



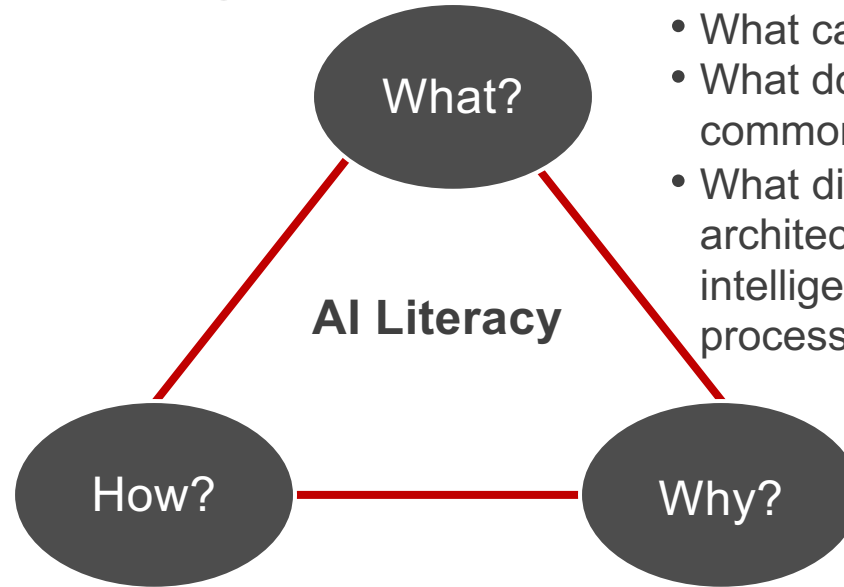
AI LITERACY BLOCKCHAIN CONFERENCE, BERLIN

DR. ANASTASSIA LAUTERBACH-LANG

JUNE 14TH, 2025

HTW BERLIN

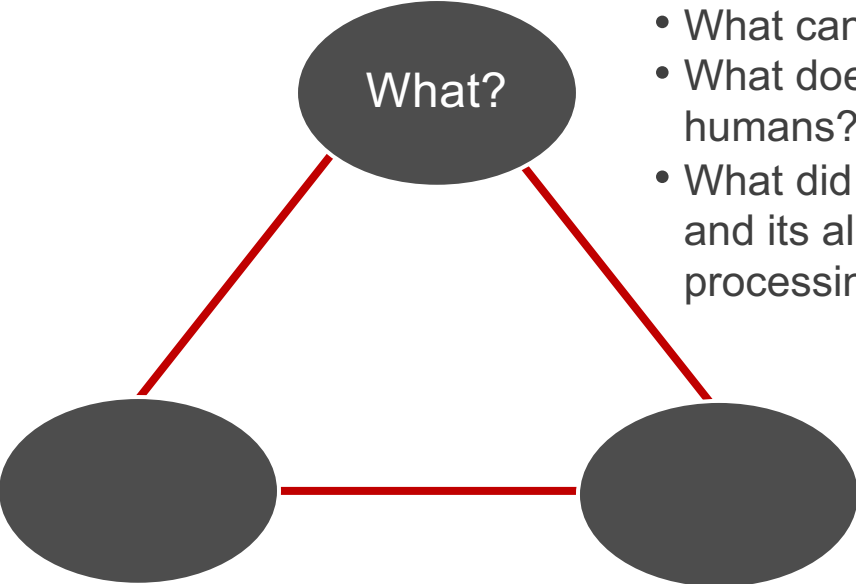
AI LITERACY FRAMEWORK.



- What is AI?
- Where are AI risks?
- What can it do?
- What does not exist in AI that is common to all humans?
- What did humans learn from AIs' architecture and its alien type of intelligence (=information processing)?

- How can we achieve democratization of data, if we aren't BigTech?
- What are AI (literacy) policies around the world (top-down approach), including education?
- What are bottom-up initiatives?

- What role do digital assets play in valuation?
- Where is AI positioned as a driver of value?
- What is a link between AI and cybersecurity?
- What are implementation issues with AI? ₂



What?

- What is AI?
- Where are AI risks?
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AI: DEFINITIONS, EXPECTATIONS AND OUTLOOK.

