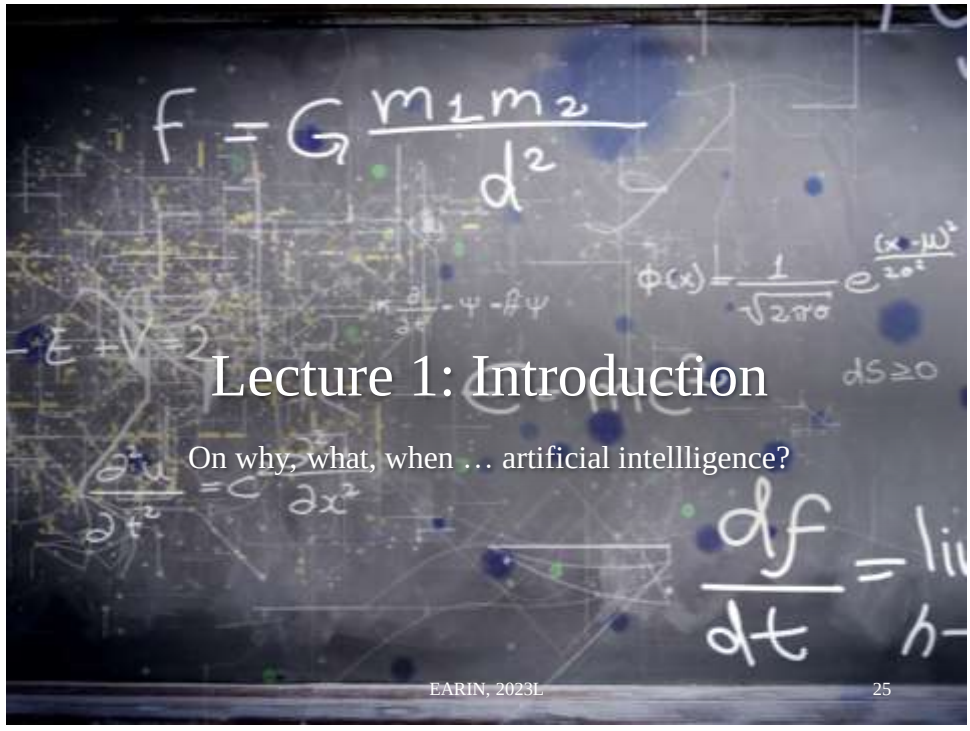

Lecture 1: Introduction

On why, what, when … artificial intellligence?

Topics to be discussed

Part I. Introduction

1. Introduction to Artificial intelligence

Part II. Search and optimisation.

2. Search - basic approaches
3. Search - optimisation
4. Two-player deterministic games
5. Evolutionary and genetic algorithms

Part III. Machine learning and data analysis.

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8. Artificial neural networks
9. Bayesian models
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Part IV. Logic, Inference, Knowledge Representation

11. Propositional logic and predicate logic
12. Knowledge Representation

Part V. AI in Action: Language, Vision

13. AI in Natural language processing
14. AI in Vision and Graphics

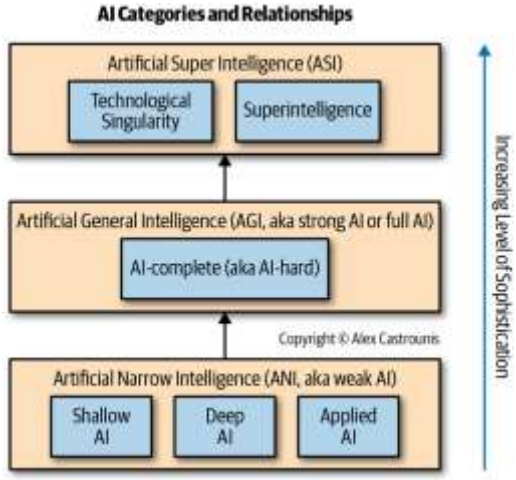
Part VI. Summary

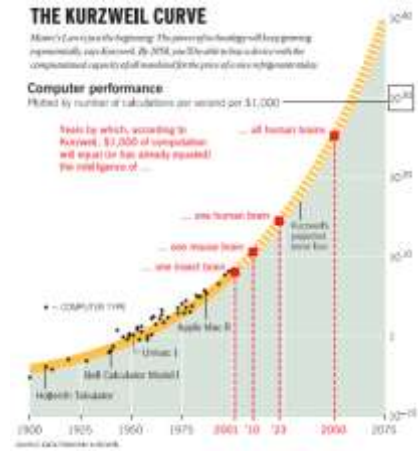
15. AI engineering, Explainable AI, Ethics,

