

Humans are HOOKED

Machines are LEARNING

Generative AI



Naveen Kumar Bhansali

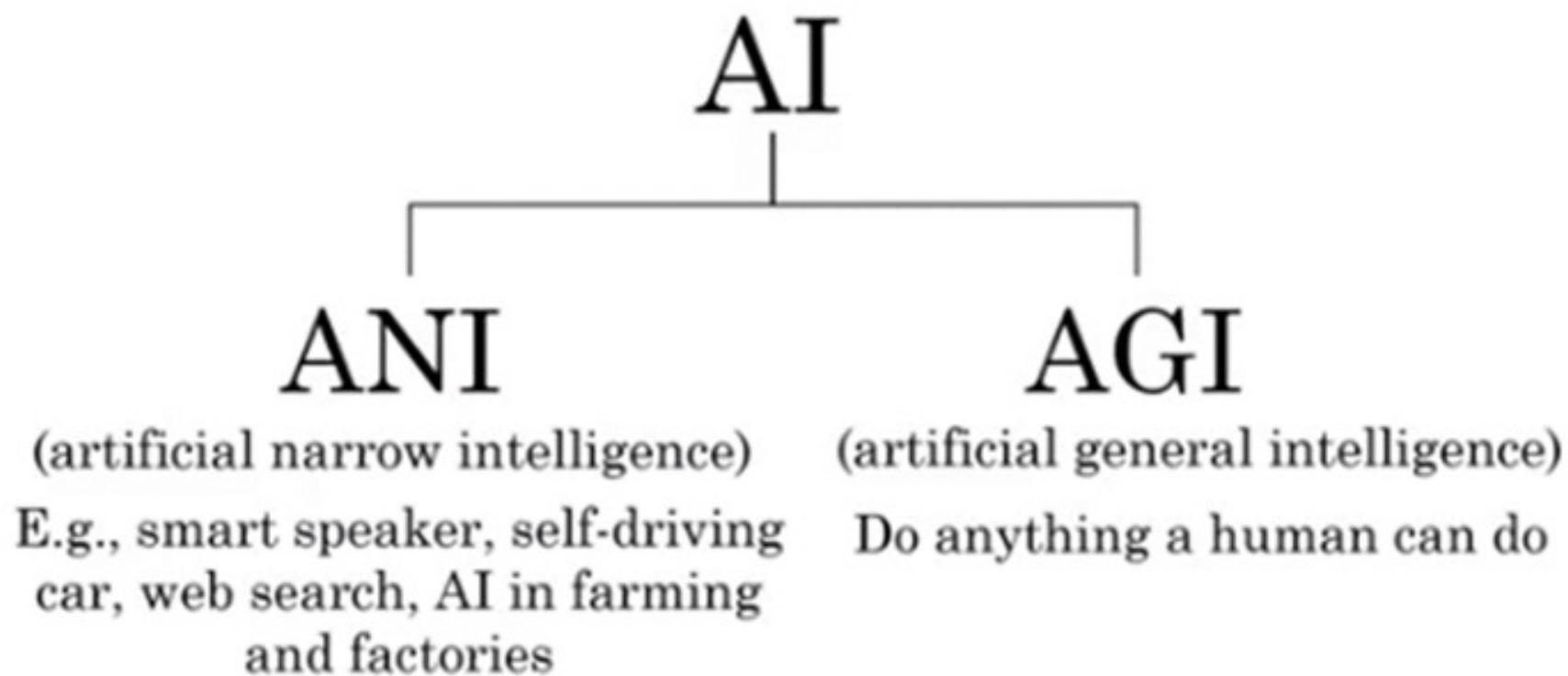
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IIM Bangalore



