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Overblik - Digital Intelligens

Preben Mejer

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Forude venter...



Preben Mejer

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Pejlemærker

Aladdin - Lampens ånd - LLM

Ambient - AI

Ansvarlig - AI etik, omtanke, bæredygtighed



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Autonomi - AI Agents
Alignment – Ansvarlig AI
Attention economy RIP





Det største teknologispring...

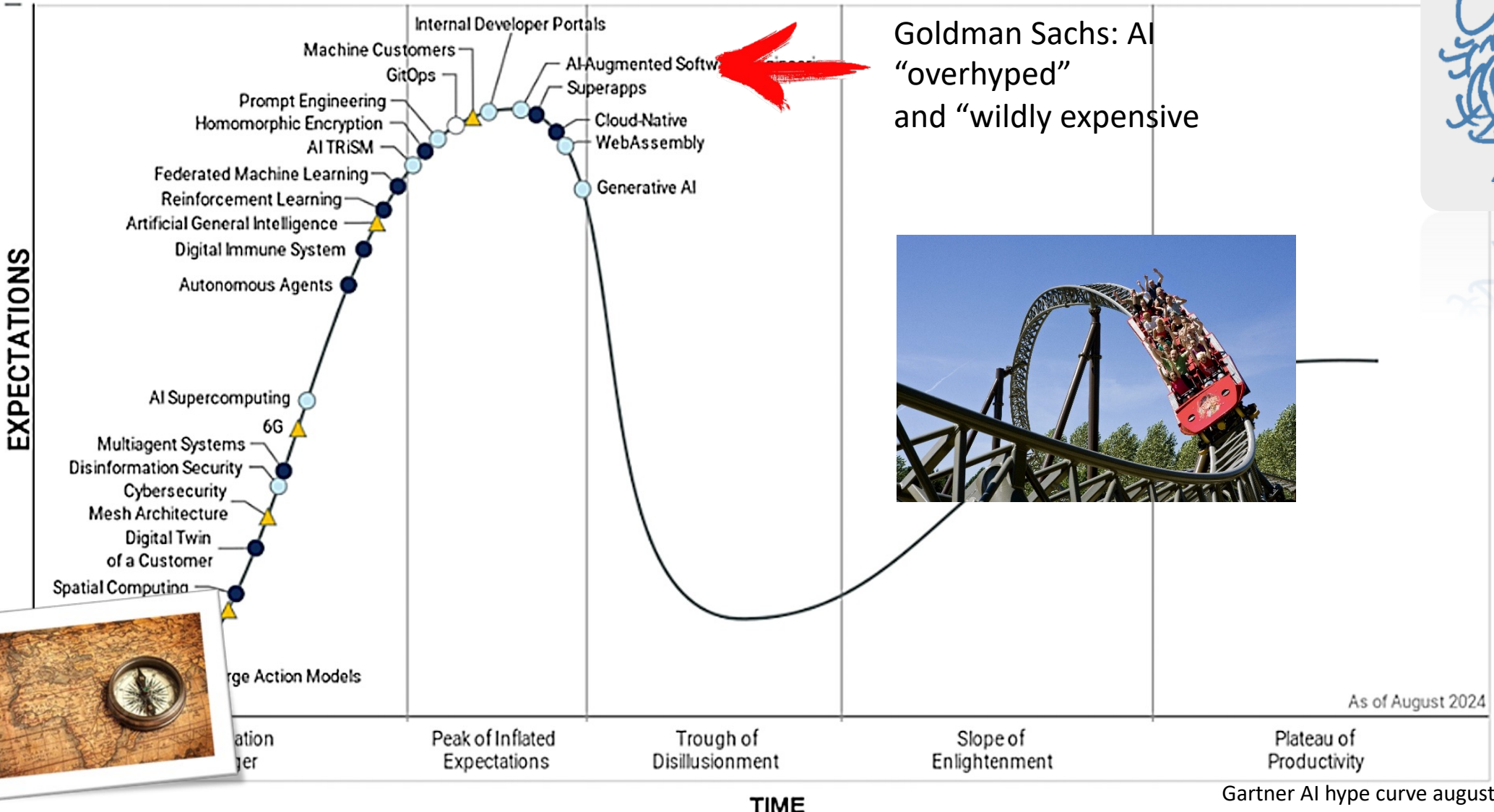
- Personal Computing
- Internet
- AI



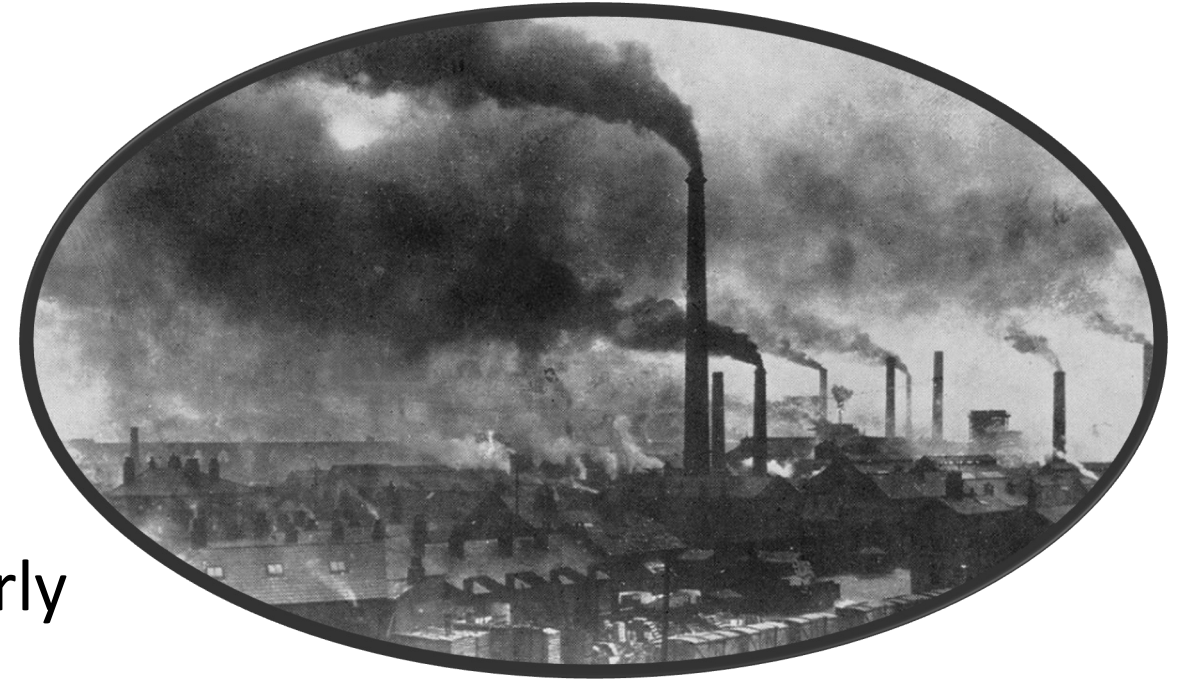
- It's not the tools it is the process
- Internet, PC and software where tools
- AI takes part of the process The Newyorker, Carl Newport



Den store nedtur ...



Potentiale ...

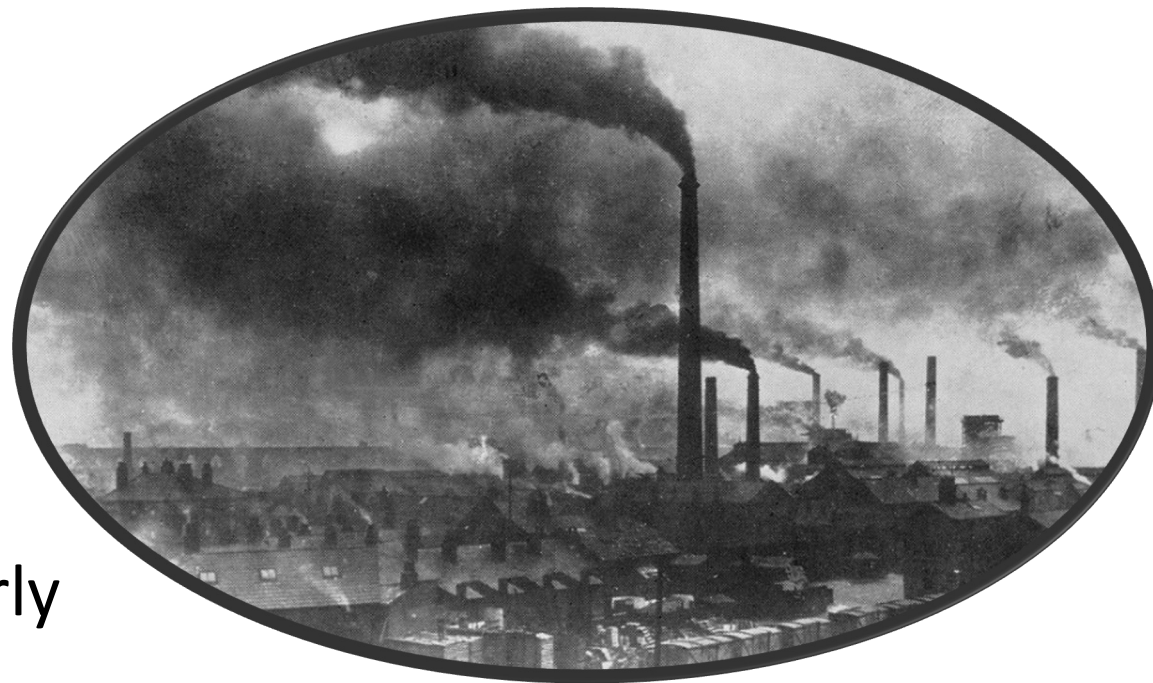


- WEF
- Steam engine grew GDP 0.3 pct yearly
- IT og Internet 0.6 pct
- AI potential ~~1.3~~ pct
- AI could increase annual GDP by 7 pct Goldman Sachs





Potentiale ...



- WEF
- Steam engine grew GDP 0.3 pct yearly
- IT og Internet 0.6 pct
- AI potential ~~1.3~~ pct
- AI could increase annual GDP by 7 pct Goldman Sachs march 26th
 - GenAI kan løfte velstanden i Danmark 10 pct af BNP = 230-290 mia kr McKinsey

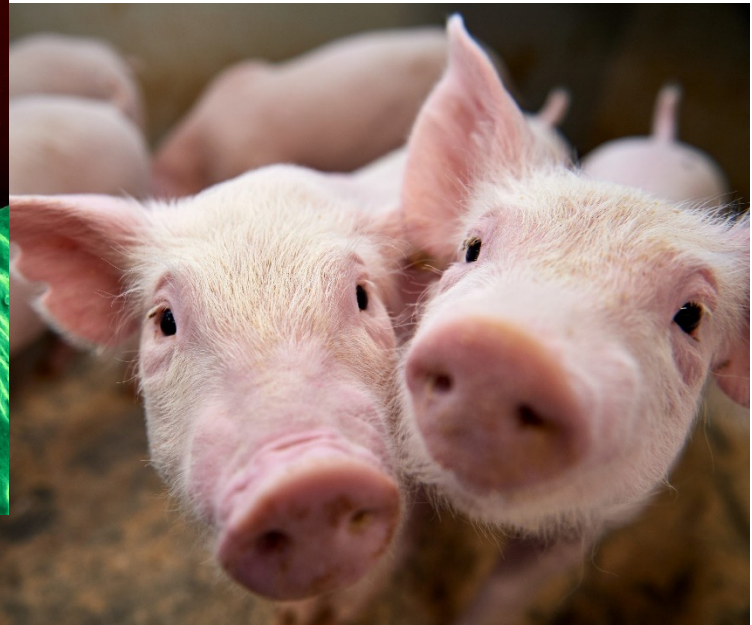
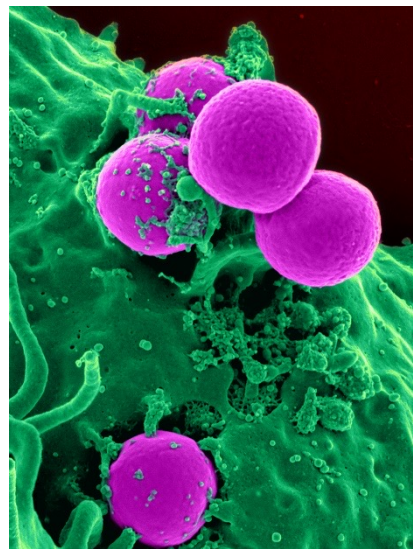
• = Danmarks samlede sundhedsudgifter





Også AI ...

