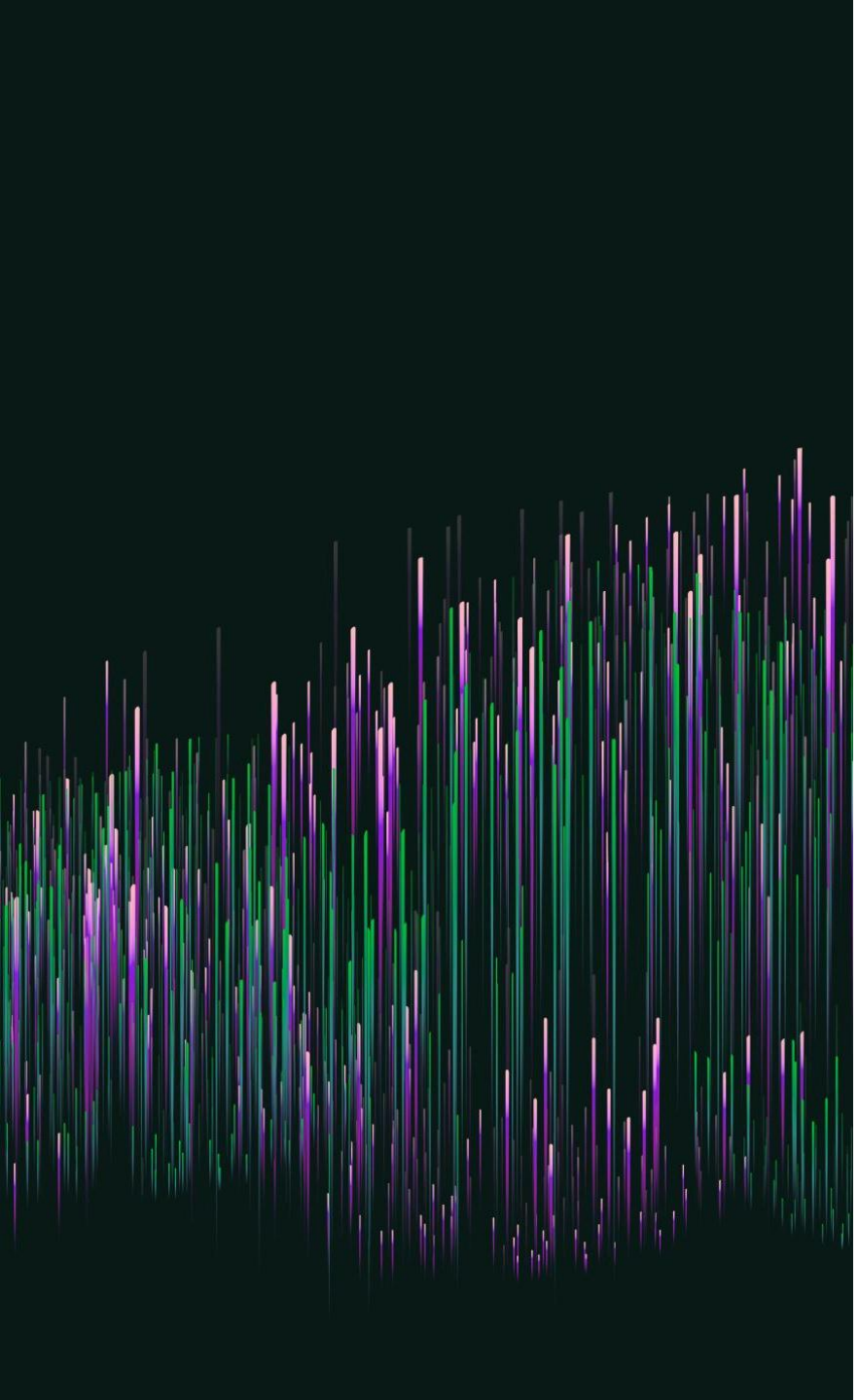

The Evolution of AI

From Conversational AI to Agentic AI

Whoami

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