Assessment Link

- <https://forms.gle/JQ9hTyHaGkvmBJwu5>

AGI Vs. ANI



AGI Levels

AGI tier list

-- Google DeepMind

Levels of AGI

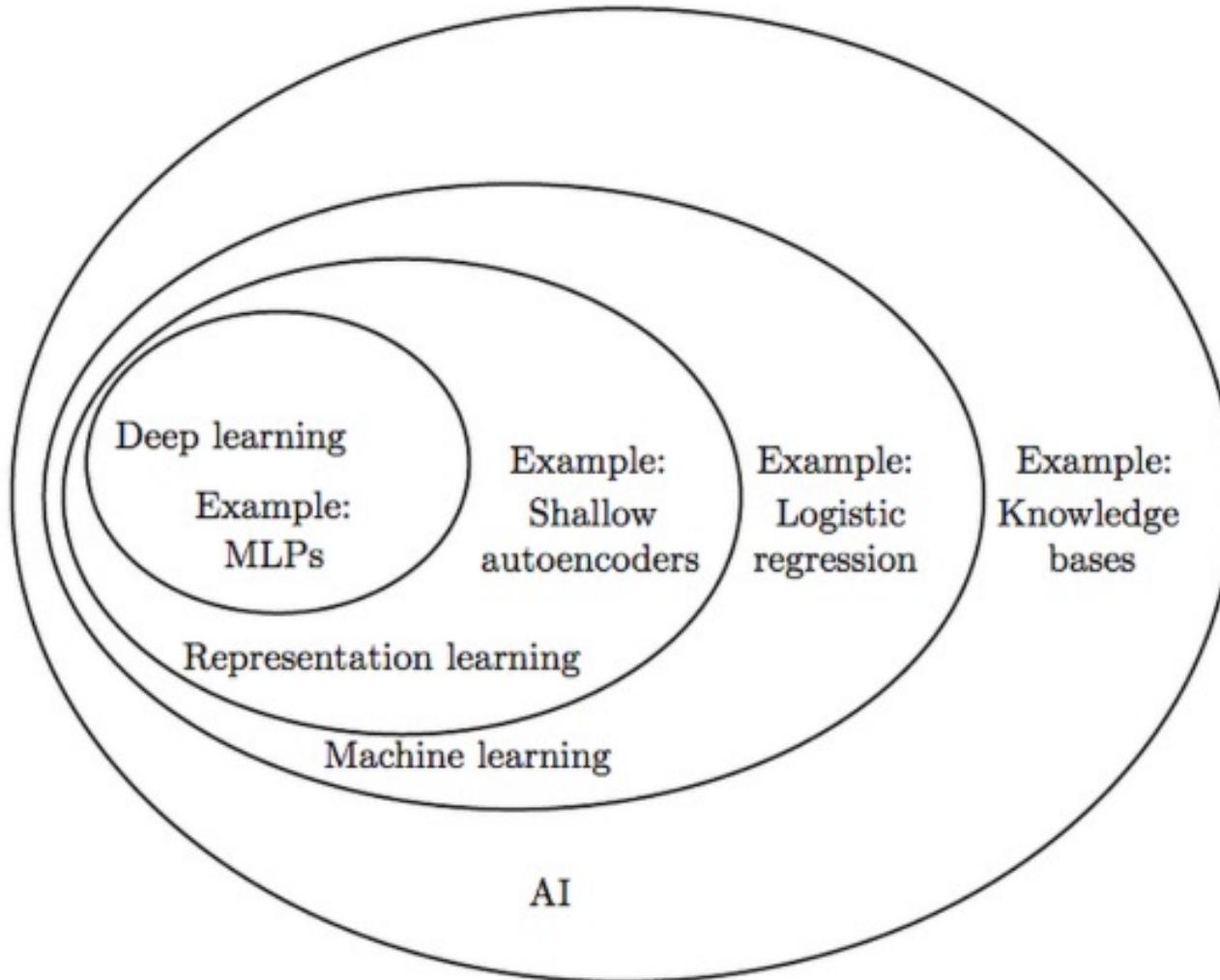
Performance (rows) x Generality (columns)	Narrow <i>clearly scoped task or set of tasks</i>	General <i>wide range of non-physical tasks, including metacognitive abilities like learning new skills</i>
Level 0: No AI	Narrow Non-AI calculator software; compiler	General Non-AI human-in-the-loop computing, e.g., Amazon Mechanical Turk
Level 1: Emerging <i>equal to or somewhat better than an unskilled human</i>	Emerging Narrow AI GOFAI ⁴ ; simple rule-based systems, e.g., SHRDLU (Winograd, 1971)	Emerging AGI ChatGPT (OpenAI, 2023), Bard (Anil et al., 2023), Llama 2 (Touvron et al., 2023)
Level 2: Competent <i>at least 50th percentile of skilled adults</i>	Competent Narrow AI toxicity detectors such as Jigsaw (Das et al., 2022); Smart Speakers such as Siri (Apple), Alexa (Amazon), or Google Assistant (Google); VQA systems such as PaLI (Chen et al., 2023); Watson (IBM); SOTA LLMs for a subset of tasks (e.g., short essay writing, simple coding)	Competent AGI not yet achieved
Level 3: Expert <i>at least 90th percentile of skilled adults</i>	Expert Narrow AI spelling & grammar checkers such as Grammarly (Grammarly, 2023); generative image models such as Imagen (Shaharia et al., 2022) or Dall-E 2 (Ramesh et al., 2022)	Expert AGI not yet achieved
Level 4: Virtuoso <i>at least 99th percentile of skilled adults</i>	Virtuoso Narrow AI Deep Blue (Campbell et al., 2002), AlphaGo (Silver et al., 2016, 2017)	Virtuoso AGI not yet achieved
Level 5: Superhuman <i>outperforms 100% of humans</i>	Superhuman Narrow AI AlphaFold (Jumper et al., 2021; Varadi et al., 2021), AlphaZero (Silver et al., 2018), StockFish (Stockfish, 2023)	Artificial Superintelligence (ASI) not yet achieved



Agenda

- Generative AI - Large Language Models / Large Multimodal Models
- Applications
- Case Studies
- Generative AI project lifecycle
 - Cheat Sheet
 - Prompt Engineering
 - LLM Powered Applications

AI / ML / DL – How are they related?