Agenda

- Definition of Artificial Intelligence (AI)
- Topics of AI
- History of AI
- AI now
- Future of AI

https://www.youtube.com/watch?v=s7_NlkBwdj8





https://www.whyofai.com/blog/narrow-ai-vs-general-ai-vs-super-ai

Just one week; few weeks ago

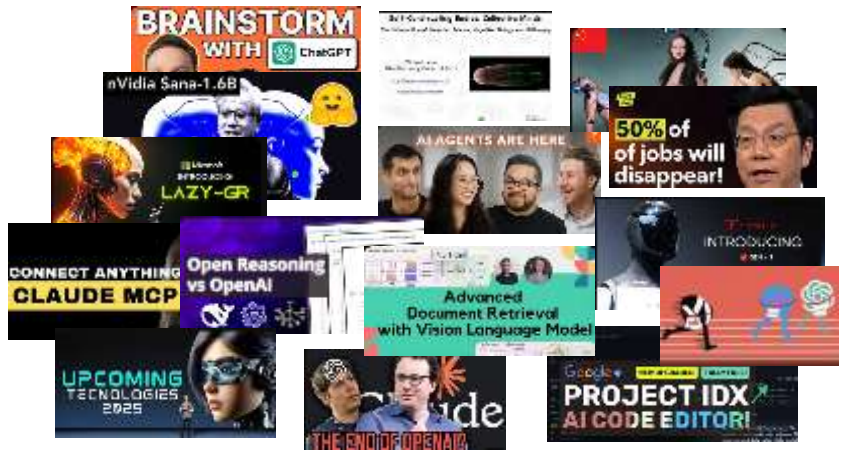
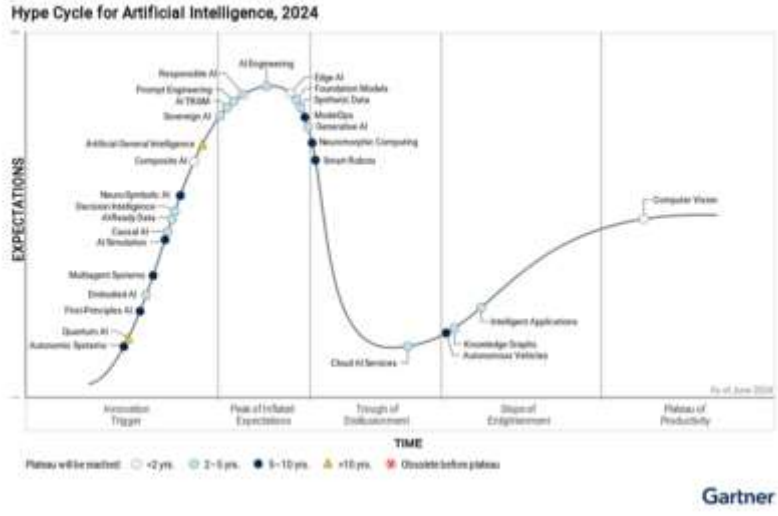
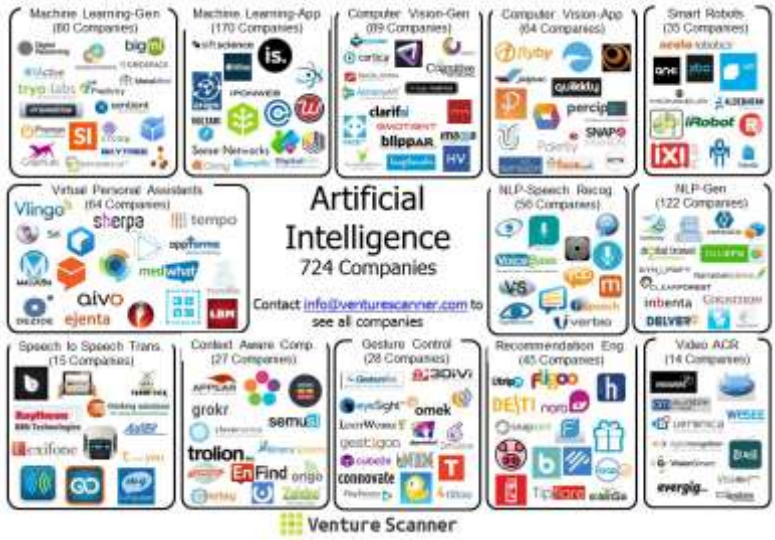