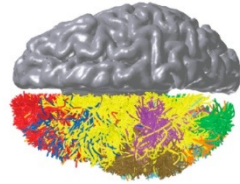
Initial 'why' behind AI:

- Mimic human behavior
- Mimic thinking
- Project human intent
- Advise humans

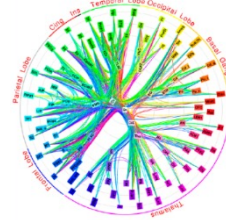
Initial expectations behind AI:

- Multipurpose
- Behave intelligently (incl. ratio and empathy)
- Alignment with humans

... explicitly model the human brain

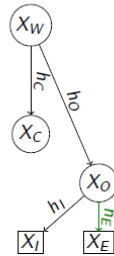


Architecture of the "projectome"



Network model of 'target' and 'source' nodes via anatomical tracing/ Implementing 'cortex,' targeting neocortex and hippocampus

... or loosely approximate the mental models



Multistate Markovian Survival Model



Bayes' Network of perfume characteristics

Current focus and the next 24 months:

- Further development of Transformers
 - Even larger models
 - Customized LLMs
 - Multi-modal AIs and LLMs
- Embodiment and Robotics
- Further development of use of synthetics
- M2M language

THE REAL RISKS OF AI.

Design Issues and Mistakes

- **Bias in datasets and model architecture reflecting their creators** (historic lack of diversity in gender, age, ethnics and lack of interdisciplinarity);
 - **Weaknesses of DL/transformers as approach** (distribution shift hurdles, no reasoning and understanding, energy use);
 - **No clarity on synthetics** (different statistical behavior, lack of missingness in data vs. real life).
-
- LLMs hallucinating;
 - Win of human against AI in Go in 2023 as AI doesn't understand the concept of a 'group';
 - De-biasing of Gemini and hallucinations resulting in historical nonsense
 - A generative AI-based prompt request consumes 10 to 100 times more electricity than a typical internet search query,
 - Synthetics in clinical trials& automotive.

Malicious Intent, Crime and lack of thinking in digital

- **Unethical behaviors of system makers to exploit users for financial gain or cover up for bigger issues of their technology;**
 - **Cyber-hacking. (Gen) AI enabling criminals to do bad things faster;**
 - **Executives and non-executive leaders lack awareness about valuation of digital assets and systemic approach to manage these.**
-
- Attracting eyeballs while emphasizing anger and mistrust on social networks;
 - Deep fakes on social networks;
 - Adversarial attacks on data models, e.g., hacking into a fleet of self-driving cars, faking video images;
 - Use of deep fakes (e.g., text and audio files) in cyber attacks;
 - Very few businesses can financially assess cybersecurity exposure.

Amount of 'Human' in the Loop

- **Systems becoming capable to reuse data and experiences from other tasks when trying solving new tasks.**
 - **Necessity to use of human in pre-processing of data.**
 - **In some industry human co-pilot will stay, e.g., automotive, medicine.**
-
- Future coding will be dominated by automated systems without significant human involvement. Current deterioration of code quality;
 - Absence of teaching critical thinking in schools and lack of interdisciplinarity in University programs (STEM & Humanities as a fusion, e.g., mathematical analyses and applications and creative writing);
 - AI Literacy misunderstood as AI use.

FROM FUNDAMENTAL MATH TO AI THAT DOESN'T EXIST TODAY (1/2)



*“Current machine-learning systems operate almost exclusively in a **statistical, or model-blind, mode**, which is analogous in many ways to **fitting a function** to a **cloud of data points**. Such systems **cannot reason about ‘What if?’ questions**... Current machines improve their performance by optimizing parameters for a stream of sensory inputs received from the environment..., a slow process...”*

Judea Pearl

FROM FUNDAMENTAL MATH TO AI THAT DOESN'T EXIST TODAY (2/2).