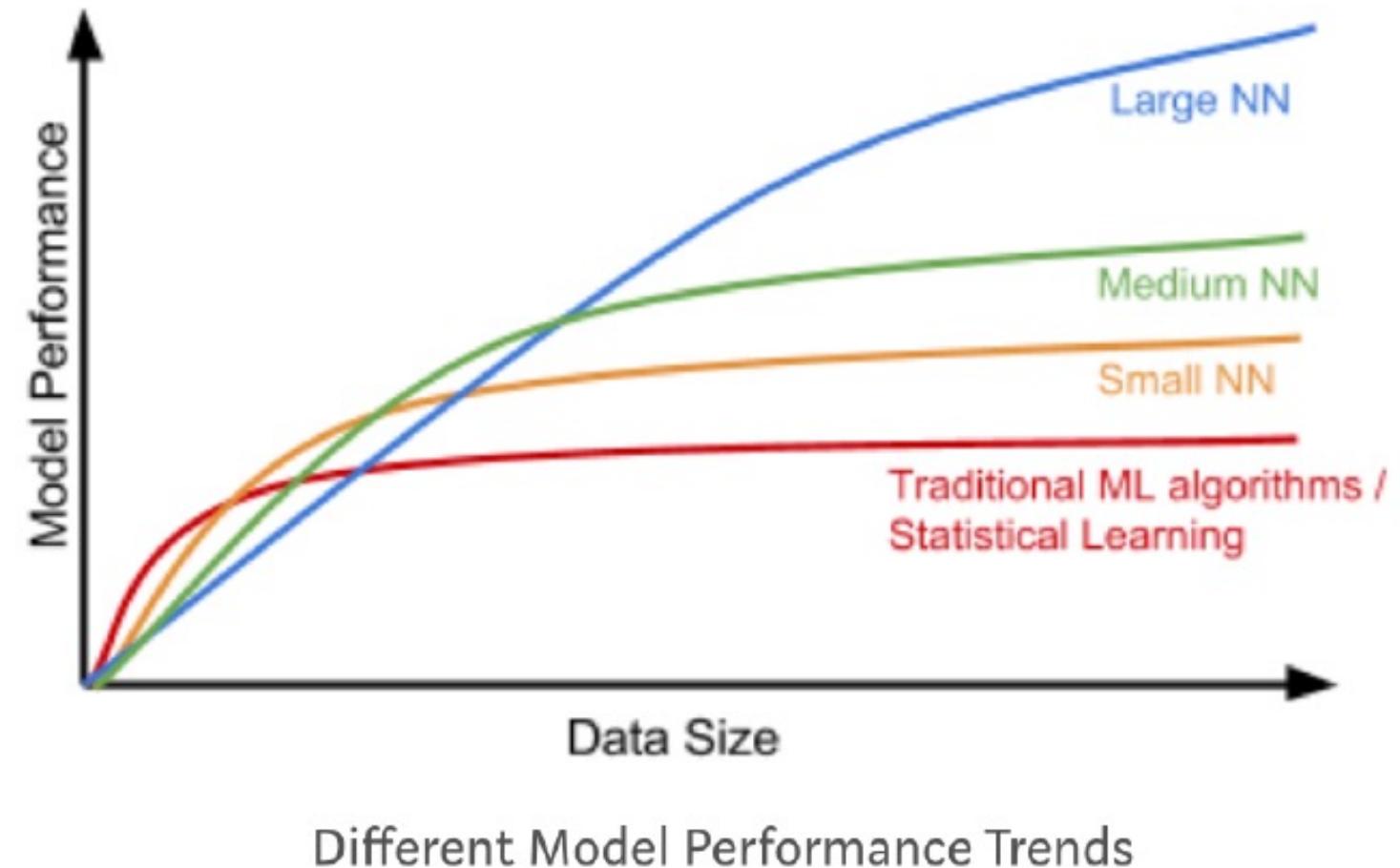


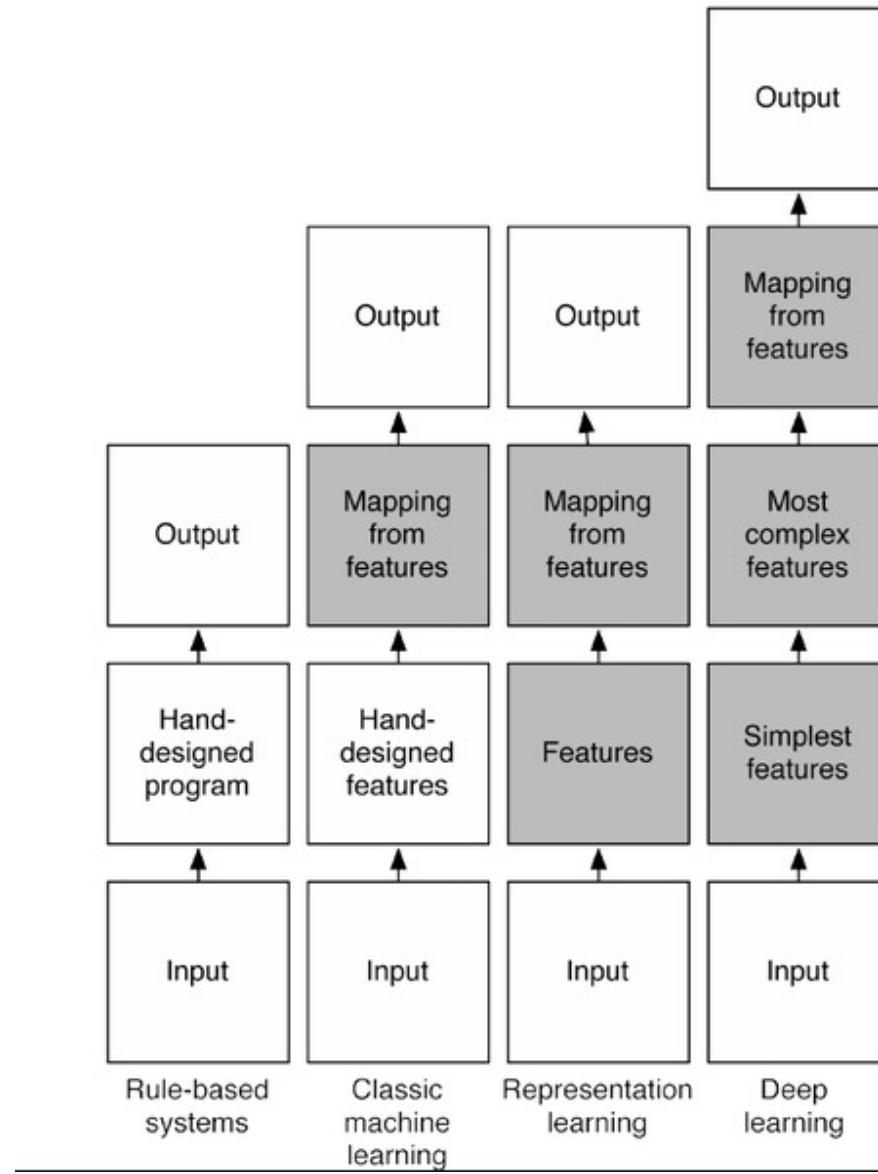
<https://www.deeplearningbook.org> -- Ian Goodfellow



Why is Deep Learning Important?

