



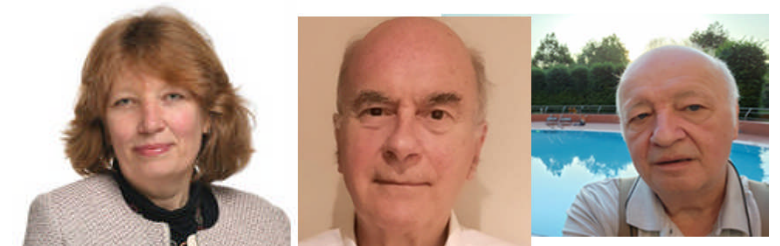
Ad Hoc Open Debate

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July 2024

IARIA Congress 2024 & DigiTech 2024

Theme: AI Now, as of July 2024 - Achievements, Challenges,
Potential Dangers

IGNITERS



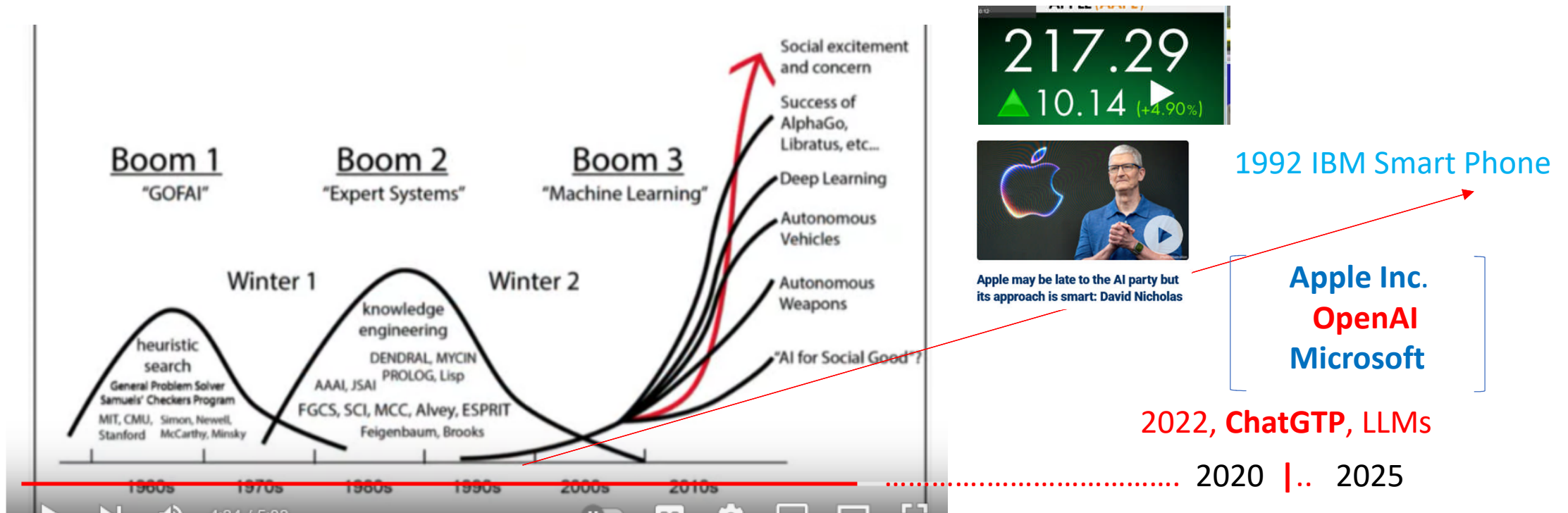
Prof. Dr. Tatiana Kalganova, Brunel University London, UK
Emeritus Prof. Dr. Malcolm Crowe, University of the West of
Scotland, UK
(Retd) Prof. Dr. Petre Dini, IARIA, USA/EU



Igniting

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We will start the fire with a little history!