Figure 1: Hype Cycle for Artificial Intelligence, 2024





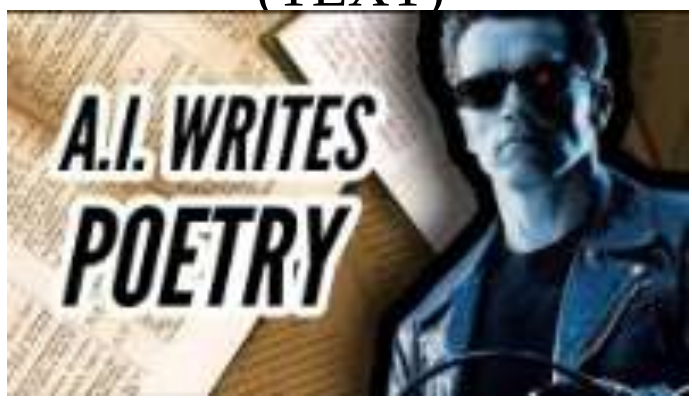
EARIN, 2025L

EARIN, 2024L

https://cartoonmovement.com/cartoon/chatgpt

EARIN, 2025L

DIGITAL / ai CREATIVITY (TEXT)



CreatiVe photo
(Sony World Photography Award 2023)

https://cyfrowa.rp.pl/technologie/art38343551-bezczelna-malpa-sztuczna-inteligencji-pokonala-zawodowych-fotografow

Example 1

EARIN, 2024L

Example 2

https://www.youtube.com/shorts/UJMXFLu6Krk

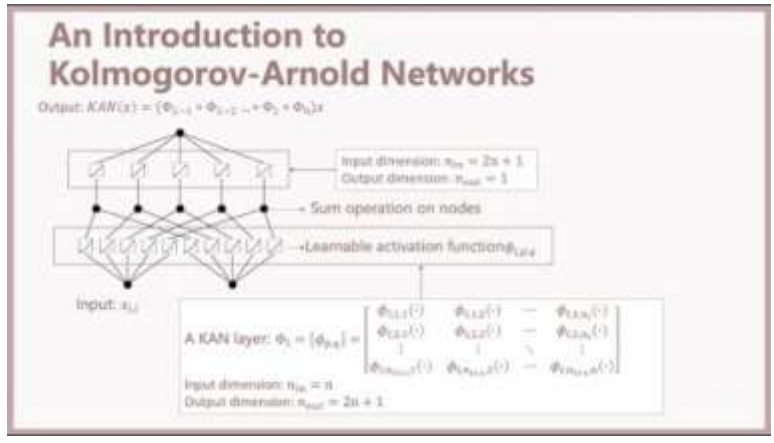
Example 3

Dialogue with an AI Chatbot chatGpT

https://youtu.be/_XTXqSCSzR0

https://jadrian.substack.com/p/chatgpt

AI Education and academic world



ROBOTS IN ACTION – CONT.

https://www.youtube.com/watch?v=vCYsKCbPTTU

Robots in action

https://www.youtube.com/watch?v=AYSfcgVv9-U

Example: Sales process with gen ai

https://www.youtube.com/watch?v=qcHpu6WA-k8

Intelligence colloquially

Property of:

- Humans?
- Animals?
- Plants?
- Chemical compounds?
- Washing machines?
- Computers?
- …