Scale drives
deep
learning
progress



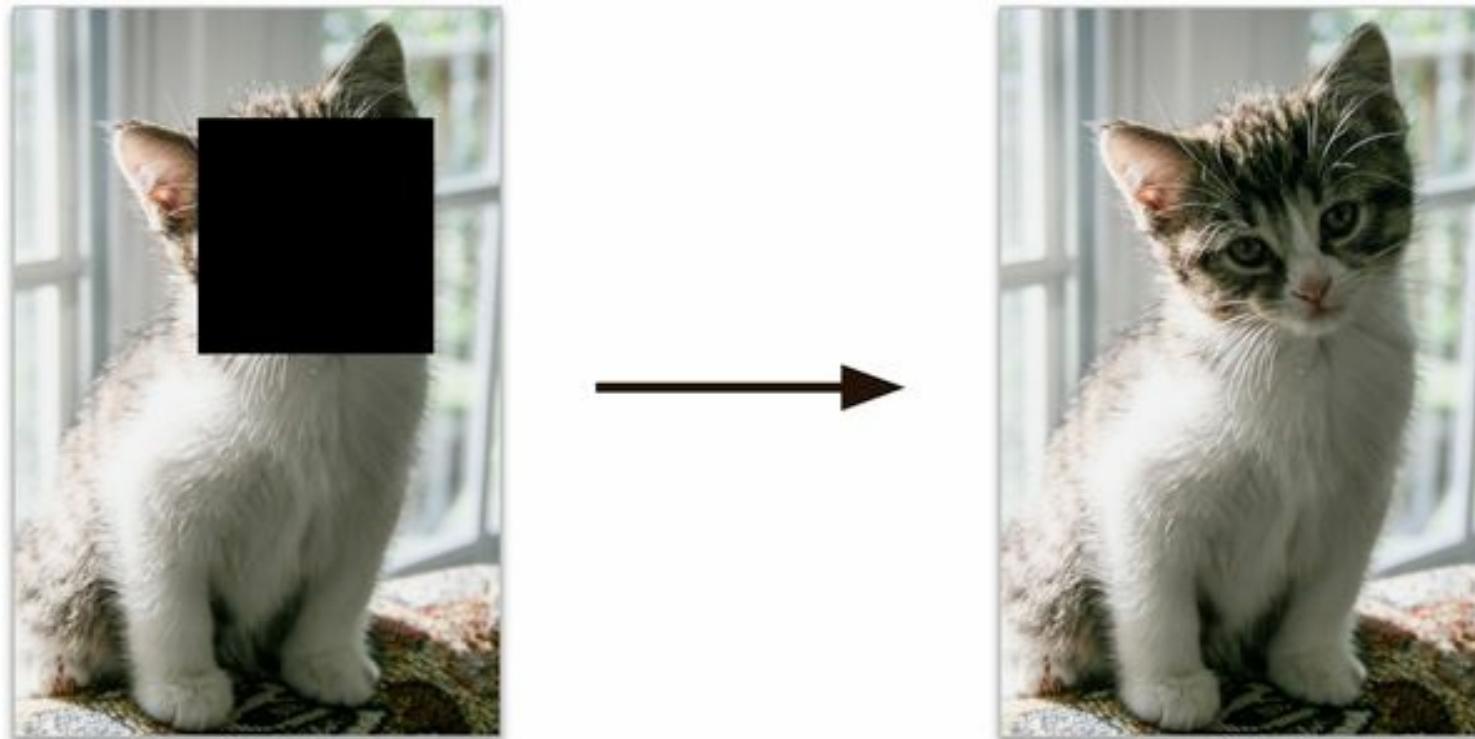


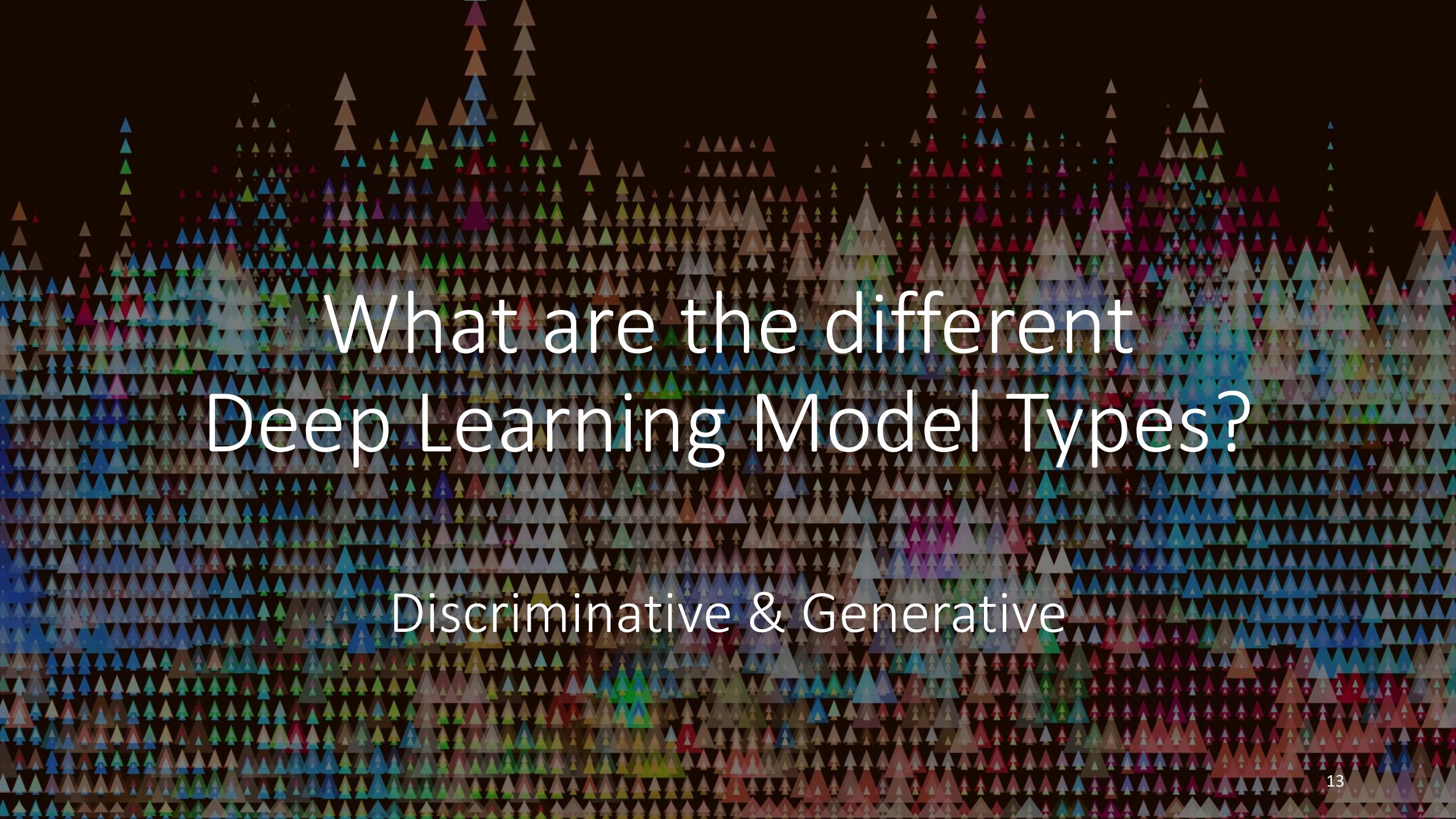


AI / ML / DL / GenAI – How are they related?