GOFAI (Good Old Fashioned Artificial Intelligence); John Haugeland in 1985, refers to the early method in AI research using symbolic approaches; rule-driven systems with symbolic methods to mimic intelligent behavior.²



Critical Mass for AI-tools

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Critical Mass for Intelligence/Smartness for everybody: smartphones and computers

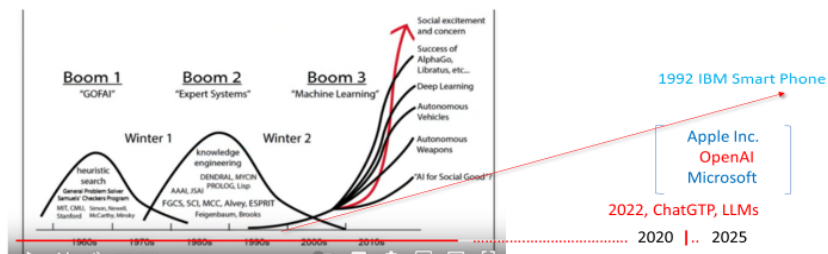


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<https://blog.textedly.com/smartphone-history-when-were-smartphones-invented>

We will start the fire with a little history!



JESSIE CHANTEL
Content Manager





AI – Mile ZERO

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In the back row from left to right are Oliver Selfridge, Nathaniel Rochester, Marvin Minsky, and John McCarthy. In front on the left is Ray Solomonoff; on the right, Claude Shannon. The identity of the person between Solomonoff and Shannon remained a mystery for some time. THE MINSKY FAMILY

Summer of 1956 at Dartmouth College in Hanover, New Hampshire, USA
These men had a shared vision for the potential of AI. They believed that it was possible to create machines that **could think and reason like humans**, and they propose a workshop to explore this possibility.

Meet the brilliant minds of John McCarthy, Marvin Minsky, Herbert Simon, Oliver Selfridge, Nathaniel Rochester, Ray Solomonoff, Trenchard More, and Claude Shannon who kickstarted the AI revolution.

<https://medium.com/@nickyverd/the-first-ever-ai-conference-tracing-the-evolution-and-the-history-of-ai-82347f93a89f>



The Proposal

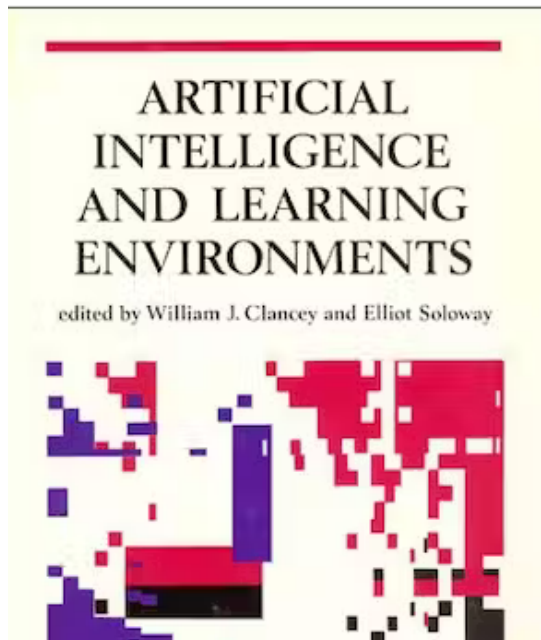
“We propose that a two-month, ten-man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire”

The written proposal to the [Rockefeller Foundation](#) was formulated by McCarthy at Dartmouth and Minsky, then at Harvard. They brought their proposal to the two senior faculty, [Claude Shannon](#) at Bell Labs and [Nathaniel Rochester](#) at IBM and got their support (Crevier, 1993). The proposal went as follows (McCarthy et al, 1955, reprinted in AI Magazine Volume 27, Number 4 pp. 12–14):



AI – Mile ZERO – my appendix

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From: Special Issues of Artificial Intelligence

Artificial Intelligence and Learning Environments

Edited by William J. Clancey and Elliot Soloway

168 pp., 6 x 9 in,
Paperback
ISBN: 9780262530903
Published: September 27, 1990
Publisher: The MIT Press

Missing (I don't know the reason)
Elliot Soloway: University of Michigan
Beverly Woolf: University of Massachusetts Amherst
- AI (Intelligent) Tutoring Systems
- Learning/cognition at children level
Noam Chomsky: MIT
- Modern linguistics
- Analytic philosophy
and
- One of the founders of the field of *cognitive science*
Susanne Lajoie (McGill), **Claude Frasson** (UdM), **Sami Benjio** (All),...