- AI in research
 - A catalyst for scientific breakthroughs. EU News - Projekt x
- First new antibiotic in 60 years
 - MRSA Staphylococcus
 - 35.000 deaths a year in Europe - MIT
- Kluge dyr - fra grise-stress – til
 - Talking to whales
 - CETI – Cetacean Translation Initiative
- Earthquakes
 - Tectonic plates grating
 - A timeline to failure Geophysical Research Letter - Los Alamos



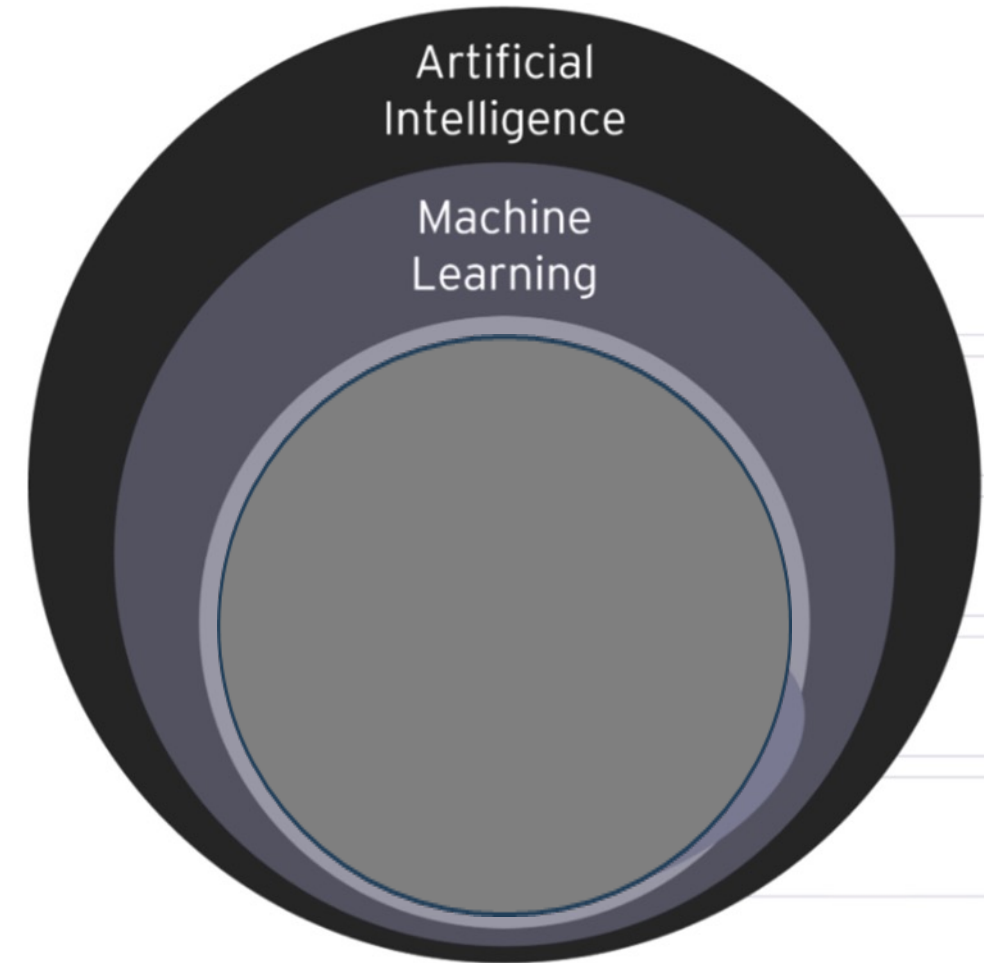
Også AI ...



- Analytical AI / Machine learning
 - Machine learning algorithms based on data
 - make predictions, recommendations or decisions
- Deep learning
 - Based on neural (brain like) structure
- Generative AI / Generative adversarial networks
 - Two neural networks, one generating new data, one evaluating
 - Generator and discriminator work together, end result look like real data
- GPT4 – Generative pretrained transformer
 - Pretrained on 175b parameters – internet – 2021 data (GPT3)
 - Transformer – can weight the significance of each part of input data
 - (BERT invented by Google)

LLM - Predict the next best word in a sentence

- The first person to walk on the moon was.... Neil Armstrong
- I want to help you..





Qampo



- Qampo – Machine Learning
 - Decision science
 - Ressource optimization
- Pondoos
 - Homecare
 - 20 pct reduction, time on the road
 - Fokus: borgerkontinuitet
- Bagstage - CPH
 - 8 incoming conveyor belts
 - 35 pct better flow



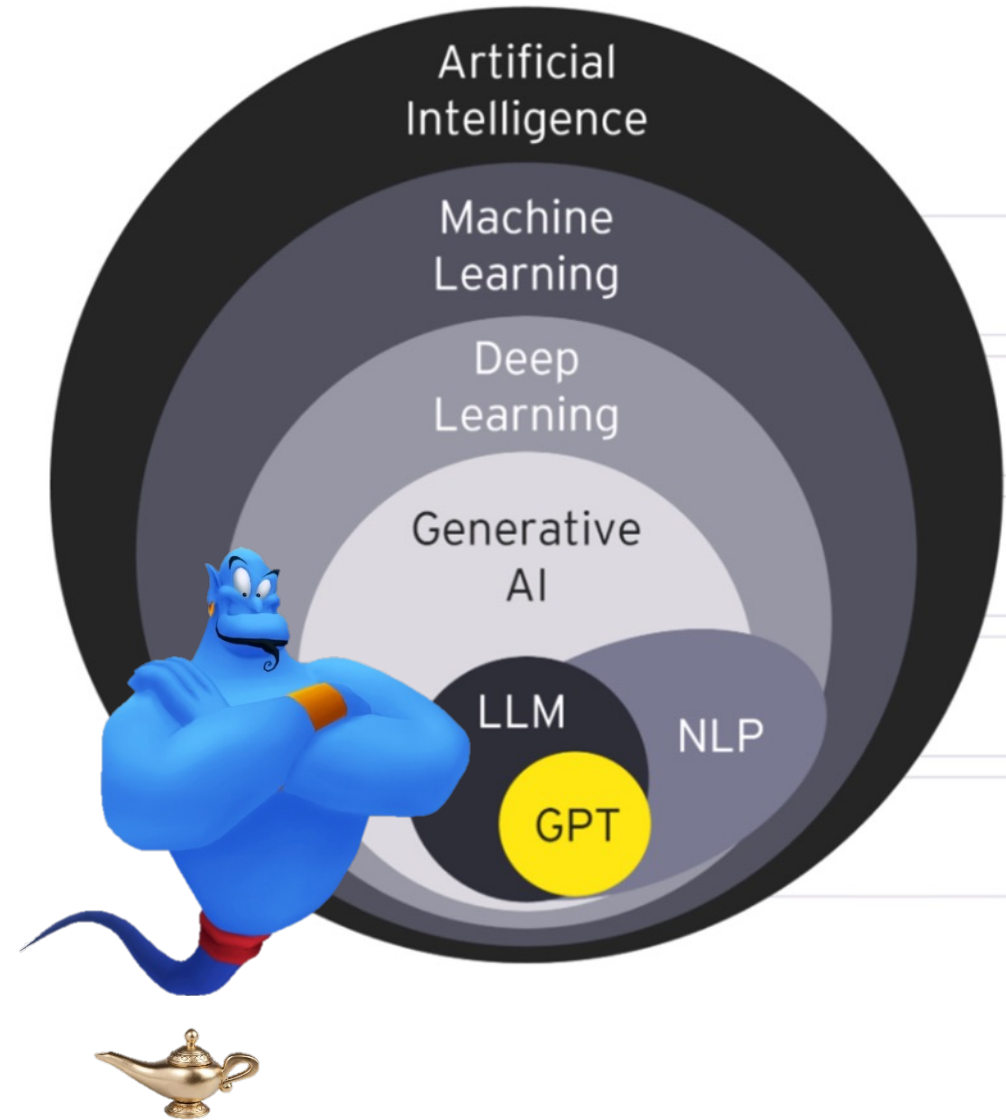
Aladdin ..



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- I want to help you..
- A major insurer will offer a risk hallucination policy in 2024 Forrester

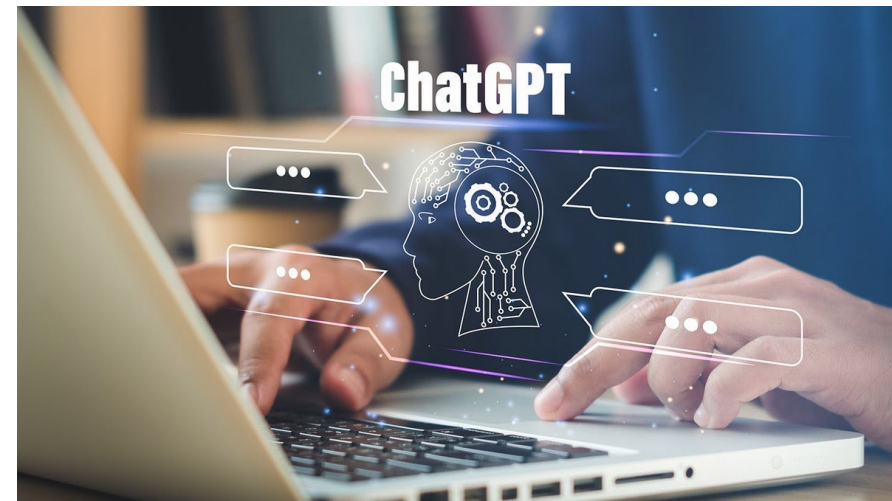




AI with Generative AI

- Som at få en pissebegavet kollega
 - Altid klar til at hjælpe dig
 - Jan Birkemose, journalist / Børsen
- Gen AI LLM capabilities
 - Abstract
 - Expand
 - Chatbots
 - Extracting