Self-supervised Learning

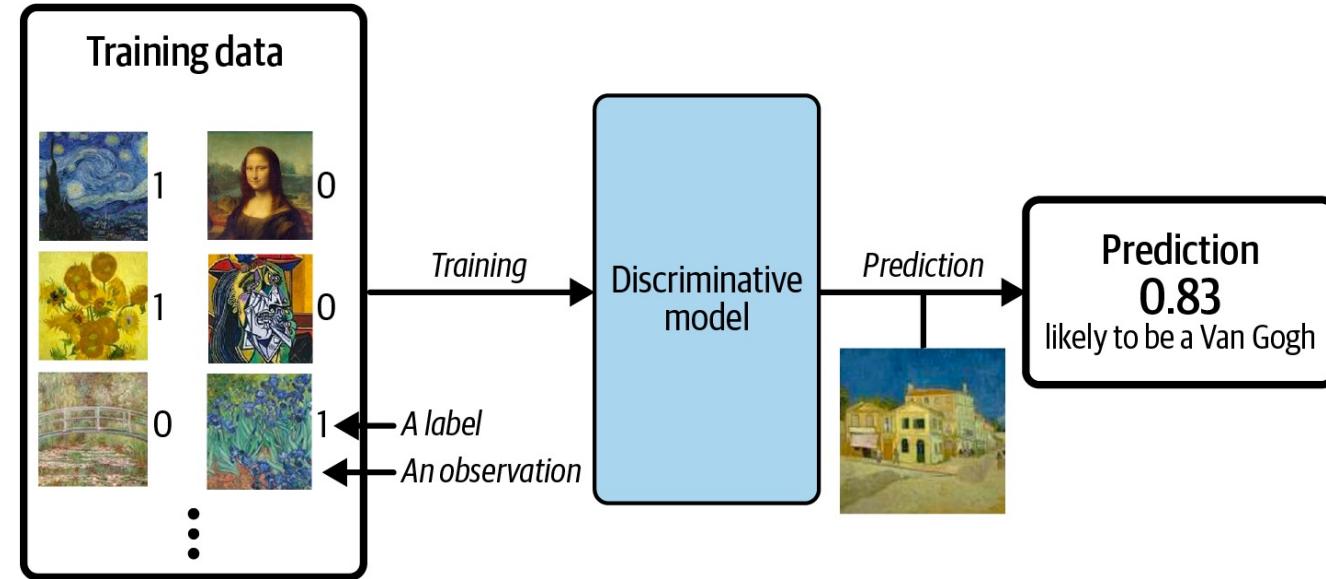




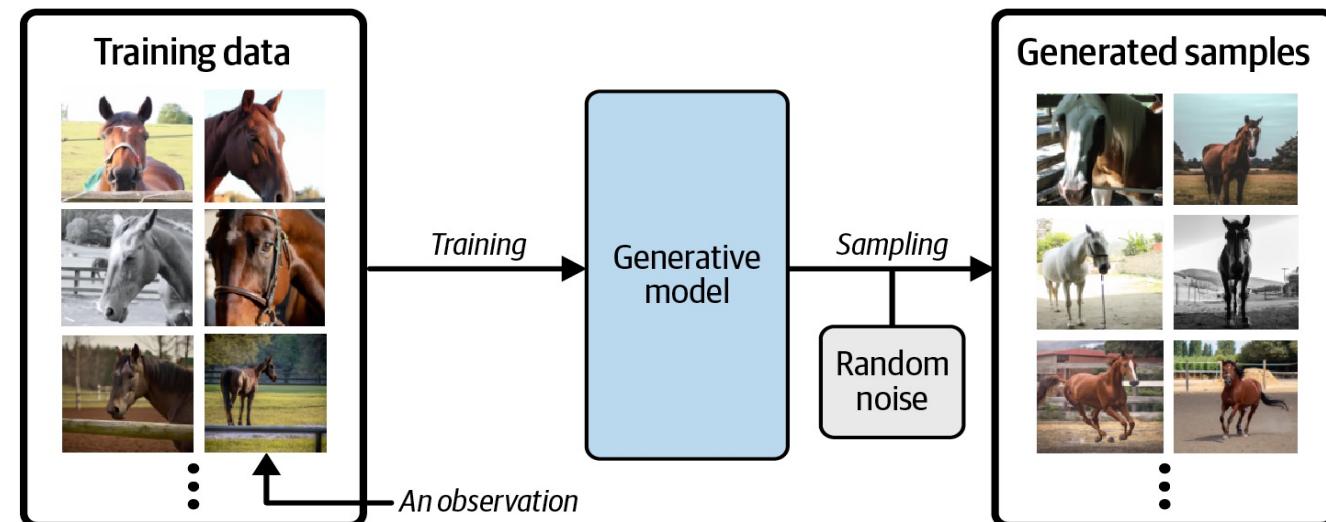
What are the different Deep Learning Model Types?

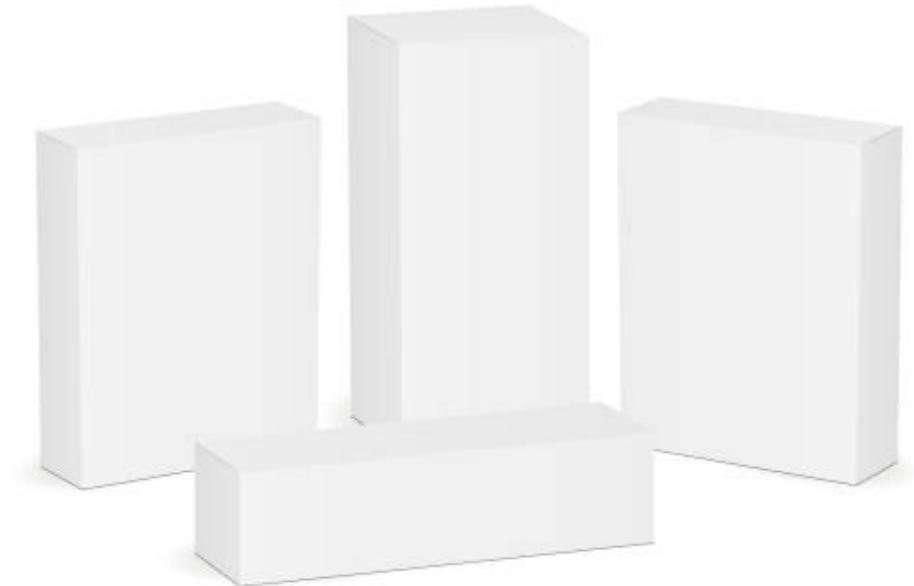
Discriminative & Generative

Discriminative AI