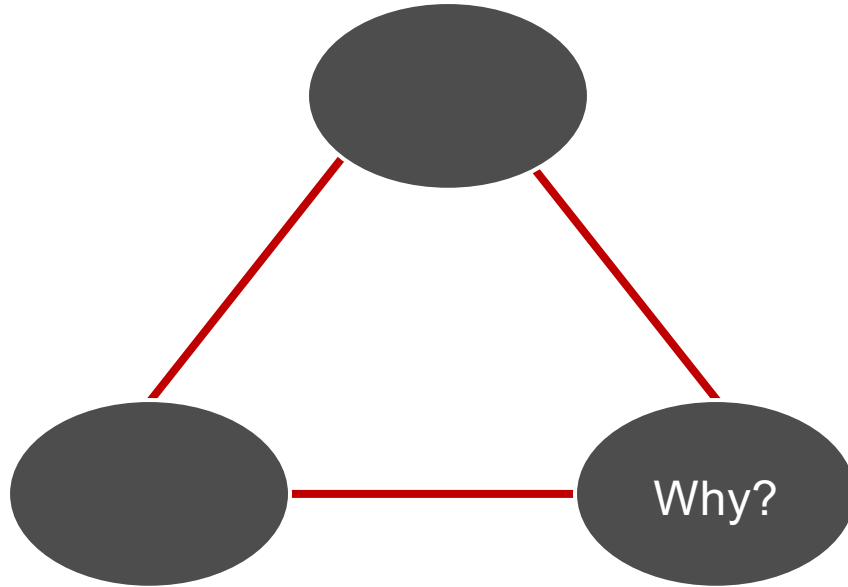


*“We humans give way too much importance to language and symbols as the substrate of intelligence. Primates, dogs, cats, crows, parrots, octopi, and many other animals don’t have human-like languages, yet exhibit intelligent behavior beyond that of our best AI systems. What they do have is **an ability to learn powerful ‘world models’ that allow them to predict the consequences of their actions and to search for and plan actions to achieve a goal.** The ability to learn such world models is what is missing from AI systems today.”*

Yann LeCun

MUST-DO TO IMPLEMENT SAFE AND BENEFICIAL AI.

- Increase investments into mathematical foundation of AI. Current AIs are maths from 1940s to 1970s;
- Correct current distribution of funding in applied AI (**98 percent on behalf of AI capabilities vs 2 percent on behalf of AI safety and XAI**);
- Support people with knowledge driving AI Literacy across society and implement programs **educating ALL teachers about AI** and digital technologies;
- Improve **cybersecurity** regulatory frameworks and stop wasting time and money on mitigating what can't be mitigated due to current AI architectures;
- Fund research and pilots of AIs built on learnings from neuroscience. Today's AIs with the exception of AlphaZero even don't match reinforcement learning as it is done within the neurocortex, and they can't learn from counterfactuals. **Alogritmizaiton of causation** hasn't move into AI yet. This is why today's AIs are frozen in space, including LLMs. Otherwise, problem of catastrophic forgetting apply.



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2017: EIGHT OF TOP 10 FORTUNE 500 COMPANIES ARE 'AI-FIRST'.

facebook



Baidu 百度

Alphabet

Tencent 腾讯



amazon

WHAT CHANGED IN 2021?

Alphabet



CYBER CRIMINALS ATTACK DIGITAL ASSETS.

Examples of Digital Assets

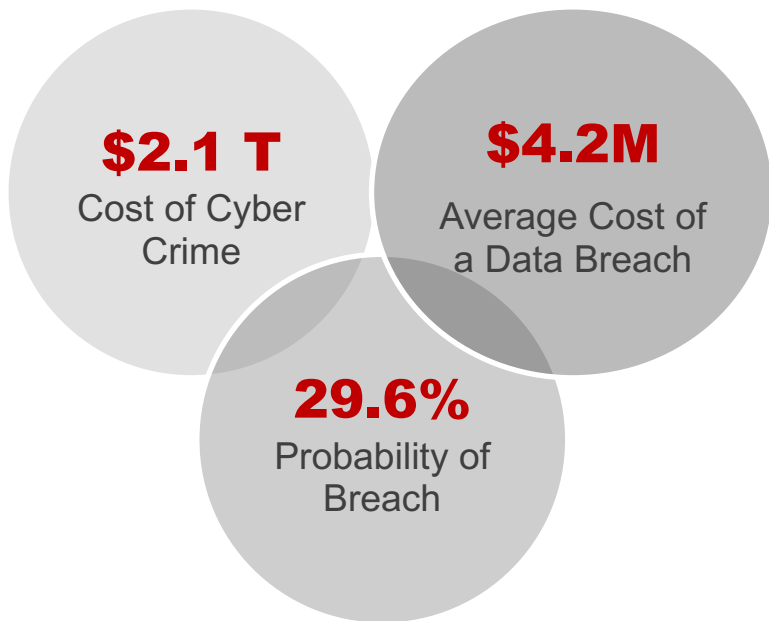


Major Clusters of Damage

- Loss of records / data, followed by regulatory fines
- Business interruption
- Reputational damage, including decrease in share price, struggles in customer retention and achieving organic growth

CONSEQUENCES OF NEGLECTING DIGITAL ASSETS CATEGORY.