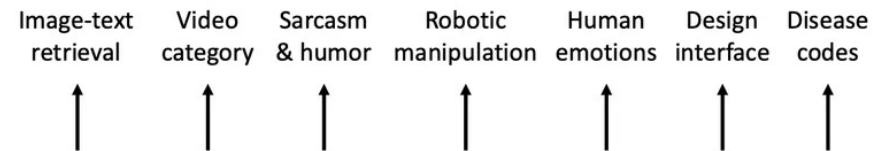
Transformation



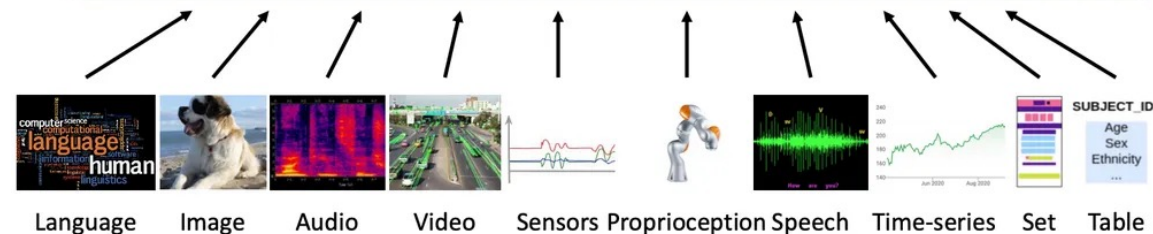


GenAI - Multi Modal

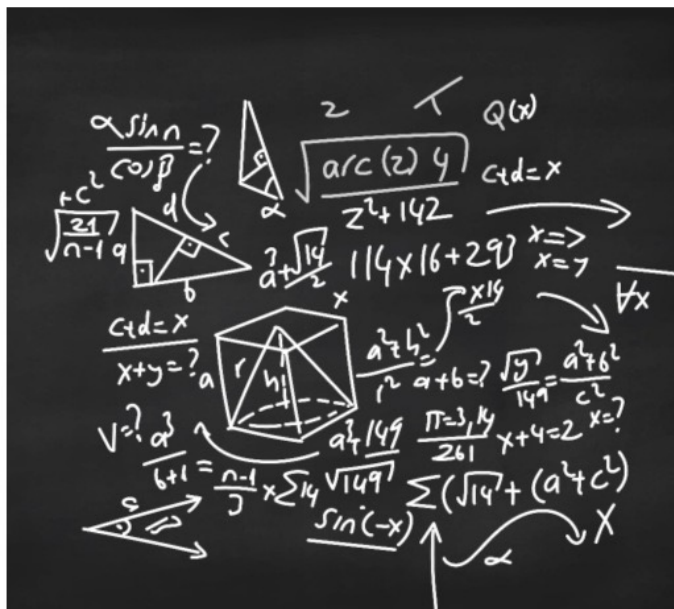
- LLM from text to
- Multimodal capabilities
- ZDNet - Tiernan Ray



1. Which **modalities** are different and should be separately **processed**?
 2. Which **modality pairs** interact differently and should be separately **fused**?



Carnegie Mellon 2023 High-Modality Multimodal Transformer



Hey, GPT! Can you tell me what's wrong about this X-ray of an arm?

It appears you've provided an X-ray image of a forearm and wrist. I can offer some general observations, but please note that I am not a substitute for professional medical evaluation. You should consult with a radiologist or an orthopedic doctor for a definitive diagnosis.

From the image, it looks like there's a fracture in the radius, which is one of the two bones in the forearm. The break appears to be near the wrist joint. Such fractures are commonly referred to as distal radius fractures.



Orchestration, multiple LLM's

- Smaller more specialized models
 - Targeted expertise in specific domains
 - New tools will emerge
 - Orchestrate and route to right model
 - Expertise, efficiency and cost Ali Arsanjani Google
- Blending, merging or stacking multiple smaller LLMs
 - Systems with strong behaviour
 - Greater than the sum of parts Bijit Gosh Medium

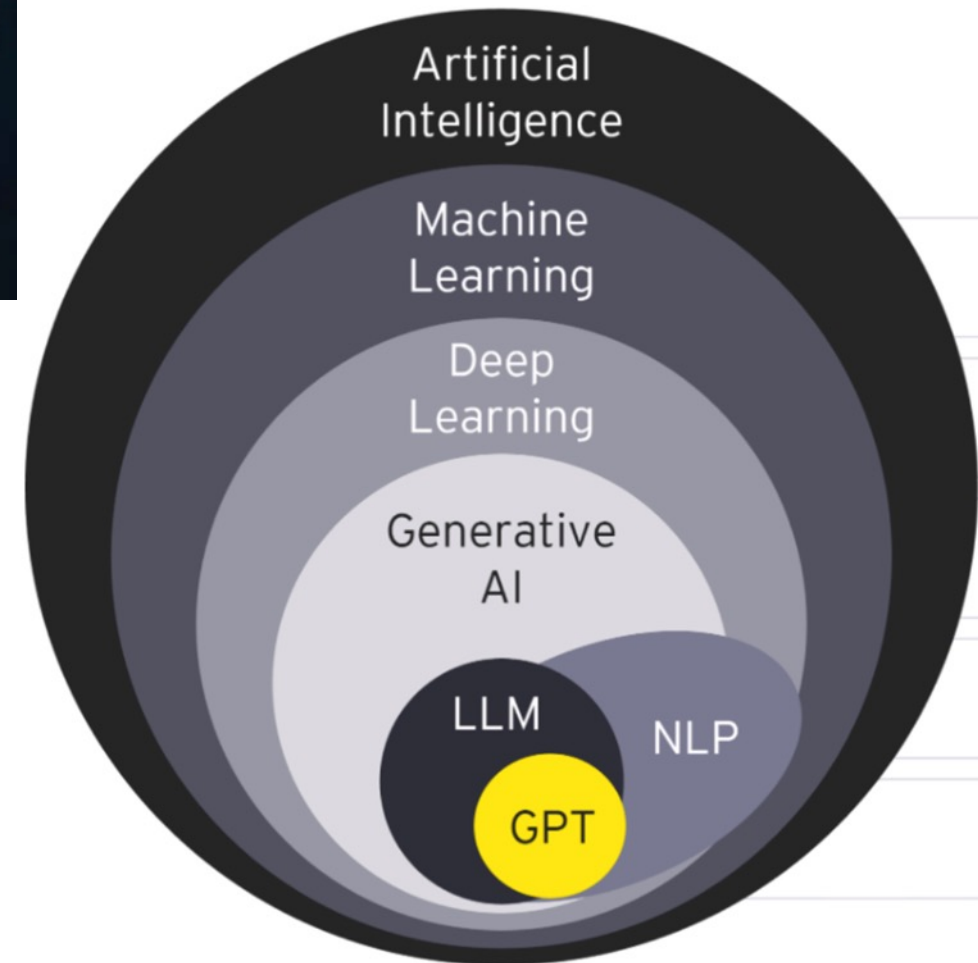


AI types

Hvad så nu ?



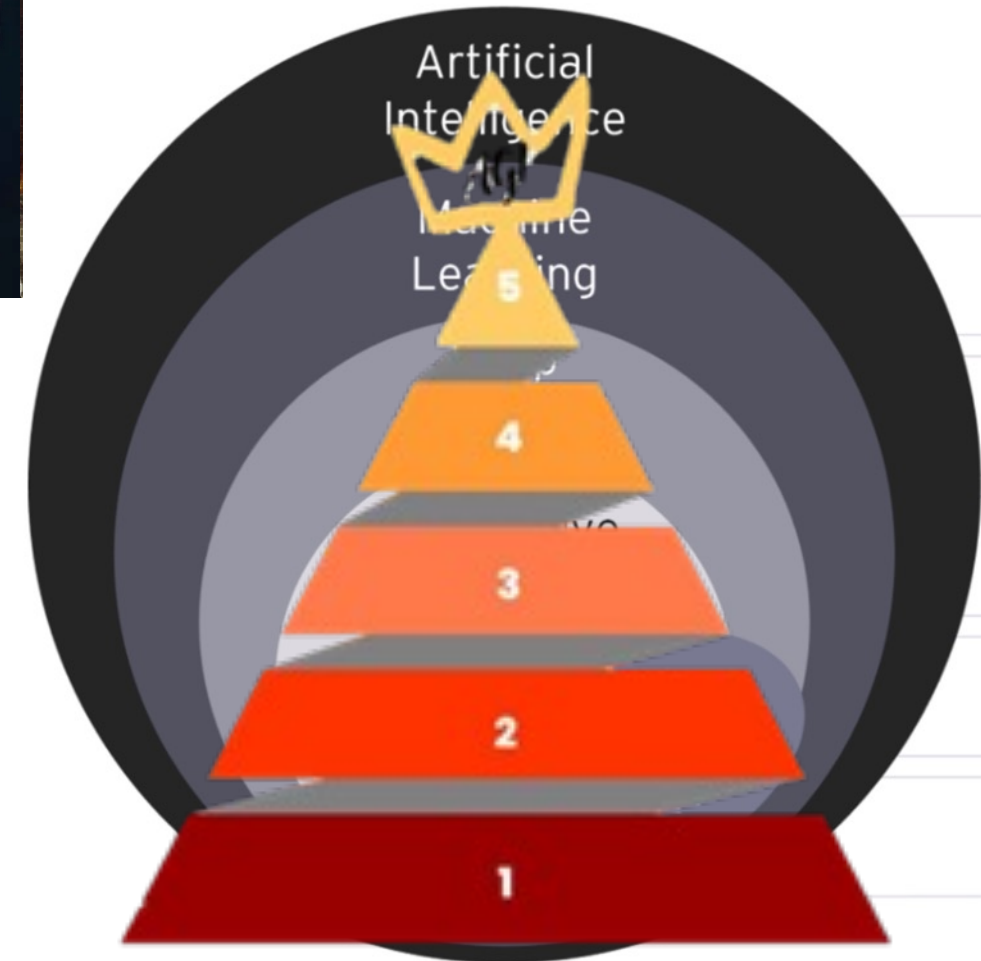
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AI types Next



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- Open AI – Next - 5 Levels of AI

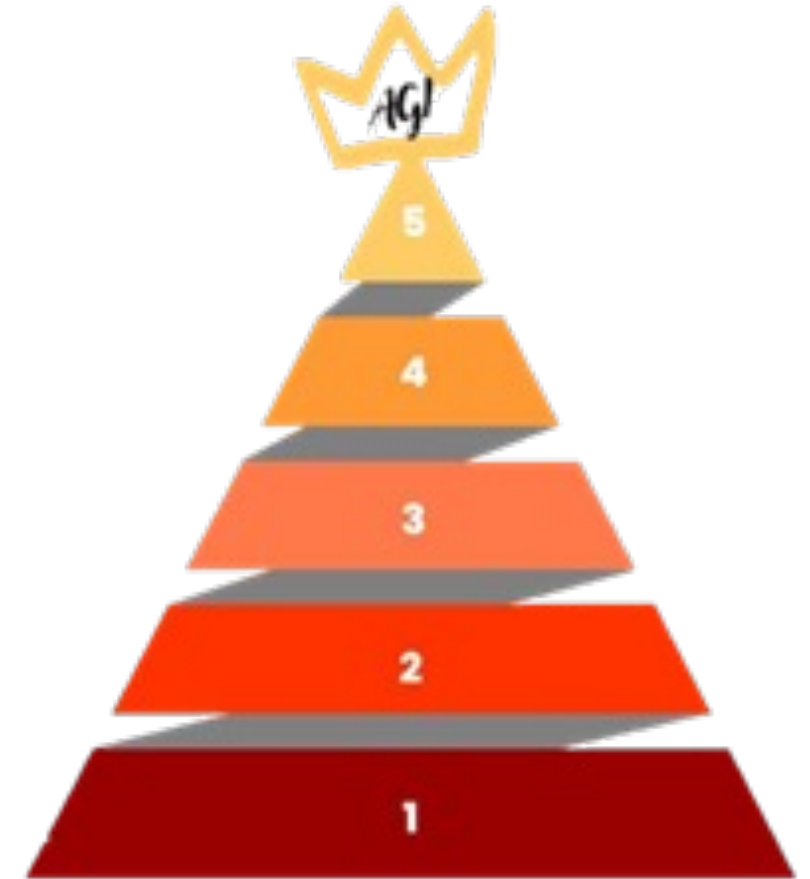


AI types Next...