The New York Times

<https://www.nytimes.com> › 2023/03/08 › noam-chomsk...

Opinion | Noam Chomsky: The False Promise of ChatGPT

Mar 8, 2023 — As an AI, I am a **machine learning** model that has been trained on large amounts of text data, and I don't have personal experiences or feelings.

[www.youtube.com](https://www.youtube.com/watch) › watch

Noam Chomsky - Advances in AI: ChatGPT | Human Brain



Considered as the father of modern linguistics, **Noam Chomsky** talks about recent advances in natural language processing, **artificial ...**

YouTube · Teacher Development Webinars · Jan 26, 2023



AI - related - Fine Grain History

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A little history... well-back

Multivariate **Dataset** introduced by Ronald Fisher (**1936**).

The first **artificial neuron** was the Threshold Logic Unit (TLU), or Linear Threshold Unit, first proposed by Warren McCulloch and Walter Pitts in **1943**

Neural networks were first proposed in **1944** by Warren McCulloch and Walter Pitts - University of Chicago (then, MIT)

The **concept of Deep learning** has been around since the **1950s**.

The **earliest successful AI program** was written in **1951** by Christopher Strachey, University of Oxford.

Strachey's checkers (draughts) program ran on the Ferranti Mark I computer at the University of Manchester, England.

The Dartmouth Summer Research Project on Artificial Intelligence, 1956 summer workshop - considered to be the founding event of AI

Generative AI was introduced in the **1960s** in Chatbots

Convolutional neural networks, also called ConvNets, were first introduced in **the 1980s** by Yann LeCun

AI ups&downs (~ '90-'20s. **Expert Systems** failing highly-set expectations) {**smart systems, cognitive systems, autonomous systems**, etc.,....)

Generative AI (GAI) (processing: text, pictures, audio, ...) || from 60's Chatbots → 2022 LLMs (Solid state to VLSI : 1940 → 1960/70)

> Summarization, surveys, statistics, general reports; no measurements, no innovation, no link to reality, no interpretation, no feedback

> GAI tools generate new content based on a variety of inputs. Inputs and outputs to these models can include text, images, sounds, animation, 3D models, or other types of data.

> There is no validation of data, there is no corrective feedback, there is no guarantee, (user awareness)

Traditional AI targets (patterns, decisions, real systems, cognitive processing, brain-like mimicking, .. brain substitution, cohabitation, etc.)

ANI

AGI

ASI



AI - Looking behind and ahead!

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For everybody's comfort (and mine)

Humanity will not be replaced by artificial entities as

- There are no personalized memory(ies)
- There is no instant personalized thinking
- There is no visibility on any personal past activity
- There are no feelings of fear, emotions (eventually mimicking by instructions/learning)

Do not fear and do not have compassion on those thousands that regret fathering AI, because there were very few of them; most of the tens of thousands vocal ones truly were and are not.

These two pictures: 2023 – March, Wilmington DE, MedExpress Lab Poster and Vitaly's input from the College of Healthcare Information Management Executives, April 1995, (Canada) triggered my initiative for documentation and for preparing this open discussion.



Lessons learned

- *Technologies were developed in a silos with great success*
- *Last 30 years of achievements allowed comprehensive results*
- *Awareness*
- *Education*
- *Societal services*



- Why there are not much progress in Healthcare AI?



Vitaly Herasevich



AI – Political/Business push

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STOP AI!: The letter signed by the Band of Six



Tech billionaire Elon Musk makes an eerie prediction about the future of AI

AI UN



- Over the course of two days, tech and business executives and world leaders — including Vice President Kamala Harris — discussed the future of AI, regulation and safety issues associated related to the advanced technology. Nearly 30 countries including China and the European Union signed the Bletchley Declaration, which recognizes potential risks associated with AI.

It seems to me being an eerie prediction, indeed, but not the sense of the article.