Generative AI





Core Principle – Representation Learning

Applications





2014

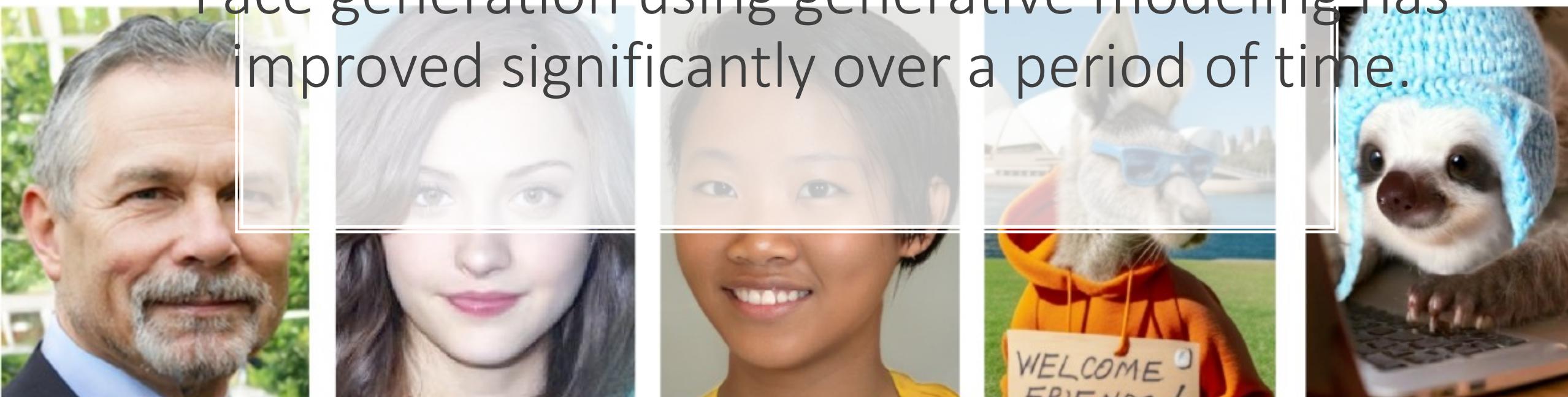
2015

2016

2017

2018

Face generation using generative modeling has improved significantly over a period of time.