All AI development so far:
Levels one and two!!



- Level one: conversational AI
 - At level one, the current stage of AI, computers can interact in conversational language with people.
 - Customer service support agents, AI coaches
 - ChatGPT and Claude conversing with your team and helping you write your social media content.
- Level two: reasoning AI
 - Can perform basic problem-solving tasks comparable to a human with a doctorate-level education
 - Without access to any tools.
 - More comprehensive and human-like
- Level three: autonomous AI
 - LLM based applications require humans to input prompt
 - Agents can plan and execute tasks end to end
 - Take actions autonomously
 - Like team members
- Forbes



Strawberry - GPT5 - OpenAI o1

AI reasoning

- Tell me what you can do which the previous model couldn't do?
 - Over inflated answer
- It's thinking before answering
- And it gets better and better
 - Using Reinforcement Learning (RL), it practices on a massive amount of training data - includes problem prompts and answers
 - The model gets feedback and adjusts its behavior.
 - This RL training process improve ability to generate better COT - Chains of Thought over time.
- Breaking Down Complex Problems
 - Deconstruct challenging tasks into simpler, more manageable step



Strawberry - GPT5 - OpenAI o1 AI reasoning

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 - Deconstruct challenging tasks into simpler, more manageable step
- Use Chain of thought to solve a problem
 - Learns to recognize and correct its mistakes



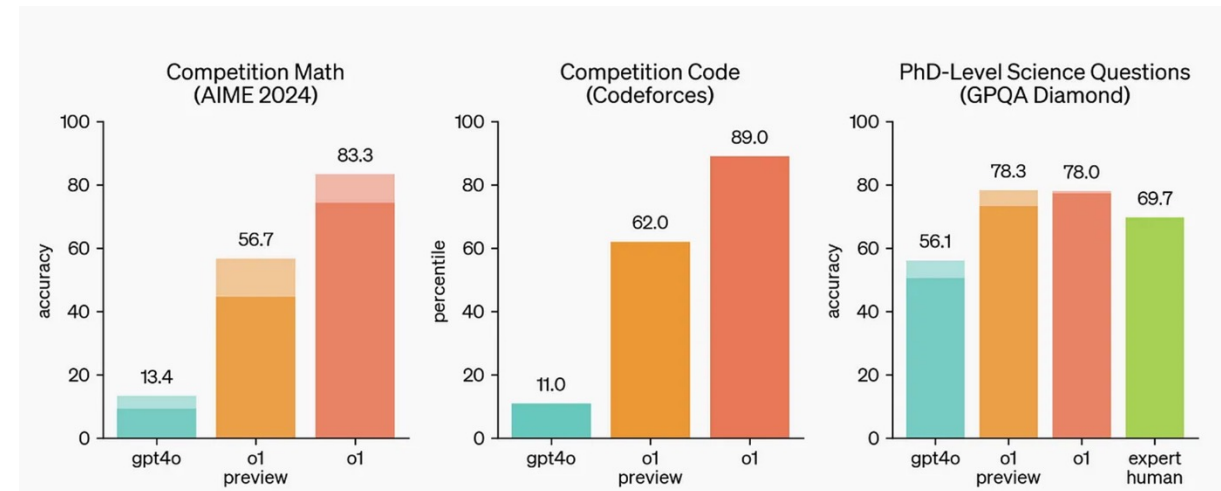
@DrJimFan

Strawberry - GPT5 - OpenAI o1

AI reasoning



- Has PhD level accuracy in physics, biology and chemistry problems
 - Open AI test, comparing with experts holding PhD's answering the same GPQA Questions Medium Jim Clyde Monge. Mehul Gupta Data Science

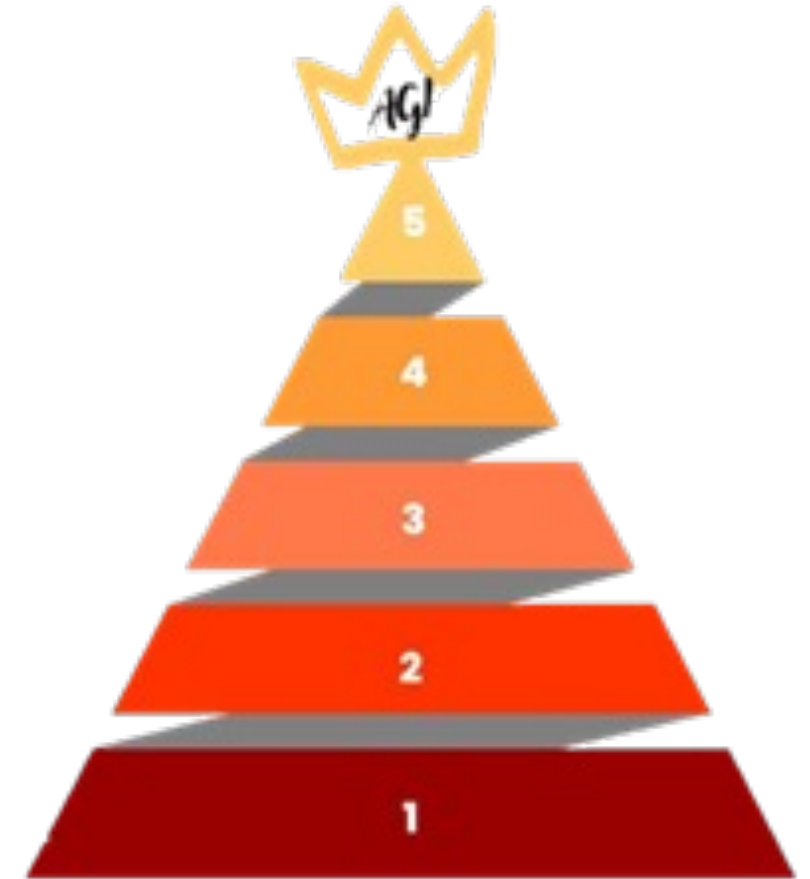


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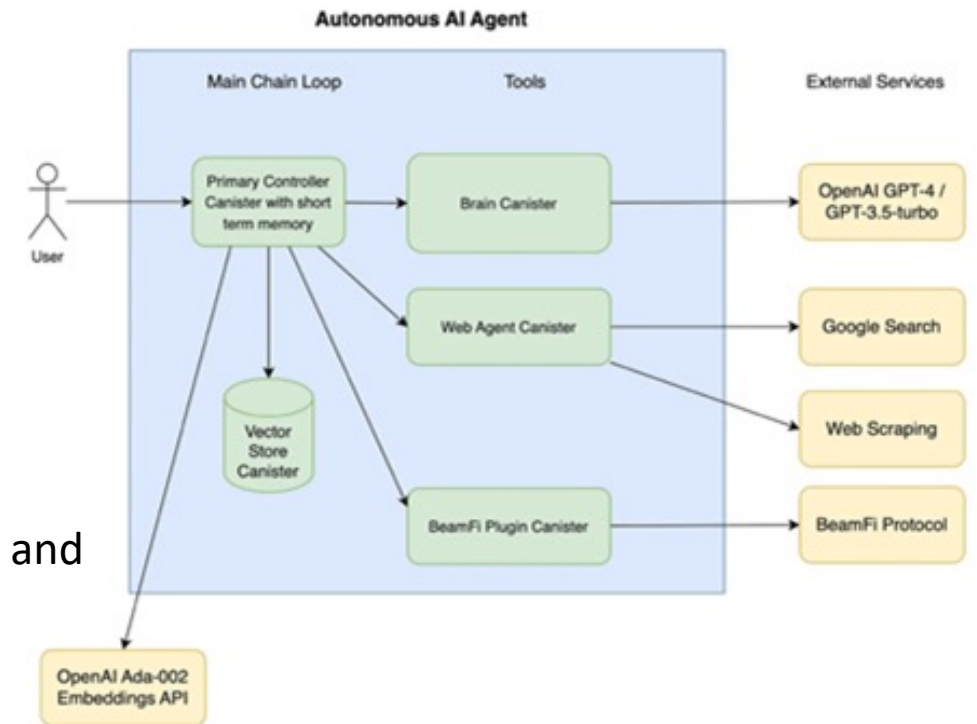


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Fra tanke til handling Agentbaseret AI

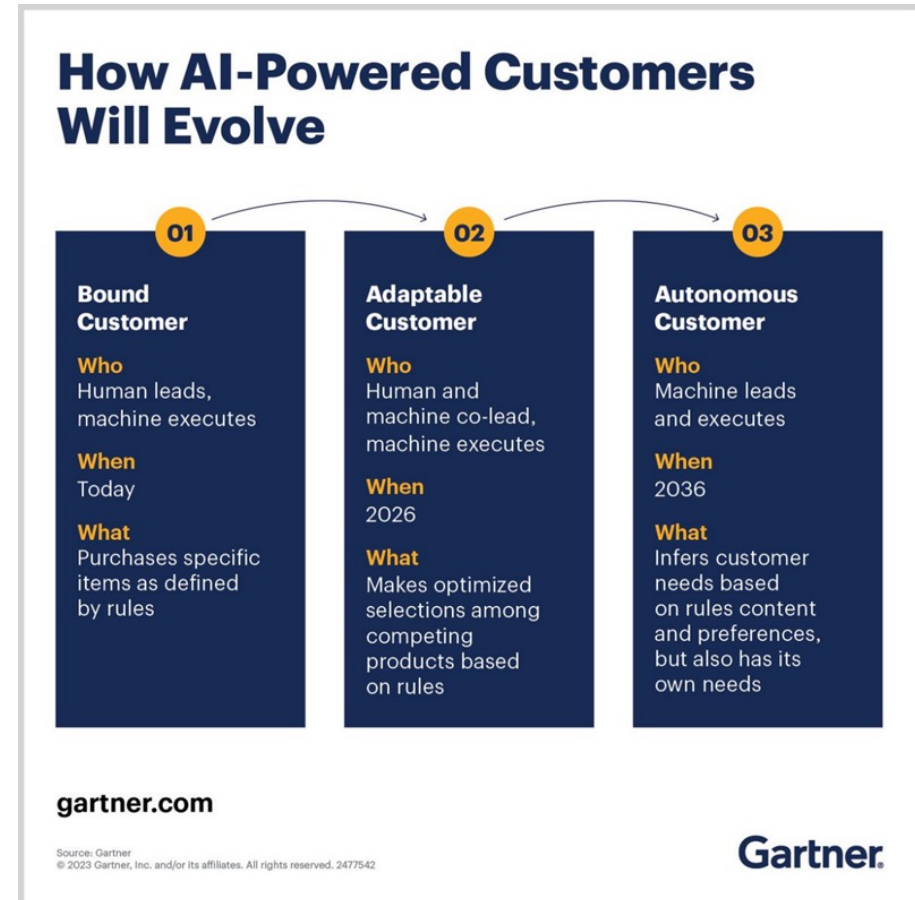
- Perform all kinds of tasks autonomously
 - Make decisions
 - Solve problems
 - Do shopping
 - Negotiate contracts
 - Book your travels,
 - Remember your preferences in hotels and, check your calendar and select best flight,
 - Make a list of what to pack
 - What to see, book restaurants.
 - Look in your to do lists and meeting summaries
 - Executing tasks, booking meetings, sending mails and memos.
- Tech Review / Angel Molina Laguna medium