<https://www.foxbusiness.com/technology/elon-musk-ai-eventually-create-situation-no-job-needed>

The Gist:

"We will have for the first time something that is *smarter than the smartest human*," Musk added.

Musk said, "It's hard to say exactly what that moment is, but there will come a point where *no job is needed*."

"You can have a job if you want to have a job — sort of personal satisfaction — *but the AI will be able to do everything*," the billionaire Tesla CEO added.

But the lack of guardrails surrounding AI has not stopped Musk from developing *his own generative AI models* to compete with those already available for commercial use, including chatbots ChatGPT and Google's Bard.

A "maximum truth-seeking" AI chatbot could be coming, which he dubbed "**TruthGPT**."

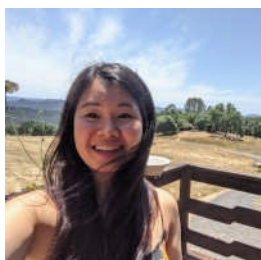


AI - ChatGPT

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<https://github.com/>

Open-Source Local
LLM Projects



<https://www.linkedin.com/in/chiphuyen/>



Chip Huyen • 3rd+

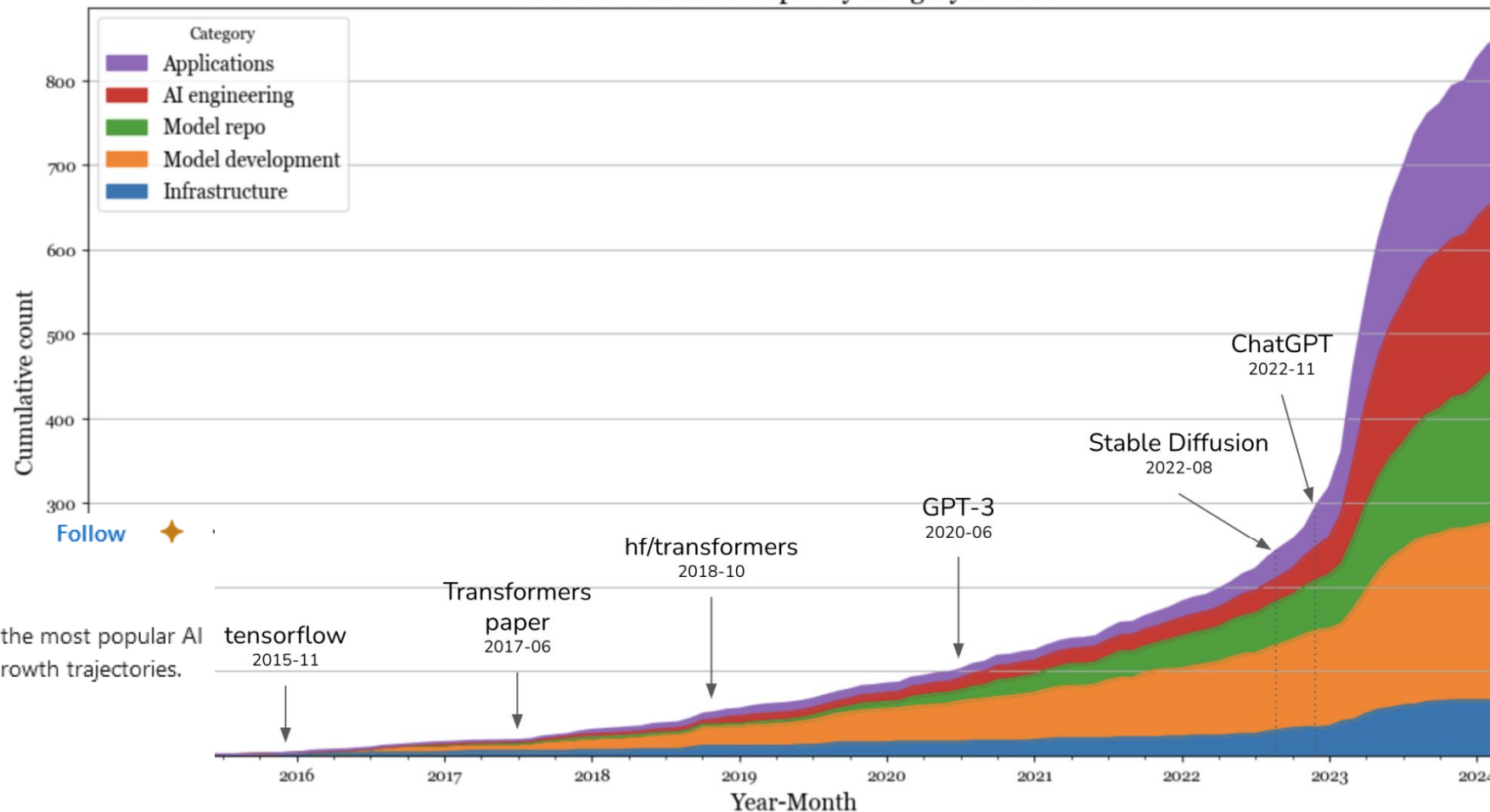
AI founder | Open source | GPU optimization
2mo • Edited •