Intelligence colloquially

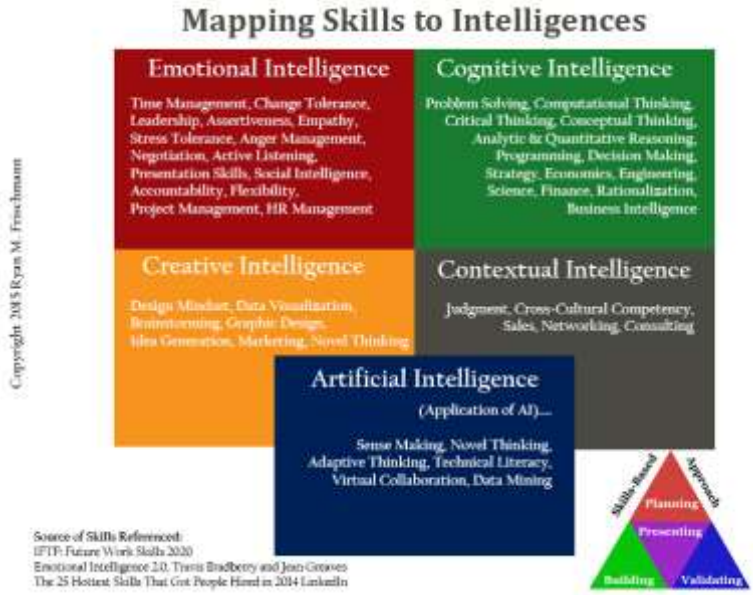
Ability to

- make choices
- make inference
- predict
- plan
- adapt
- classify
- create

Table 1: Four Categories of AI Definitions

	Human Behaviour	Rational Behaviour
Thinking (Mental Process)	**1. Thinking Humanly** Machines that think intelligently like humans	**3. Thinking Rationally** Machines that think rationally
Acting (Action)	**2. Acting Humanly** Machines that perform activities that human consider intelligent	**4. Acting Rationally** Machines that act rationally

Source: Adapted from Russell and Norvig (2010), Figure 1.1, p.2.



Two views of AI

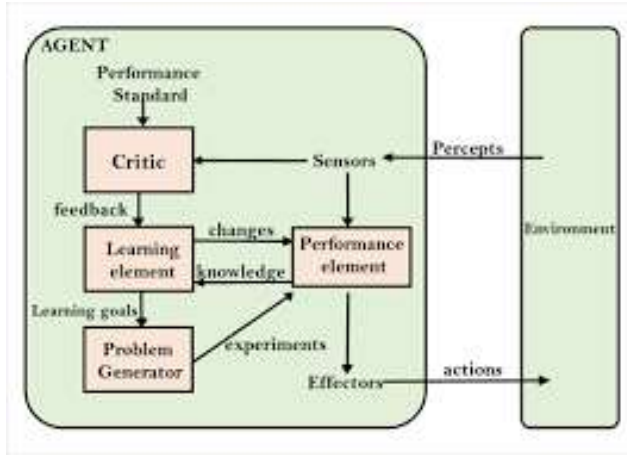
AI agents: how can we create intelligence?

- The inspiration comes from the types of capabilities that humans possess.

AI tools: how can we benefit society?

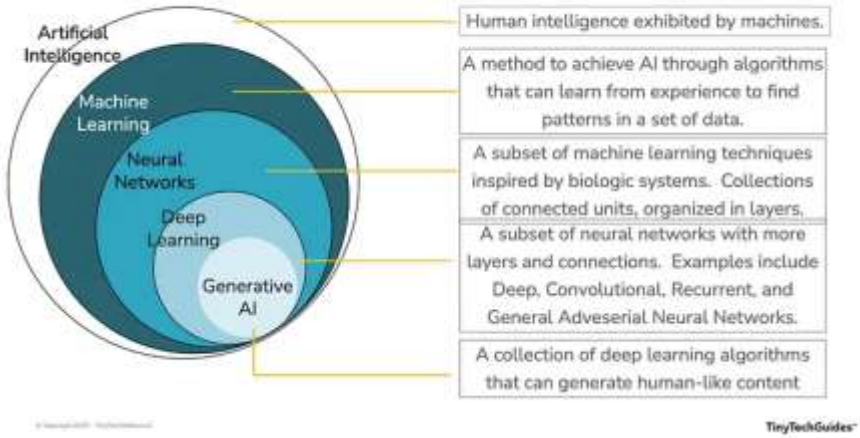
- Need comes from existing problems in the world, and techniques developed by the AI community happen to be useful for that.