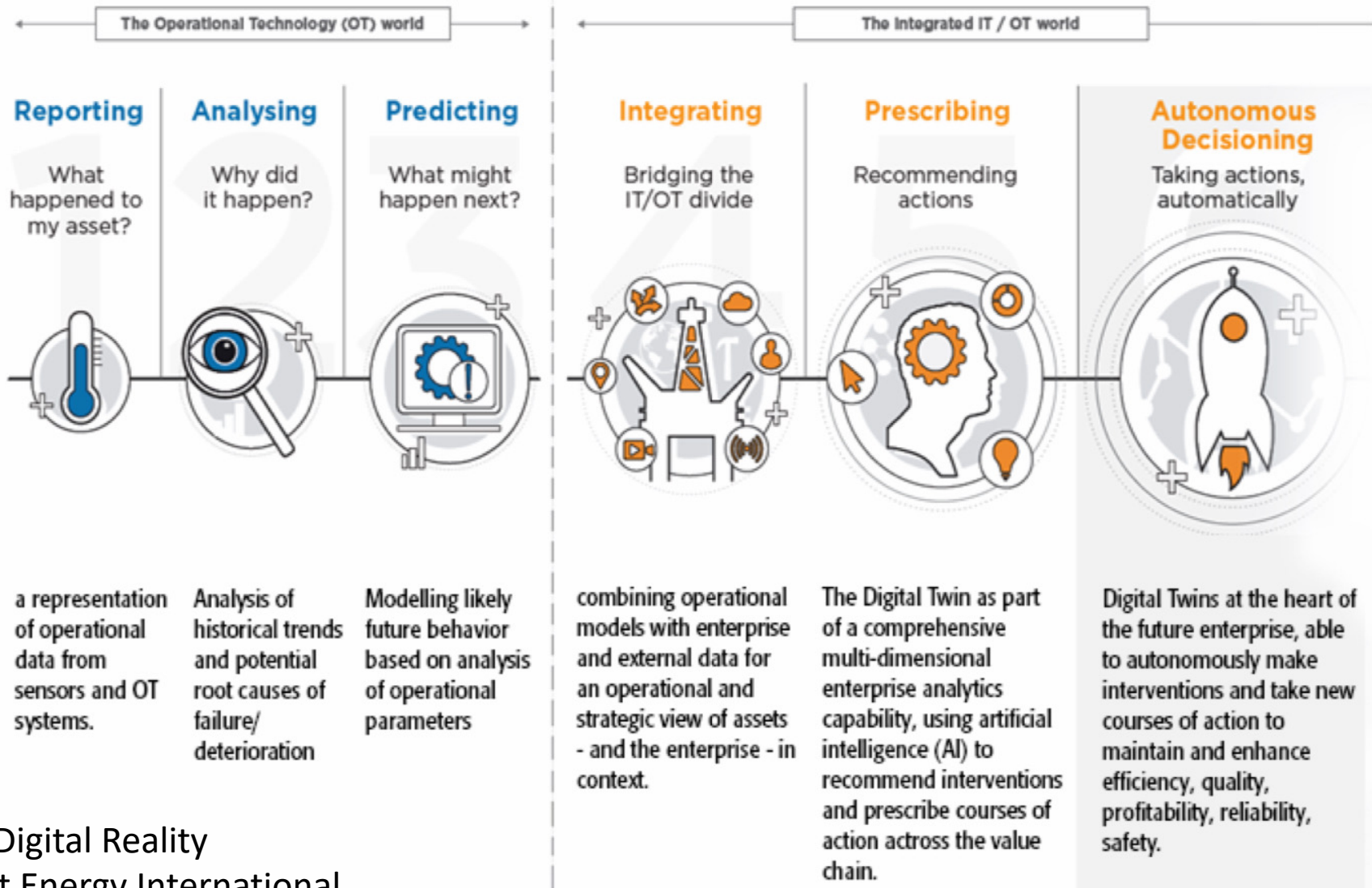
Your future customer is a machine

- Machine Customers
 - Autonomously negotiate and purchase goods and services
 - Evaluate, decide and execute transactions autonomously
 - Smart refrigerators ordering groceries
 - Cars managing maintenance
 - Factory ordering raw materials
- 1. Bound customer - Today
 - Automated printer ink subscriptions
- 2. Adaptable customer – 2026
 - Machines co-lead with humans, making optimized decisions
- 3. Autonomous customer – 2036
 - AI personal assistants managing daily tasks
 - CEO's believe 20 pct of revenue will be by custobots in 2030

Medium, Tamarah Usher, Slalom Business / Gartner



Digital Twin Evolution





Visa for Agents

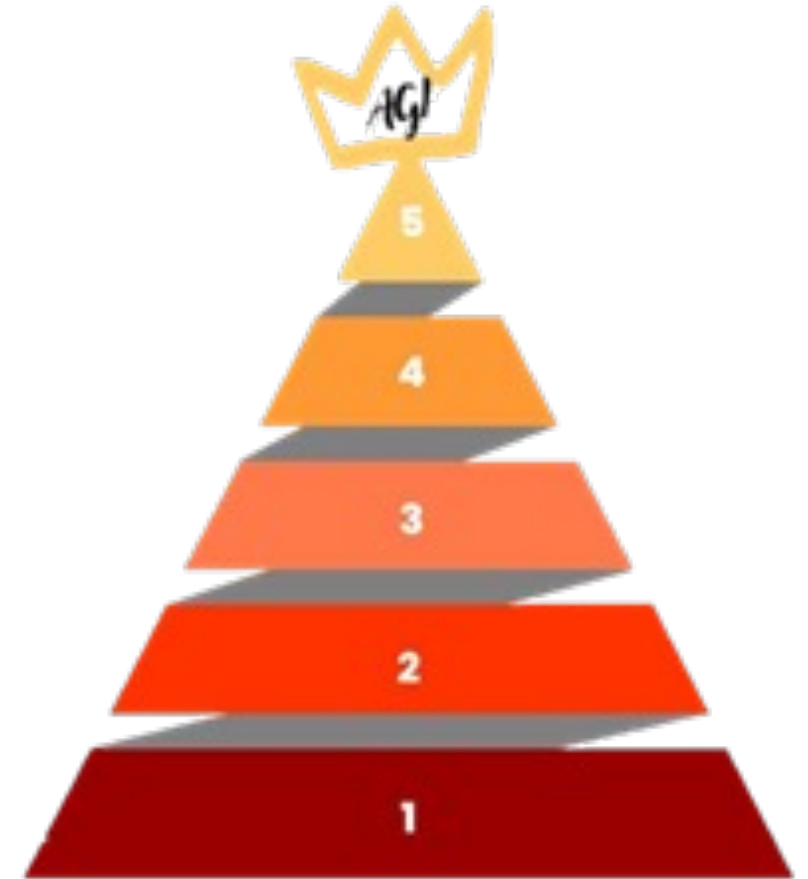
- Skyfire - the “Visa for AI”
- AI agents will be able to autonomously
 - make payments
 - receive payments
 - hold balances
- Skyfire CEO Amir Sarhangi / [Venturebeat.com](https://venturebeat.com)



AI types Next..



- Level four: innovating AI
 - Systems can develop innovations independently.
 - Not just running your processes, but improving them.
 - Not just following rules
- Level five: organizational AI
 - Final stage of super AI
 - Performing the work of an entire organization.
 - Agents that work together
 - Make improvements
 - Run everything required without a human in sight.
- Sam Altman, CEO of OpenAI, predicts we will reach level five within ten years Forbes





Cambrian explosion AI and IoT..AloT

- 521 mio years ago
 - From slimy creep to the species we know today
- Eyes, ears, senses, brain activity
 - AloT
- SoftBank Masayoushi Son

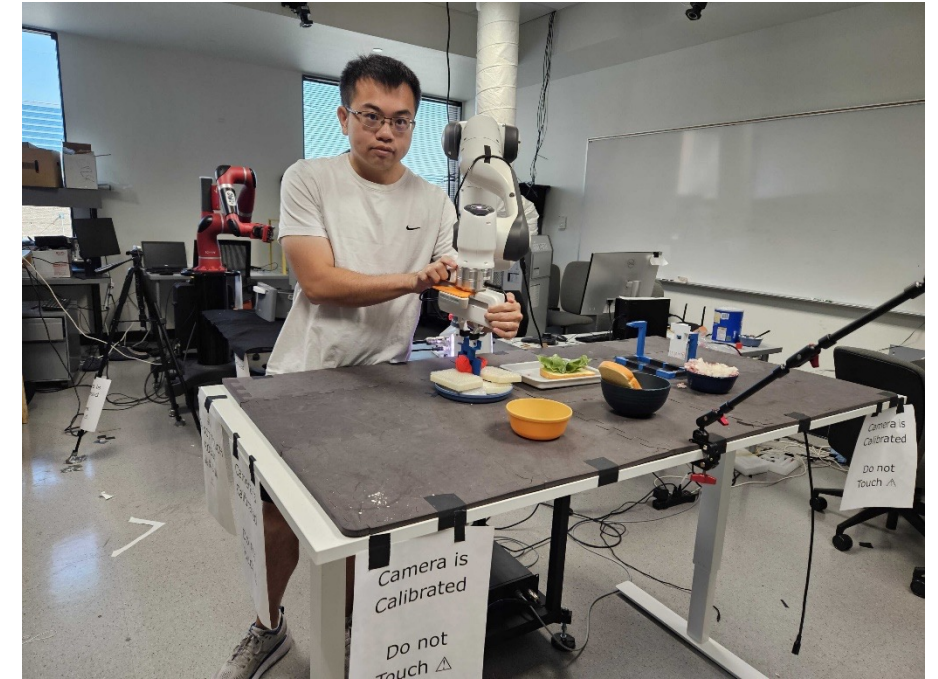
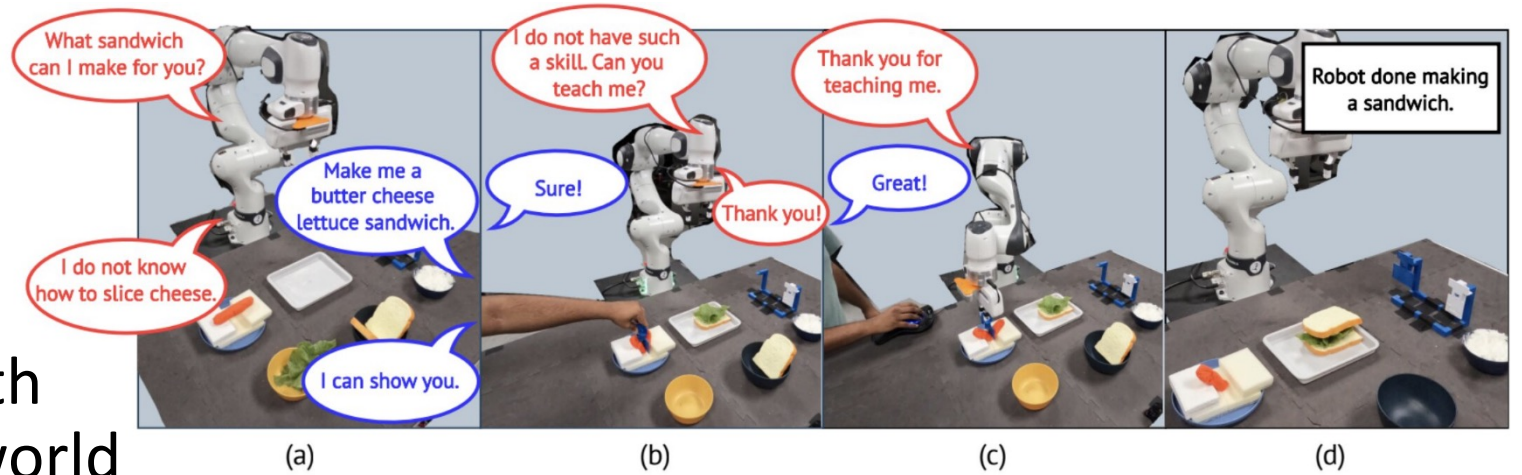