To understand the open source AI landscape, I went through the most popular AI repositories on GitHub, categorized them, and studied their growth trajectories. Here are some of the learnings:

<https://lnkd.in/exR-PGZX>

1. There are 845 generative AI repos with at least 500 stars on GitHub. They are built with contributions from over 20,000 developers, making almost a million commits

Cumulative count of repos by category over time



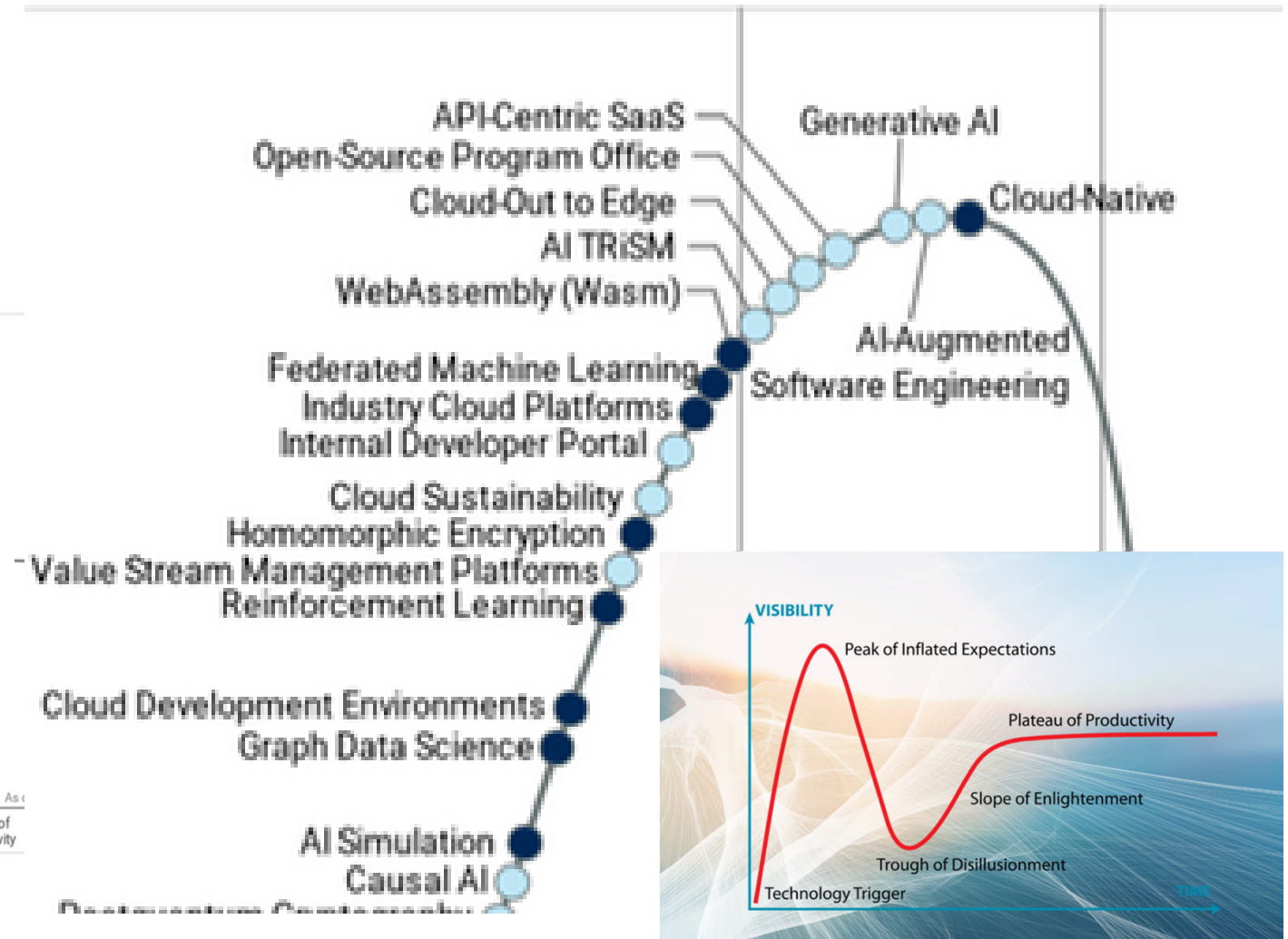
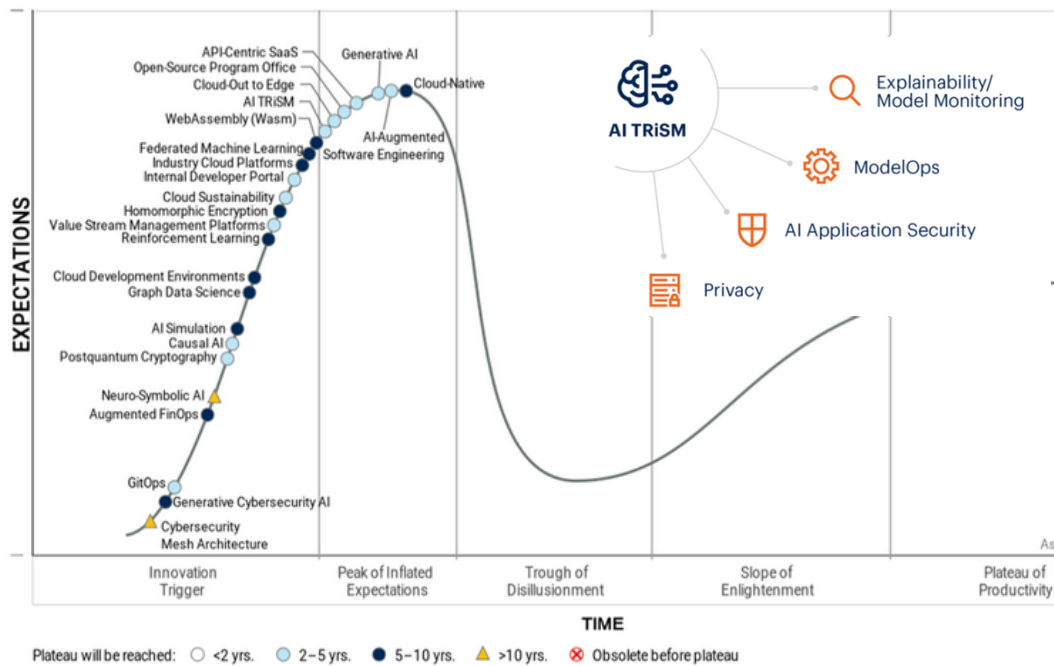


Panelist Positions

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Gartner Curve adoption, investments, market