Intelligent Agents in AI

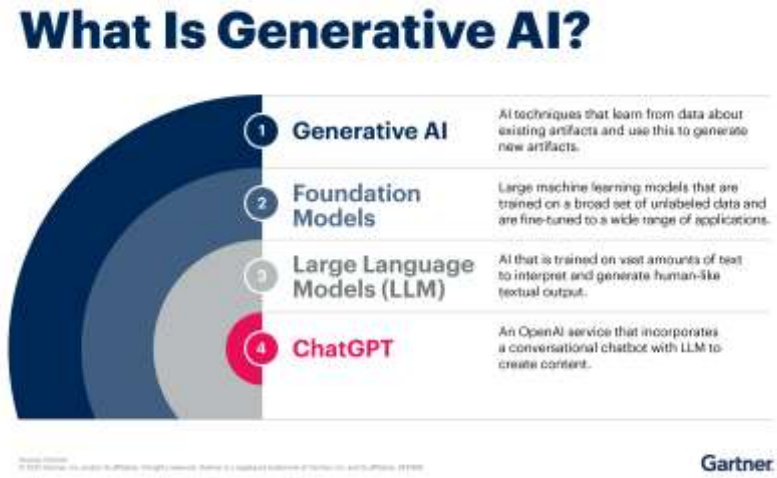


https://www.geeksforgeeks.org/agents-artificial-intelligence/

Artificial Intelligence



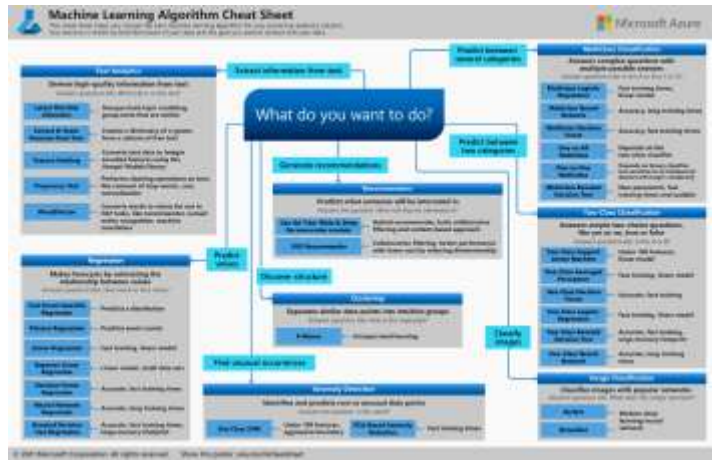
https://medium.com/@davidsweenor/generative-ai-vs-traditional-ai-whats-better-f2f9e86a61ef