Explosion in digitization is parallel to the explosion in cybercrime.



Average figures influencing cybersecurity claims:

- ➔ Revenue loss: \$30 tsd. per hour per infiltrated system.
- ➔ Ransom: \$6.2 mn.
- ➔ Regulatory fines (examples):
 - ➔ GDPR – 4% of the revenue base,
 - ➔ CCPA - \$7.5 tsd. per record.

+ AI and Gen. AI in hands of criminals

DEVELOPING AND IMPLEMENTING AI IS REALLY HARD.

300,000x vs. 4x

Growth of compute resources to train AI models vs, transit count of NVIDIA GPUs, both since 2012.

40-50%

Edge cases are everywhere – up to 50% of intended functionality resides in the long tail and user intent.

25%

Costs of cloud as of revenues for AI companies.

15%

Costs for humans in the loop (without core engineering resources), e.g., for manual cleaning labelling, drift detection.



- **Lower gross margins** due to heavy cloud infrastructure usage and ongoing human support
- **Scaling challenges** due to the thorny problem of edge cases;
- **Weaker defensive moats** due to the commoditization of AI models and challenges with data network effects.
- **The impact of synthetic data** today isn't totally clear, most probably they deteriorate quality of models over time.

CULTURE AND THINKING WILL DECIDE ABOUT THE FUTURE – NOT TECHNOLOGY.



It's Time to Build, April 18th, 2020”:

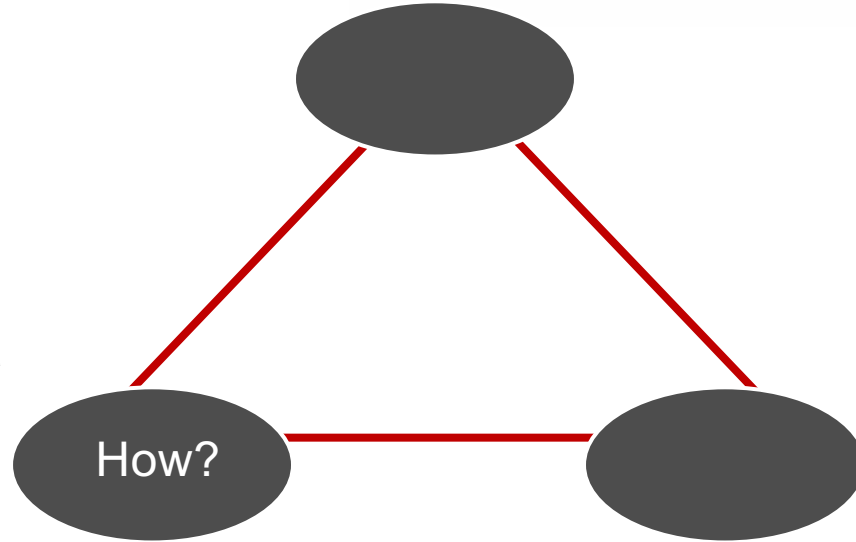
*Part of the problem is clearly foresight, a failure of imagination. But the other part of the problem is what we didn't *do* in advance, and what we're failing to do now. And that is a failure of action, and specifically our widespread inability to *build*.*

Milton Friedman once said the great public sector mistake is to judge policies and programs by their intentions rather than their results. Instead of taking that as an insult, take it as a challenge—build new things and show the results!