Figure 1. Hype Cycle for Emerging Technologies, 2023





Panelist Positions

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Malcolm

Tatiana

Petre



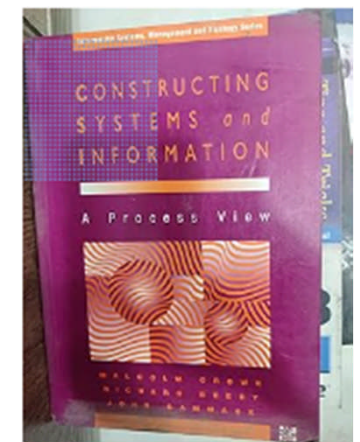
What we can do

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- **Watching AI** since 1960s, contributed during 1990s
 - There are serious and well-founded techniques even for neural nets
 - But predictive models *always* have hidden bias, assumptions
 - Hallucinations occur because of reliance on misunderstood *text*
 - Danger: errors get used in products, future research and conclusions
- **Data sharing** is still really difficult: different contexts, cultures
 - Even between workers on the same project
 - *Information* sharing (e.g., web) is too seductively easy, carries huge risks
- We can encourage realism: **Focus on need** for
 - Trusted sources of base data and complete pattern analysis
 - Domain-specific prompts including knowledge graphs (not just text)
 - Retaining human experts to help validate models, critique answers



Malcolm Crowe
University of the
West of Scotland
(retd)





What we can do?

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- **AI and society:** AI can resolve all that I have no answer to...
- **AI and ecosystems:** One algorithm approach is no longer valid when we consider its integration into business processes
- **Green Sustainable AI** – emergence of local regional data centers to support increased computational need triggered by AI
 - Do we know enough about the data to start to use it sensibly: more data, more accurate is no longer an approach
 - Smaller models, better performance regardless of size of the problem
- **Trustworthy AI:** AI and ML models are not sufficient anymore to be integrated into business process
 - How can we generate trust in outcomes AI models?
 - How can we validate the AI model performance taking into account the data shifts?
- **Resilient AI:** How can we
- **Contextual AI:** Context is defined by problems and models needs to be carefully adjusted as outcome does not take into account context and bias created by background data
- **Intuitive AI???**
- **Self-organizing AI ecosystems... Evolvable AI ecosystems....**



Prof Tatiana
Kalganova





Needs vs Summarization

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Think about human inventions (triggered by needs) and the impossibility of them appearing through AI-based tools

... chisel and hammer, charcoal, chalk, quill nib, reed nib, sharp metal..

Pencils/Pens/Ball Pens/RollerBall Pens/Gel Pens/ FountainPens/BrushPens/Markers/InkPens + nib + ink pot

Tires + Cars + Accidental discovery

Knife + Food

Music + Playing Instruments

Painting + Painting arsenal

Novels/Poetry/Tales

Painkillers

Vitamins (the C vitamin case – scurvy - 1747)



Petre DINI
IARIA (retd)

Statement valid for any technology:

**take what and where it is useful, diminish the damage,
make it harmless, make it accessible, get accustomed, enjoy,**



Inquiring Points

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Q: What do you think, feel, evaluate, react,

Statement: Human Needs and Human Feelings are the basis; the rest is a summarization of existing achievements.

- a. Educated summarization, **rapid&comprehensive**, based on a tinny fraction (**? 1%**) of trusted digitalized public information
- b. AI-based, LLM-based entities assume background, experiments, failures, understanding, etc.
- c. Data processing, LLM, unintended consequences, data fusion, taxonomy, etc.
- d. Hardware evolution, CentralPU, GraphicPU, DataPU, NeuronalPU, .. dynamic reconfig., latency, energy, etc.
Associative Processing Unit (APU), Tensor Processing Unit (TPU) [CNN], Field Programmable Gate Array (FPGA),
Vision Processing Unit (VPU), and Quantum Processing Unit (QPU)
- a. Business (restructure), Stock market (alluding), Corporation monopoly, (fierce) Competition
- b. Privacy invasion vs technology benefits; legal 'façade' regulations
- c. Education stance (unprepared), curricula not tailored (student attention deficit), workforce future (40% change)
- d. Advances literacy (AI, Health, Education, Private) and Digital divide became 'survival guidelines'
- e. Scarecrow (charlatans), Almighty (for investors), wrongdoers (Human Society), anonymity (2 ways),
- f. Digital disabilities (handicap-ed generation) and legal protection (façade)
- g. ...



Modern Marvel: Great vs Terrifying

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**STAGE IS
YOURS**