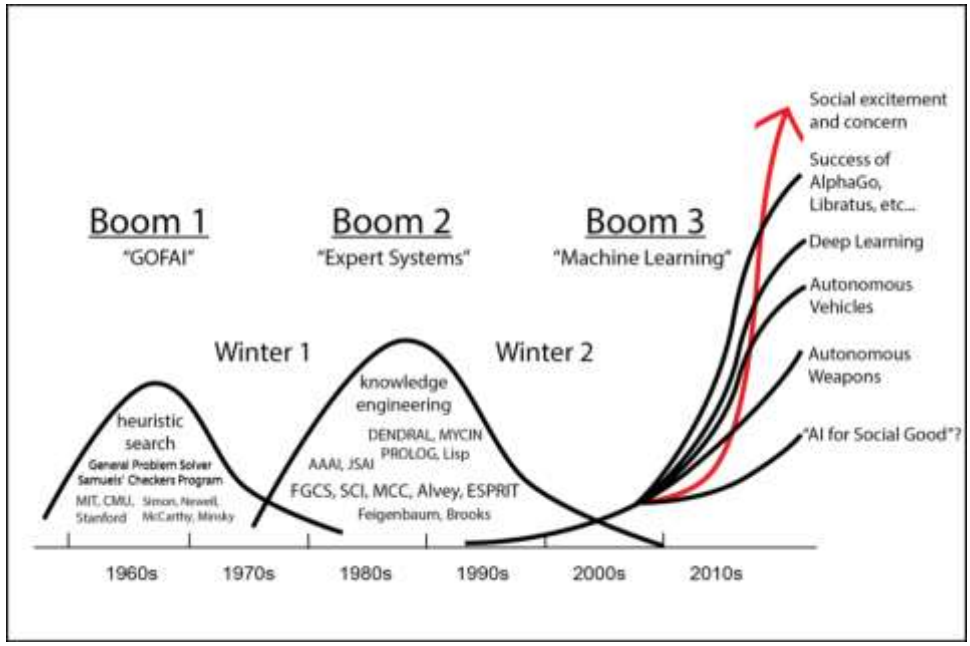


Overview of AI technologies

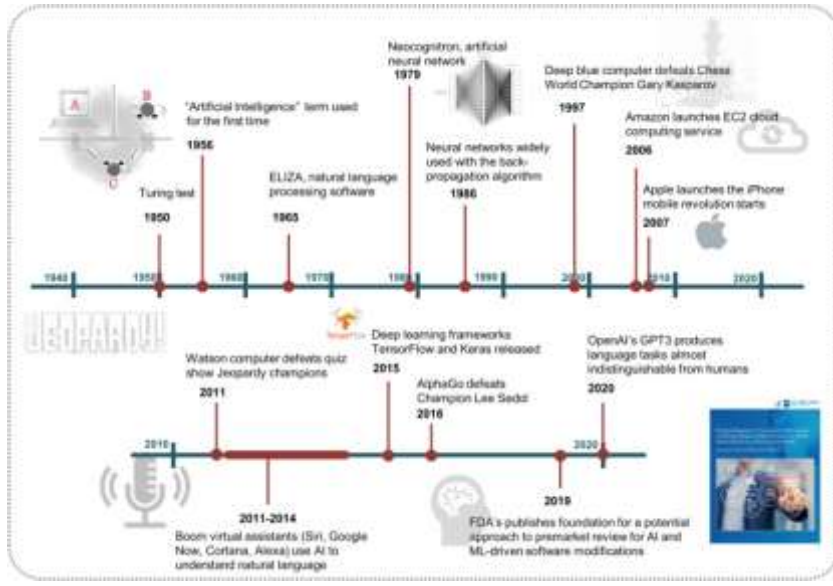
https://www.iaasb.org/news-events/2022-03/iaasb-digital-technology-market-scan-artificial-intelligence-primer

https://www.marketsandresearch.biz/



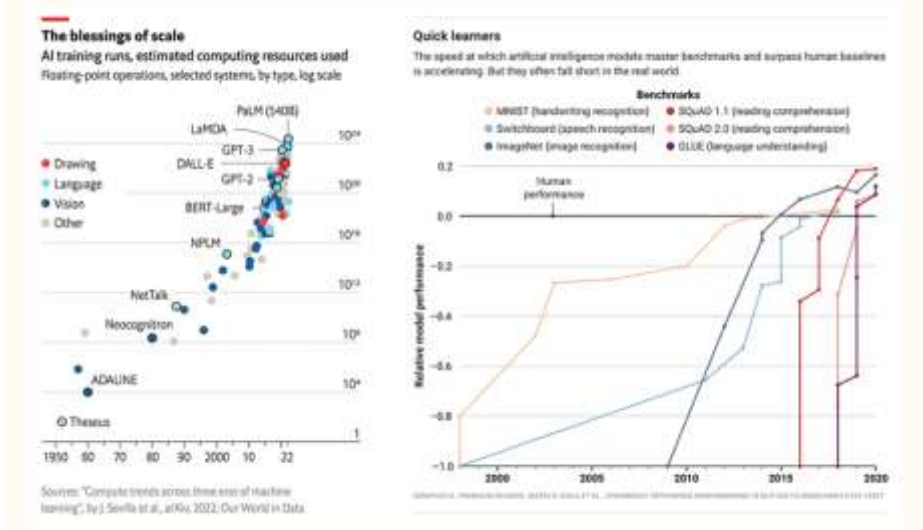


https://www.technologystories.org/ai-evolution/



EARIN, 2023L 61

https://www.sciencedirect.com/book/9780128202395/precision-medicine-and-artificial-intelligence



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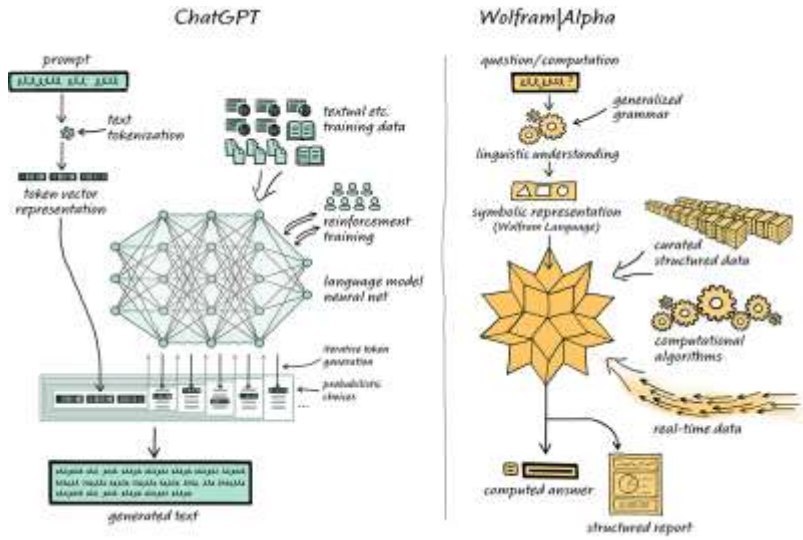
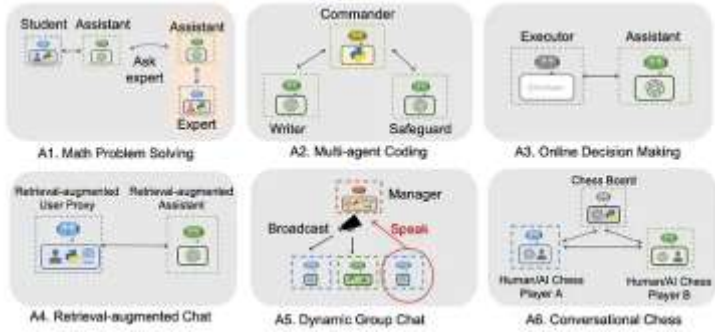
EARIN, 2024L