- Rat facial recognition
 - Where do they come from, who is returning, who is making the damage
 - Rentokil
 - Guardian



Robot learning

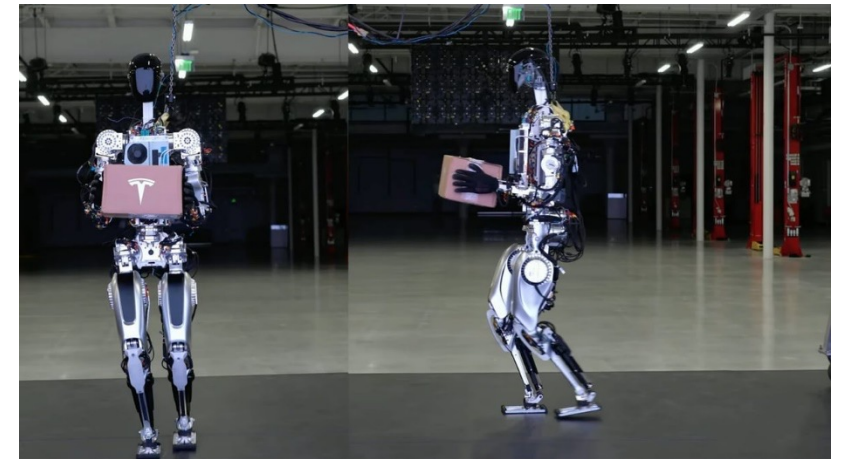
- A robot that can learn with human feedback in real world
- Dialogue based interactions, trained robot to prepare a sandwich
- Using LLM to interact, so robot can express its doubts and requirements
- Robot able to learn new skills with 100pct accuracy after only 5 human interactions
- Arizona State University Techexplore



Robots in the kitchen

.. Or at home - Tesla Optimus

- Robots are getting better and better at food preparation
- Requires vision, assessment of context and understand changing conditions in the kitchen McKinsey
- Chipotle, 200 Burrito bowls / hour by robot – Hyphen startup / Reuters
- Tesla Optimus, vision is mow lawns, clean dishes, use drill and screwdriver, push objects Tesla



But, should they look like us ?

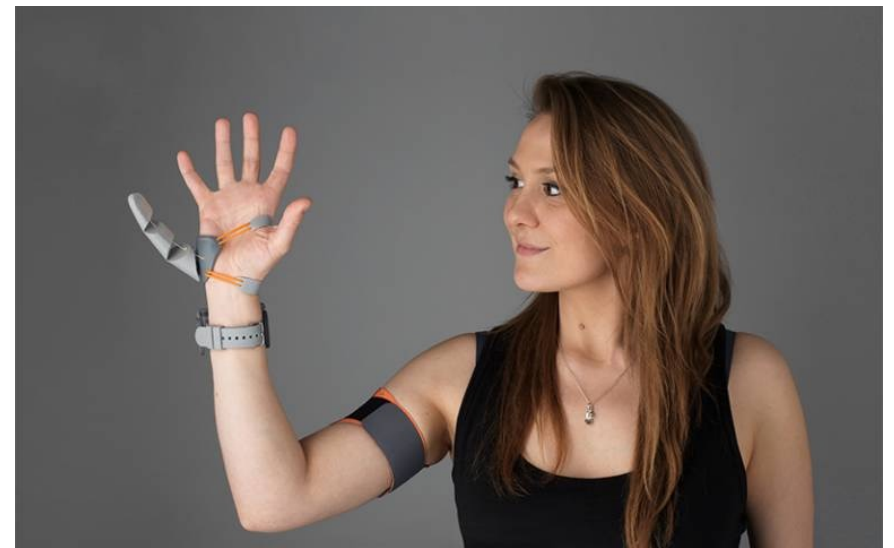
- Ting finder deres endelige form
 - Cyklen
 - John Dunlop
 - Dyr læge – masser af gummi
 - 1887 Første (cykel)dæk
 - Kronisk syg søn og trehjulet cykel
 - Laptop / Smartphone
 - Mark Weiser
 - Tabs, pads and boards
- Giving AI a body in the physical world
 - Hans Peter Brondmo Google X





Why only 5 fingers?

- Robotic third thumb expands hands grasping abilities and carrying capacity
- Using toes to maneuver
- Interesting Engineering - Shubhangi Dua
- Why should hand be confined by limitations of natural counterpart
 - EPFL Switzerland





Robot stand-off
San Francisco &
Changhi hospital



Tesla day 10 oktober

No Social intelligence

- Go or give way, basic question in traffic
 - Social interactions trained from we begin to walk
- Inability to understand social interactions Kbh Universitet
- New algorithms for AV
 - Matt Shipman North Carolina State University
- 2030 10-15 pct AV of new car sales
 - Ford patent





Devices and use? Ambient AI

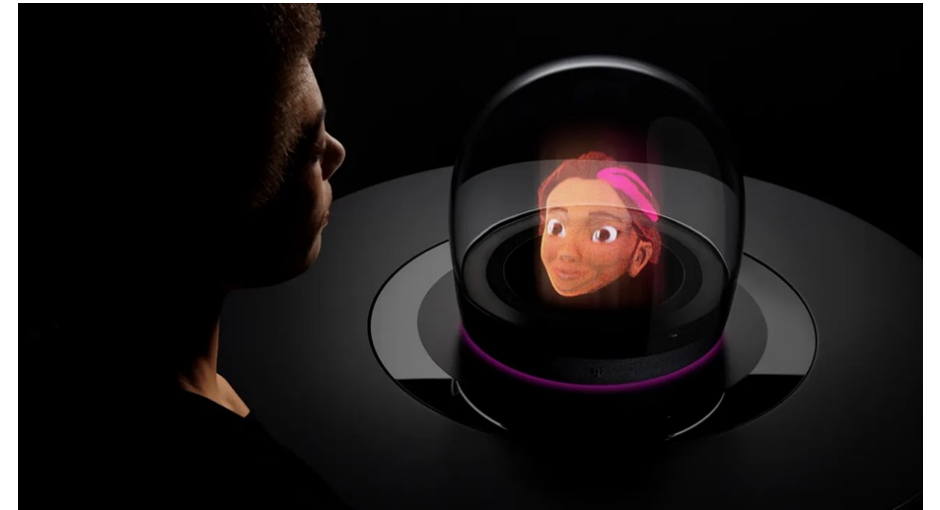


- Dimser
- Det vi arbejder med
- D...lle...



Interaction / Dimser Ambient AI

- Tabs, pads and boards Mark Weiser
- The concept of the device is fading away Sundar Pichai, Google CEO
- Smartphones will be obsolete in 10 years
 - Yann LeCun, Meta AI chief Analyticsindiamag.com
 - Design study, hologram telephony
 - AI based avatar users will be able to chat with via a hologram
 - We will use augmented reality glasses and bracelets to interact with AI Assistants
 - Deutsche Telekom Concept **T**
- Ambient AI
Everywhere around you



Interaction (Nearly) No Device

- Humane AI Pin
- Runs on ChatGPT and others
 - Laser ink display
 - Personic speaker
 - Voice assistant AI Mic
- Can
 - Summarize your email inbox for you
 - Translate languages
 - Identify food for nutritional information



Rabbit R1

- LAM – Large Action Model – cross platform agent system
 - Research a holiday destination, book flights.
 - Show it how to go online and order groceries for you, the next time it can do it on its own
 - Show me best iPhone deal on Walmart
- Rabbit AI is trained on how humans interact with apps.
- Instead of apps you get an AI assistant that talks to your favorite apps



Interaction

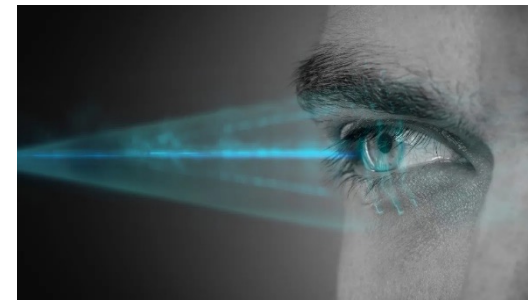
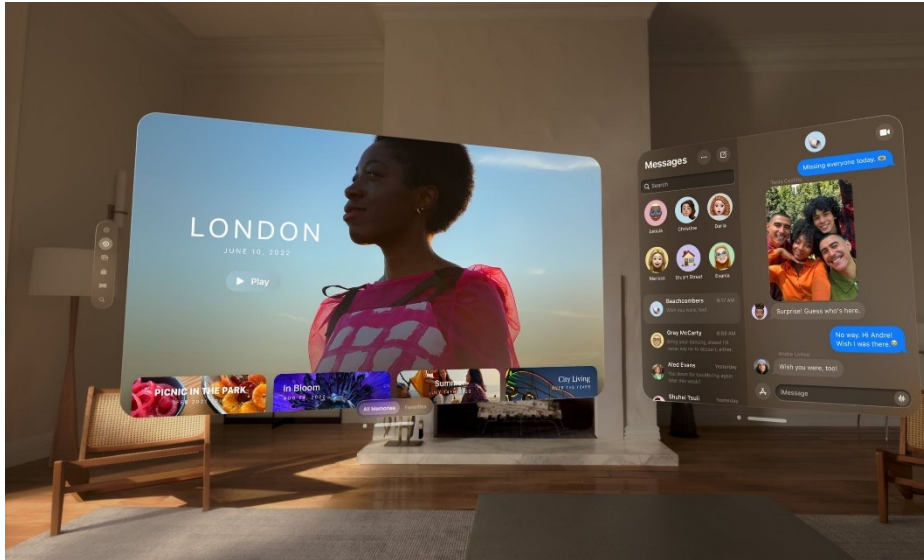
AI memory assistant