2019

2020

2021

2022

2023



Build Applications which can...

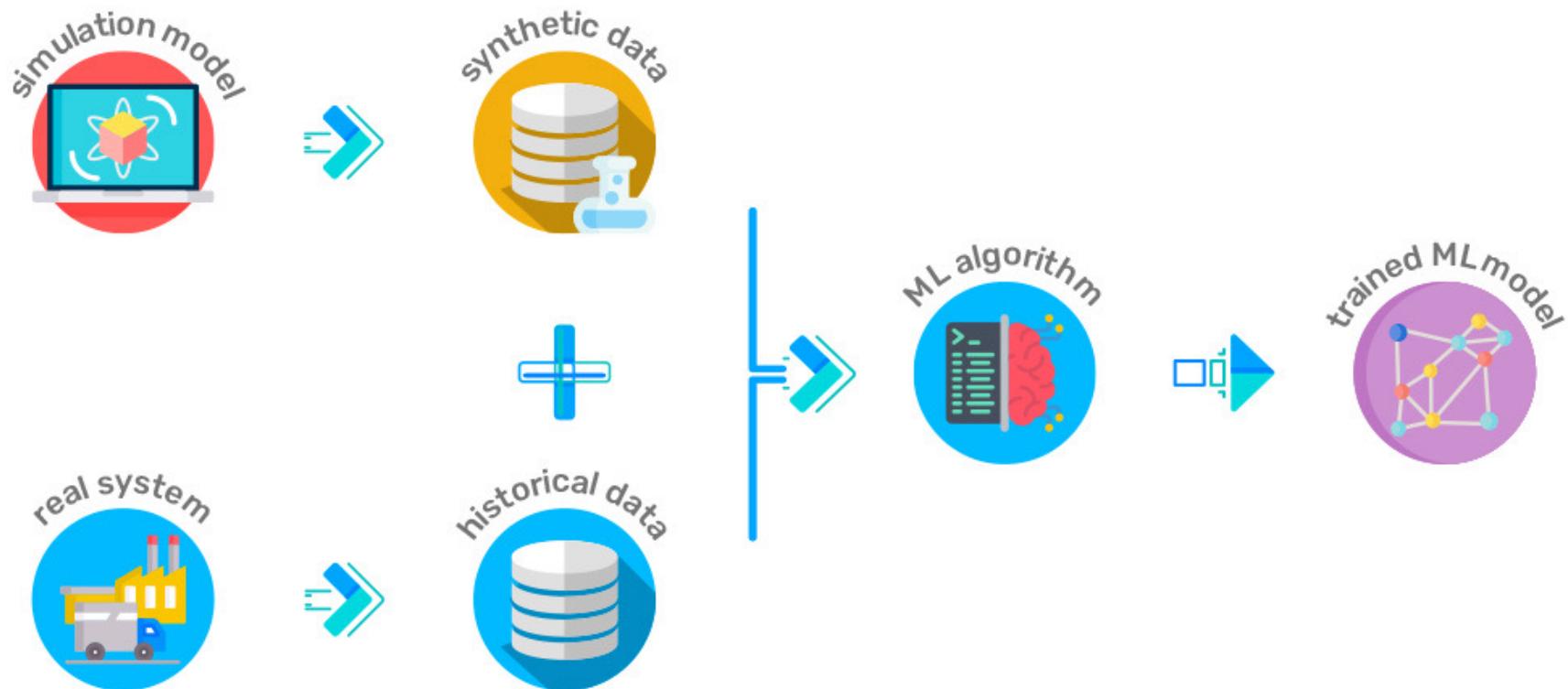
- Draft documents
- Write computer code
- Answer questions about a knowledge base
- Analyze texts
- Create conversational agents
- Give software a natural language interface
- Tutor in a range of subjects
- Translate languages
- Simulate characters for games



Data Synthesis

- By 2024, 60% of the data used for the development of AI and analytics projects will be synthetically generated.
- Stanford's Alpaca training dataset was created using OpenAI's LLMs. The cost to produce 52 thousand training instructions was about 500 dollars, which is relatively cheap.