https://www.sequoiacap.com/article/generative-ai-a-creative-new-world/



EARIN, 2024L

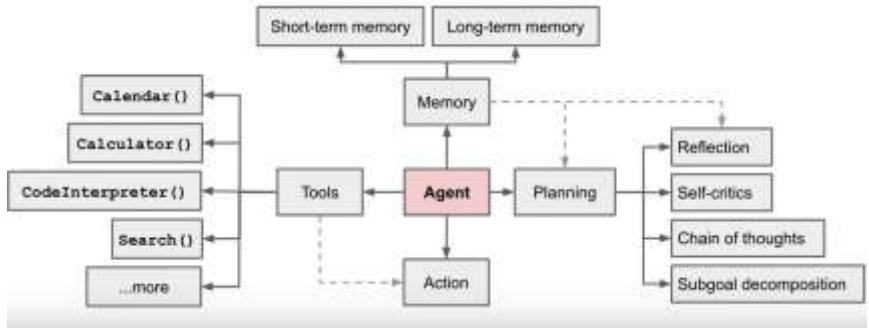
Meet AutoGen because using a single LLM is so 2020!



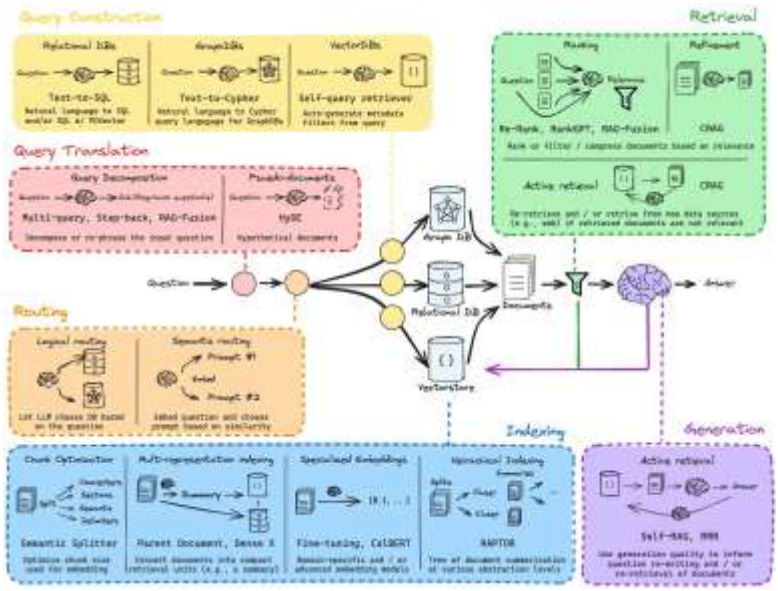
https://medium.com/@datadrifters/meet-autogen-because-using-a-single-llm-is-so-2020-4b65556b3522