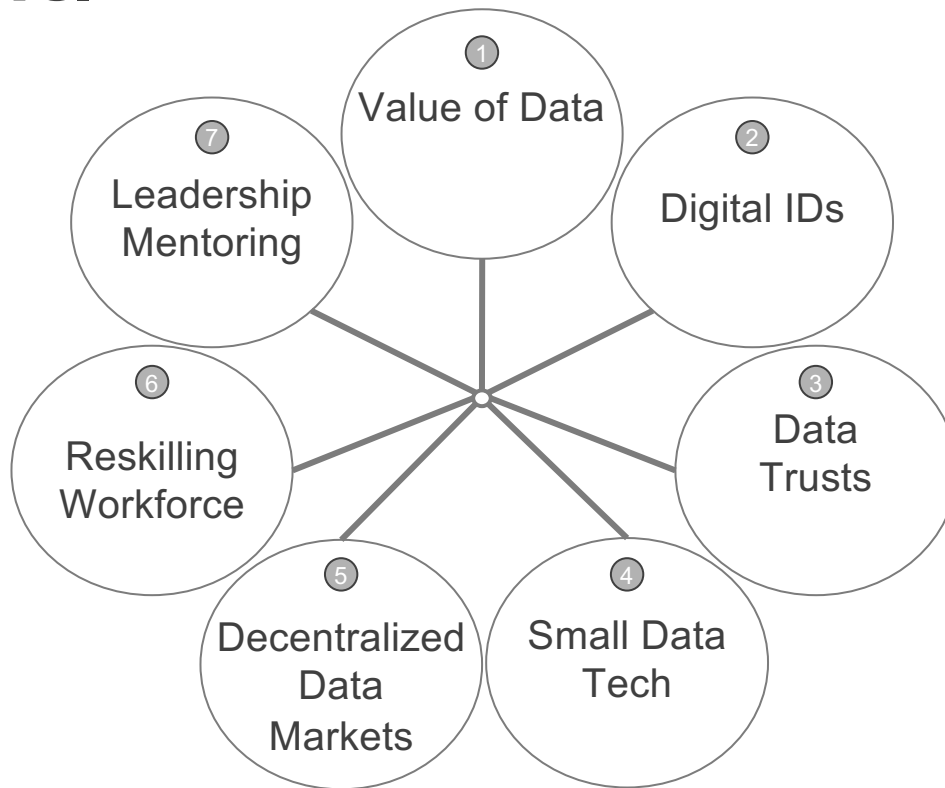
Marc Andreessen



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DEMOCRATIZATION OF DATA, INCLUDING DECENTRALIZED DATA MARKETS.



AI LITERACY.

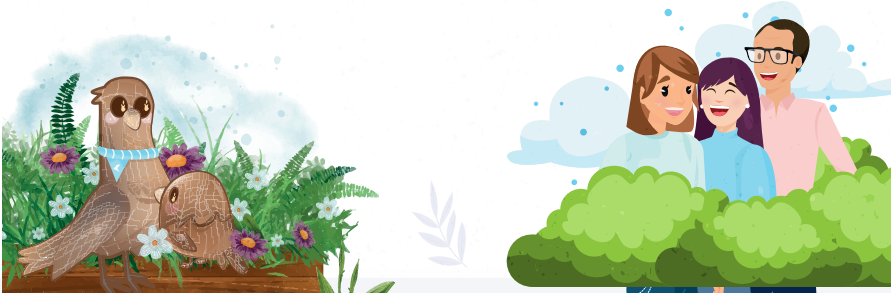
- Culture and attitude are more important than technology;
- Start with schools (e.g., best practice in China vs rest of the world);
- Work on fusing STEMs with humanities across schools and universities;
- Encourage local initiatives to implement AI literacy as future skills and GDP level depend on it (e.g., Italy, Belgium, Austria, Germany and NL are moving into mass retirement this decade and there aren't any policies to speed up automation and proliferation of AI & robotics, leading to inevitable decline of current level of GDP);
- Involve writers and artists to the table: portrayals of AI and robotics in books and movies influence societal discussion!
- Communities are key: Celebrate local initiatives and create a platform to exchange best practices.

WWW.AIEDUTAINMENT.AI; WWW.ROMYANDROBY.AI



By Anastassia Lauterbach

The AI Adventure Begins.



- **First volume** available on Amazon, focus on quantum computing, robotic specifications, transformer architecture, and definitions of intelligence. **Audiobook** on major platforms. **eBook** provides dynamic links to further resources.
- **Fun story** linked to the “**Science Behind**” section, with 140 mini deep dives into technologies, tested with 47 12-years old and their parents.
- **Podcast** translating AI and Robotics from difficult to easy to understand.
- Coming up: **AI literacy course**