GenAI – ML Pipeline

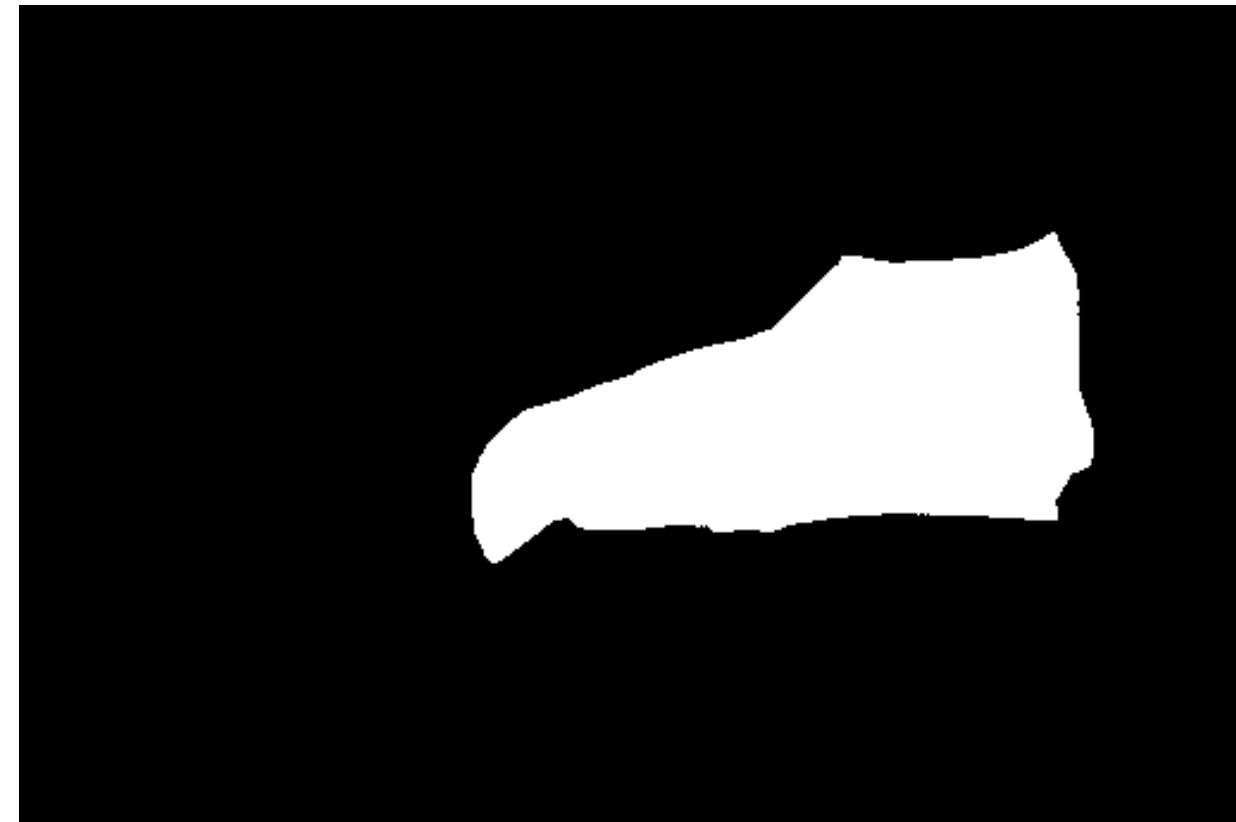




Personalized Customer Experience:

- Generative AI models can generate personalized recommendations, product suggestions, or tailored content based on individual customer preferences.
- This can enhance the customer experience, increase engagement, and improve conversion rates for businesses operating in e-commerce, media, entertainment, and other consumer-focused industries.

Personalized Design Studio



a skirt full of text



red flowers

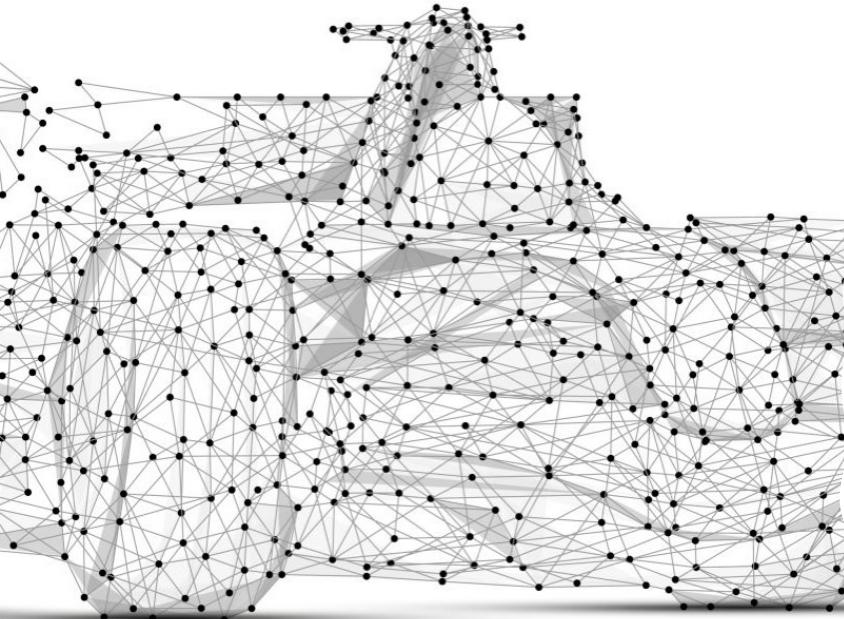
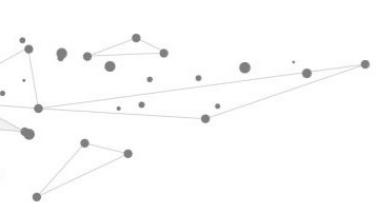


blue flowers



a zebra skirt





Simulation and Scenario Generation

- Generative AI models can create realistic simulations and scenarios that help organizations analyze and make informed decisions.
 - For example, in finance and risk management, generative AI can generate synthetic financial data for stress testing and scenario analysis.
 - <https://www.composer.trade/>
- In autonomous vehicles, generative AI can simulate various driving conditions to improve safety and performance.

OpenAI Sora

- A stylish woman walks down a Tokyo street filled with warm glowing neon and animated city signage.
- She wears a black leather jacket, a long red dress, and black boots, and carries a black purse.
- She wears sunglasses and red lipstick.
- She walks confidently and casually.
- The street is damp and reflective, creating a mirror effect of the colorful lights. Many pedestrians walk about.



Generative AI Application Landscape