EARIN, 2024L

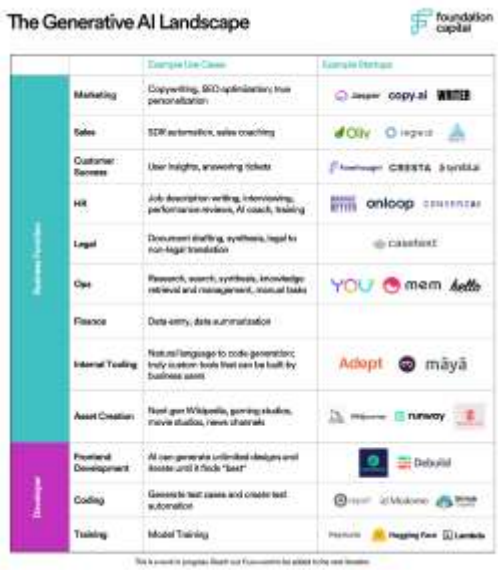
Internal components of an agent



https://www.youtube.com/watch?v=pBBe1pk8hf4



Agent ecosystems



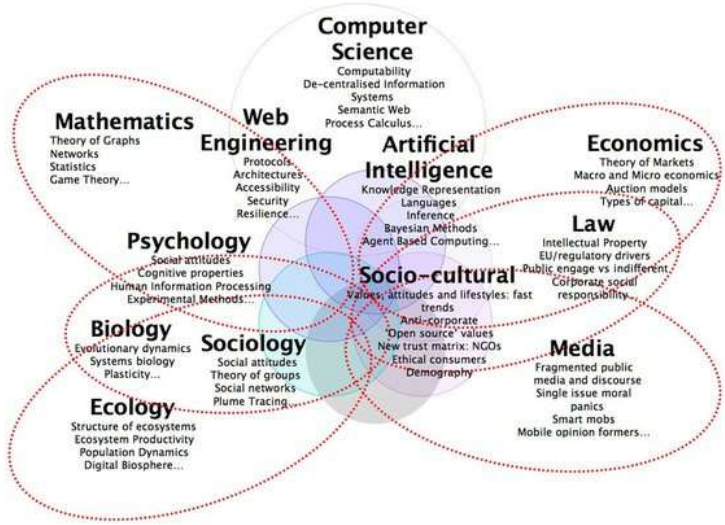
https://foundationcapital.com/jasper-and-the-past-present-and-future-of-generative-ai/

OpenAI Imagines Our AI Future

Stages of Artificial Intelligence

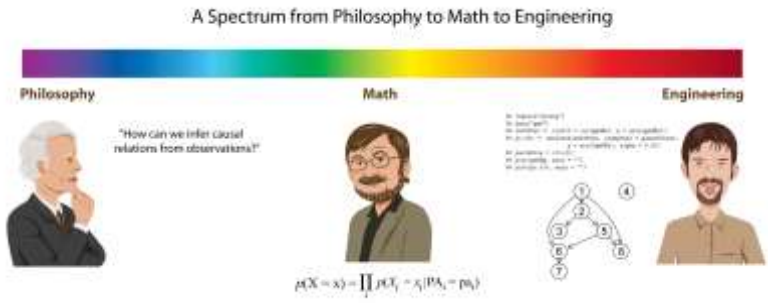
Level 1	Chatbots, AI with conversational language
Level 2	Reasoners, human-level problem solving
Level 3	Agents, systems that can take actions
Level 4	Innovators, AI that can aid in invention
Level 5	Organizations, AI that can do the work of an organization

Source: Bloomberg reporting



https://www.quora.com/Is-AI-a-subset-of-any-discipline-like-computer-science-If-not-what-else

Motives for researching AI



Next lectures

Part II. Search and optimisation.

2. Search - basic approaches
3. Search - optimisation
4. Two-player deterministic games
5. Evolutionary and genetic algorithms

Part III. Machine learning and data analysis.

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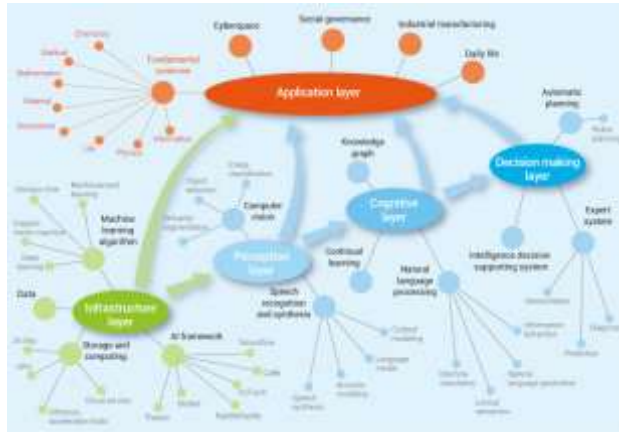
Part V. AI in Action: Language, Vision

13. AI in Natural language processing
14. AI in Vision and Perception

Part VI. Summary

15. AI engineering, Explainable AI, Ethics

The knowledge graph of the AI



https://www.sciencedirect.com/science/article/pii/S2666675821001041#sec2

Summary

- Definition of Artificial Intelligence AI
- Two views of AI
- History of AI
- AI now
- Topics to be discussed

References

• Stuart J. Russel, Peter Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, 2010.

• M. Muraszkiewicz, R Nowak (ed.), „Sztuczna Inteligencja dla inżynierów", Oficyna Wydawnicza PW, 2022