- The Pendant is a memory assistant that transcribes audio recordings
 - What new app was it xx mentioned
 - What restaurant did Shannon recommend
 - Where did I leave off in my discussion with Jake 2 weeks ago
- From meetings to entire days into an archive of searchable information
- Can summarize a discussion and identify needed actions
- Feature can prevent Pendant to record unless person verbally gives permission
- Verge / Limitless



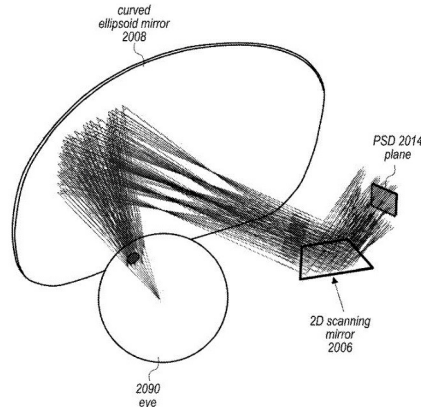
LOVEFROM JONY

Interaction - AI XR glasses Or Retina - NO glasses



- Xreal

- Projecting from the side into retina



Interaction AI Voice

- Action Focused
 - To help people get things done
- AI can detect emotions
 - Happiness, sadness,
 - Fear, disgust
 - Anger and surprise Ignacio de Gregorio Medium
- Affective Computing
 - Arising from – or influencing emotion
 - Skændes med din bil – eller køleskab

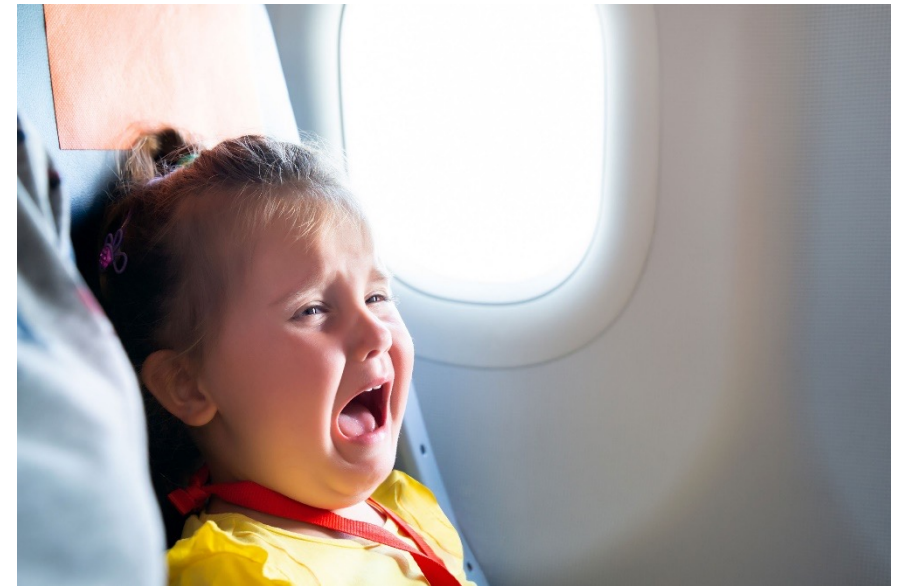


Interaction

AI Voice - Headphones

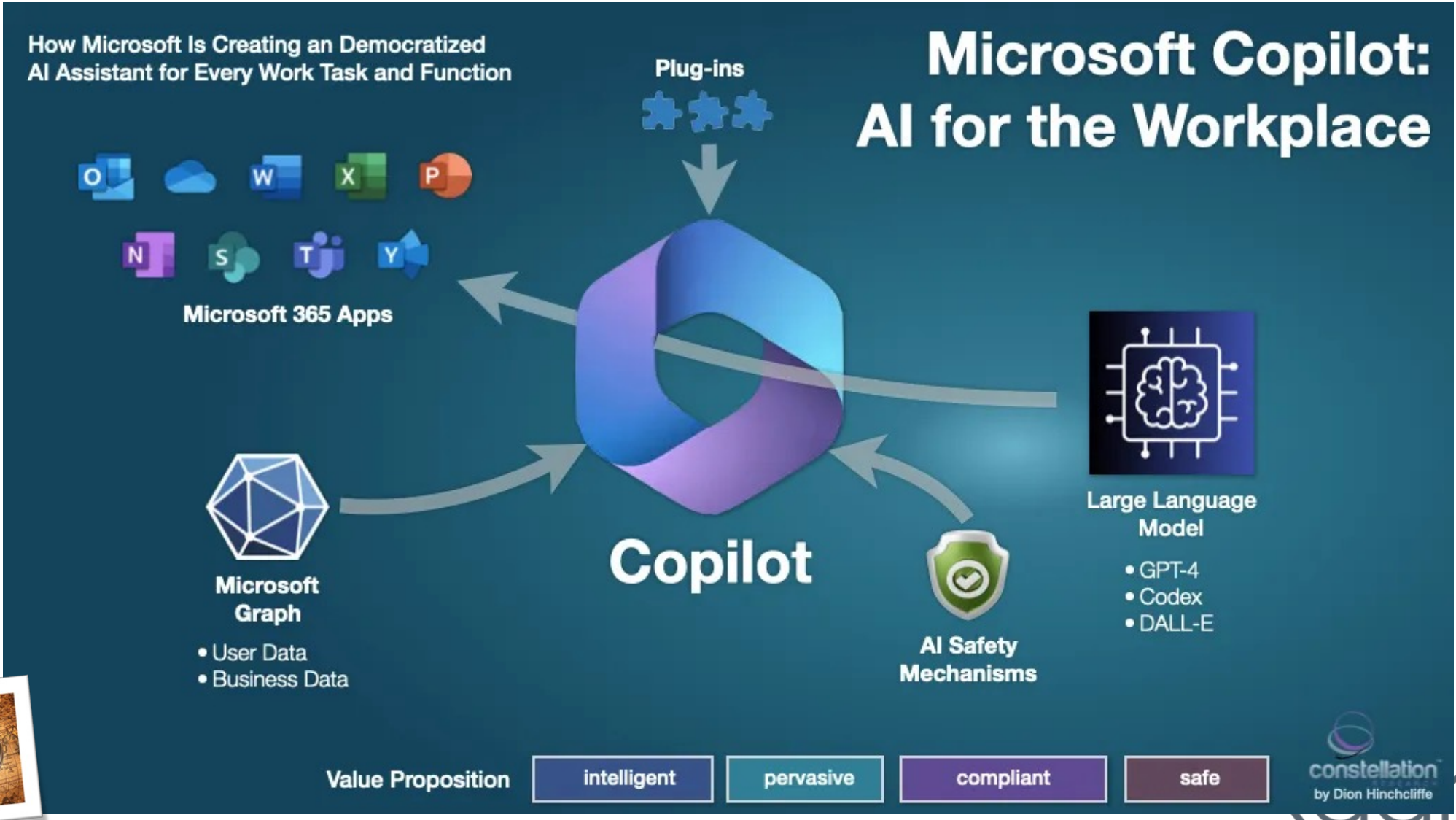
- AI headphones - reality editing machines
- Semantic hearing
 - Pick specific sounds, like birds chirping, suppress people chatting
 - Target speech hearing, choose who to listen to by looking at them
 - Filter out baby crying on plane, just look at it

• Iyo One - University of Washington, Wired





Det vi arbejder med



IT Paradigmeskifte

AI Companions

- See what we see, hear what we hear, speak and communicate like us
 - Experiences that are about a lasting, sustained interaction with a companion
- Copilot Voice
 - Support “it’s on your team, it’s backing you up, it’s your hype man”
- Copilot Vision
 - Can see your screen and react to things you point to, offer an opinion
 - It can read an entire page in an instant , and you can ask it
- Copilot Think Deeper
 - Based on OpenAI o1

• Wired - Mustafa Suleyman – cofounder of Google Deepmind, now Microsoft AI CEO



Copilot AI Companions

- The first stage
 - AI processing the same information that you process
- The second phase
 - AI having a long term persistent memory that creates a shared understanding over time
- The third stage is
 - AI interacting with third parties by sending instructions and taking actions – to by, book, plan, schedule
- The big thing is how to craft technology that is trusted, because this will feel very intimate and personal
- Wired - Mustafa Suleyman – cofounder of Google Deepmind, now Microsoft AI CEO



Google Astra Universal Agent – or you..

- Google Astra - Useful in everyday life
 - Google: with Astra we do not have to open other apps
- See and hear what we do and respond quickly, responding to audio and video inputs
 - Bring contextual understanding, where we are, what we're doing with Gemini Live via phone camera
 - Works your apps for you
- Has advanced reasoning, planning and memory
 - Can think multiple steps ahead
- Can take action, check calendar or message friend

- Ultimately you will have one agent that really knows you well, can do a lot of things for you and work across multiple tasks and domains –
 - Chirag Shah, University of Washington / Tech Review / Cnet
- Or.. Act like you – Personal.ai
 - Trained to be like you, your values, truths, opinions, mirror your style

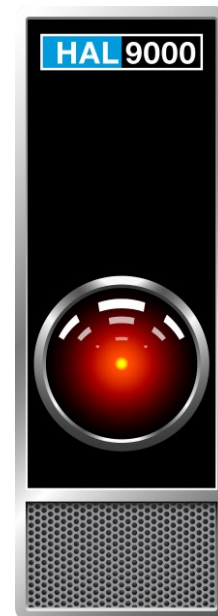




Risks ahead ?

X-risk - AI

- X-risk
 - Complete extinction of humanity
 - "Lights out for all of us"- Sam Altman
- Risks of failure
 - Unpredictability
 - Risk increases with complexity and amount of data
 - Lack of robust safety mechanisms
 - Single Chance of Control
 - Emergent behaviors
 - Not explicitly programmed
- Use scenarios
 - Bioengineering pathogens
 - Manipulating resources like food, water, energy
 - Cyber warfare
 - Automated weapons
- Roman Yampolskiy. AI safety expert - Sahin Ahmed, Medium



I'm sorry,
I can't do that, Dave

- Musk: AI given the task of maximizing strawberry fields might destroy civilization converting entire surface of the Earth into strawberry fields. O'Reilly



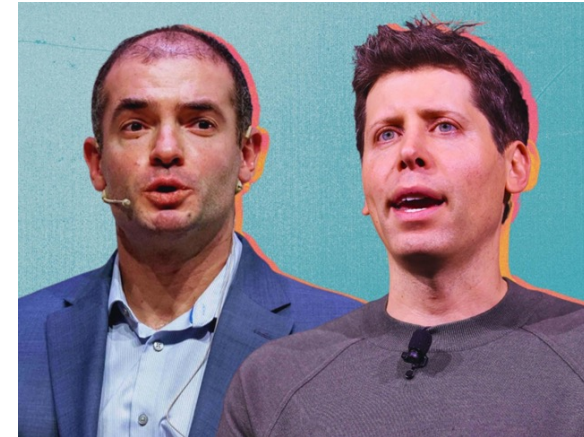
GPT5 – nu = o1 “Strawberry”

- In system card, laying out capabilities and risks
- OpenAI itself gives the new system a “medium” rating
 - Nuclear, biological, chemical weapon risk
 - OpenAI categories are low, medium, high and critical
 - First time a system is rated medium
- Can help experts with operational planning and reproducing of known threat
- Capable of doing scheming – intriger eller uærlige planer
- Open AI has a rule, only risk scores up to medium will be deployed, and they have now reached that limit
 - It is an internal rule, and they could redraw the limits Sigal Samuel - Vox Future Perfect



Er der en voksen tilstede? Ansvarlig AI

- Sam Altman CEO, cofounder
 - Moving forward to fast, business focus
- Ilya Sutskever, CSO, cofounder OpenAI – left may 2024
 - Super alignment team closed down
- OpenAI Safety Committee
 - Sam Altman departs OpenAI's safety committee September 2024
- We don't think OpenAI as it exists today can be trusted to hold itself accountable.
 - "Based on our experience, we believe that self-governance cannot reliably withstand the pressure of profit incentives"
 - Ex-OpenAI board members Helen Toner and Tasha McCauley / Economist
- Superalignment team
- Aligned, not running out of control
 - We will see superhuman models with vast capabilities, they can be very very dangerous
 - We do not have any methods to control them
 - One method is to train the super AGI to follow the guidance of weaker model AI = human
- The Information/Guardian/Reuters



AI - a big boost in productivity – to the criminal underworld

- Deepfake audio scams
 - Hong Kong Company was scammed out of 25m usd
 - Exposed to deepfake of companys CFO
 - Transferring money to scammers account.
 - Ferrari - Hemmeligt opkøb og penge der skal overføres
 - Andet mobilnummer
 - Finansdirektør checker ”hvilken bog anbefalede du for nyligt” JP
 - Brug altid flere kommunikationskanaler – mail, mobil



Geopolitisk Kommunikations Koma

- GPS jamming, maj 2024 Bornholm, færgeafgange stoppet
 - Bornholmerfærgen 2 timer forsinket – russisk lastbil 2022
 - April, Venta Mærsk containerskib uden GPS, 5 andre skibe også ramt
 - Estonia Tartu airport GPS jammed, has only GPS, unlike other airports
- Rasmus Flytkjær London Economics/Royal Institute of Navigation/Berlingeren
- Jamming 20-30 km til søs, Mobilmasterne bruger GPS til at udstede takst-telegrammer
- JP, Information, Ingeniøren, Berlingeren, Preben



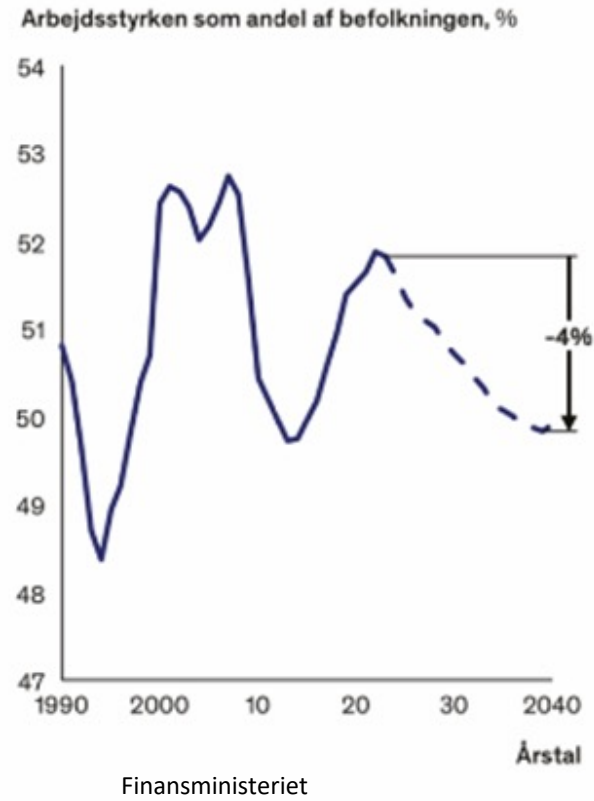
Save As...

Print...

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Velstandsløft ...



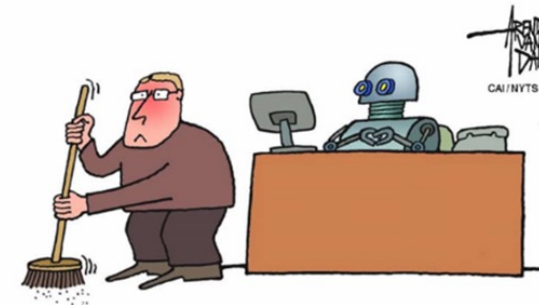
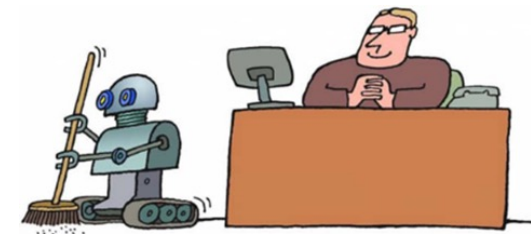
- AI potential ~~1.3~~ pct
- AI could increase annual GDP by 7 pct Goldman Sachs march 26th
 - GenAI kan løfte velstanden i Danmark 10 pct af BNP = 230-290 mia kr McKinsey



Forskydninger

- Herning - syerskerne
 - 40.000 jobs forsvandt, 2/3 i arbejde indenfor et år -
Handelshøjskolen Aarhus Niels Westergaard Nielsen

- New York – Garment District
 - Garment district job losses moved into media and tech
- GenAI and Future of New York
 - 1.8 pct net employment growth through 2030 Største vækst sundhed (56 pct)
 - Største fald office support, customer service, sales (47 pct) McKinsey



Skills of the Future ...

Louise ..

- Most critical skills
 - Team management
 - Ability to communicate effectively
 - Questioning
 - Creativity
 - Innovation
 - Learn to think critically
 - Ask the right questions
 - IBM AI boss Candy / Fortune
 - Jared Spatero / Microsoft CVP Work and business applications
- Fra IQ til AQ er ikke længere nok
 - Fra forandringsparat til forandringsdrevet –

Louise Opprud



GenAI - Design for Dialogue

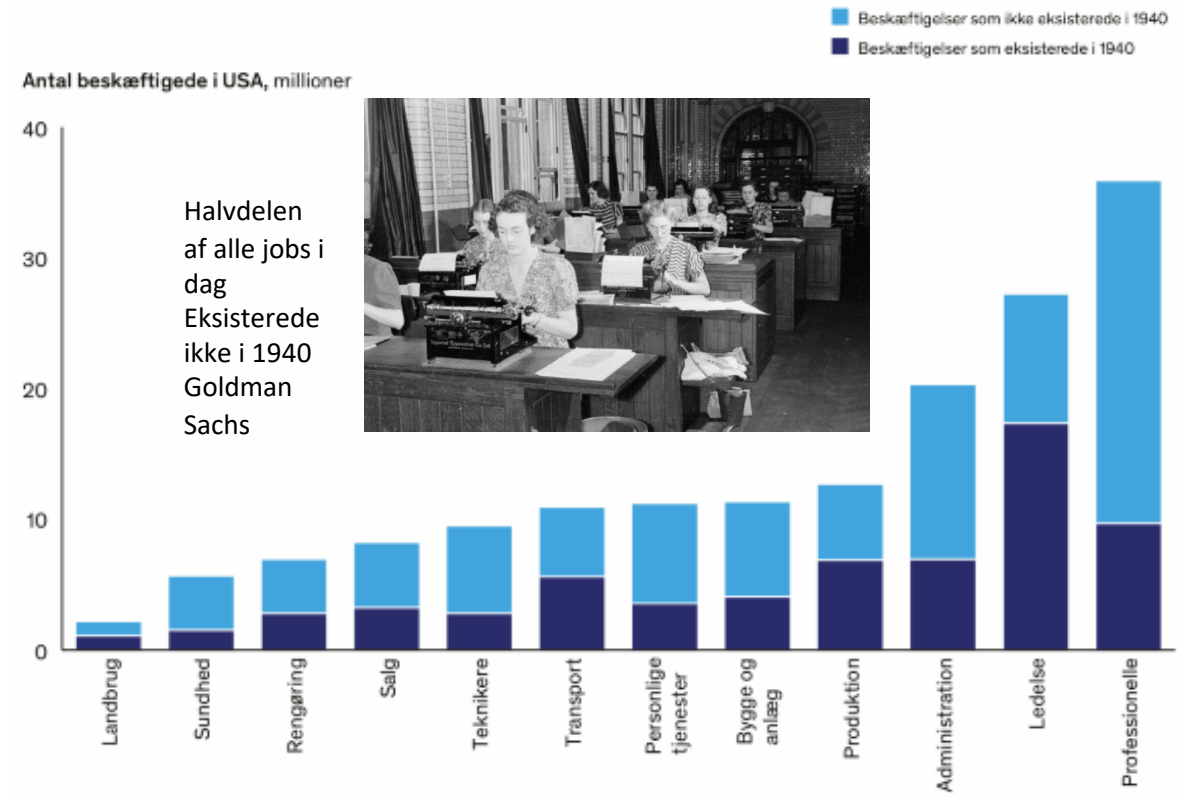
- AI Coworker
- human components
 - Task analysis
 - Project managers
 - Assessment who is best suited to role, human or AI
 - Interaction protocols
 - Team ground rules
 - How do AI and humans communicate and collaborate
 - Feedback loops
 - When AI encounters an anomaly or when human team member seek advice
 - Continuously assess and fine tune

- GAI Insights / HBR, Baier, DeLallo, Sviokla



Future AI related jobs

- Reskiller
 - Understand the talents an organization requires
- AI Literacy Educator
- AI Controller / Risk manager
 - Evaluate an AI models upbringing, looking at data and sources of bias
- AI Personality designer
 - AI Agents will need their own unique “personalities” to differentiate them from competition
- AI Input and output manager
 - Overseeing information being uploaded and outputs delivered
 - Taking care of data privacy, copyright
 - AI explainability and AI bias WEF / Forbes



A new dawn for Corporate IT

- Orchestrator
 - Leading digital and AI across IT and business, accountability for value.
 - Tech officers move from supporting corporate to shaping how companies generate value
 - Directing business and tech teams
 - Taking on real P&L accountability for business outcomes.
 - They look at tech from a cross-business point of view
 - Move from enabling capabilities to actively shaping the overall strategy and plan.
- Builder
 - Creating new digital- and AI-first businesses that generate revenue.
 - Build customer-facing products, and scale digital go-to-market capabilities that build on a company's unique advantages.
- Protector
 - Owning revenue protection, from cybersecurity to business resiliency.
- Operator
 - Absorbing and integrating tech into core business functions.
 - Combination aims to eliminate silos and accelerate rewiring
- Analysis of recent research and interviews with tech leaders - McKinsey





Future Potential based hiring

- Only 5 pct of main skills job candidates need today will be the same in 3 years
- We have to be able to predict what they will be able to do down the line
 - Maybe nothing to do with their education or credentials
- Future will be potential based hiring
- CEO Daily - McKinsey Global Research - Anu Madgavkar



The Attention Economy vs Calm Computing

- "Attention is a resource—a person has only so much of it."
 - Thomas H. Davenport HBR
- Calm Computing
 - "Informs but does not demand our focus or attention".
 - Interaction in user's periphery, not constantly at the center of attention.
 - Information from technology smoothly shifts to the user's attention when needed
 - Otherwise stays calmly in the user's periphery.
 - Mark Weiser





Driving IT



- Fra tanke til handling – Agent AI
- Interaction – Ambient AI
- Companions
- Ansvarlig AI
 - Churchill "where there is great power, there is great responsibility"
- Attention economy
 - Calm Computing

- AI hype is ending
- AI gains are not



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