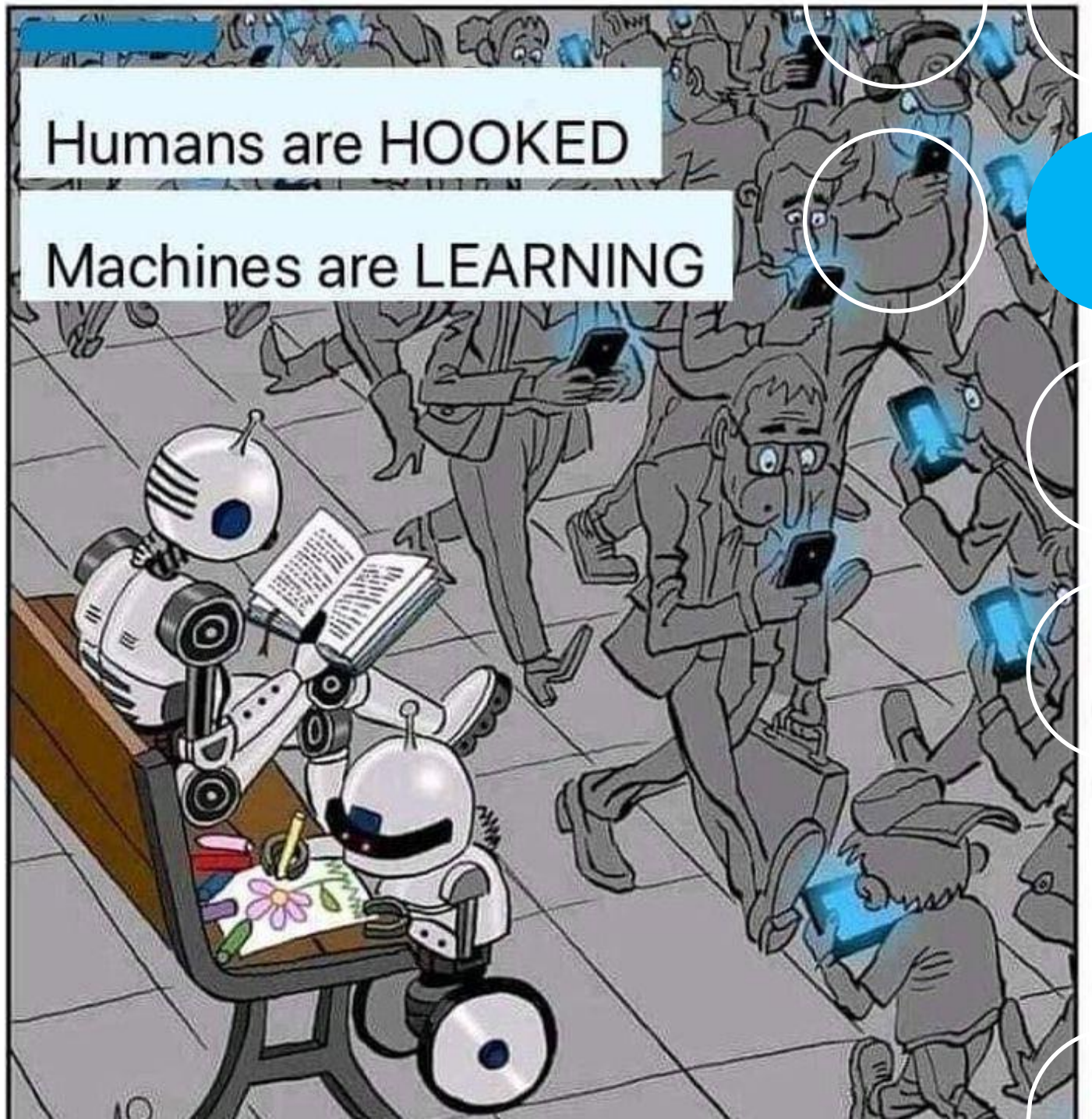
Agenda

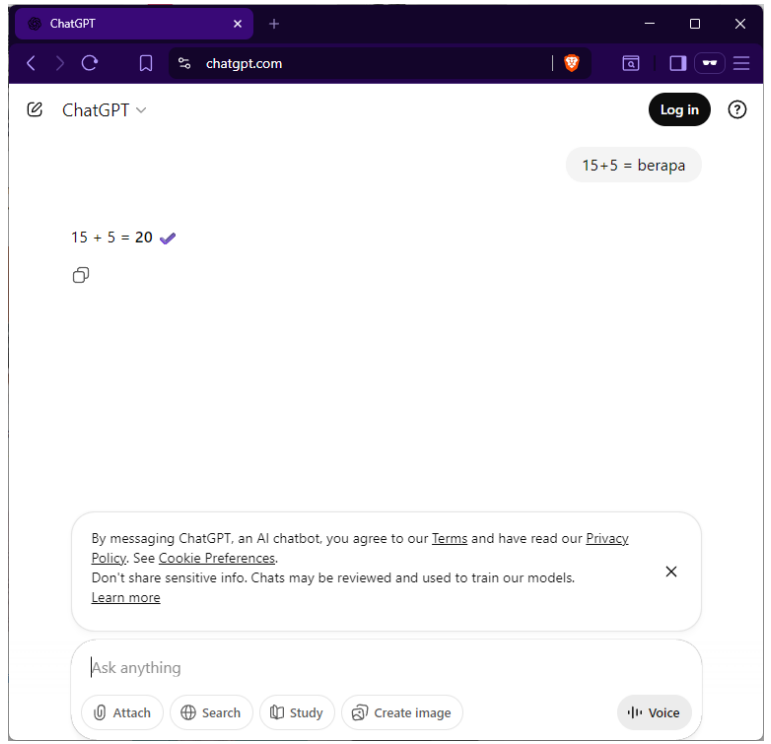
1. Timeline Evolusi AI (1950-2025)
2. Munculnya Agentic AI
3. DEMO time



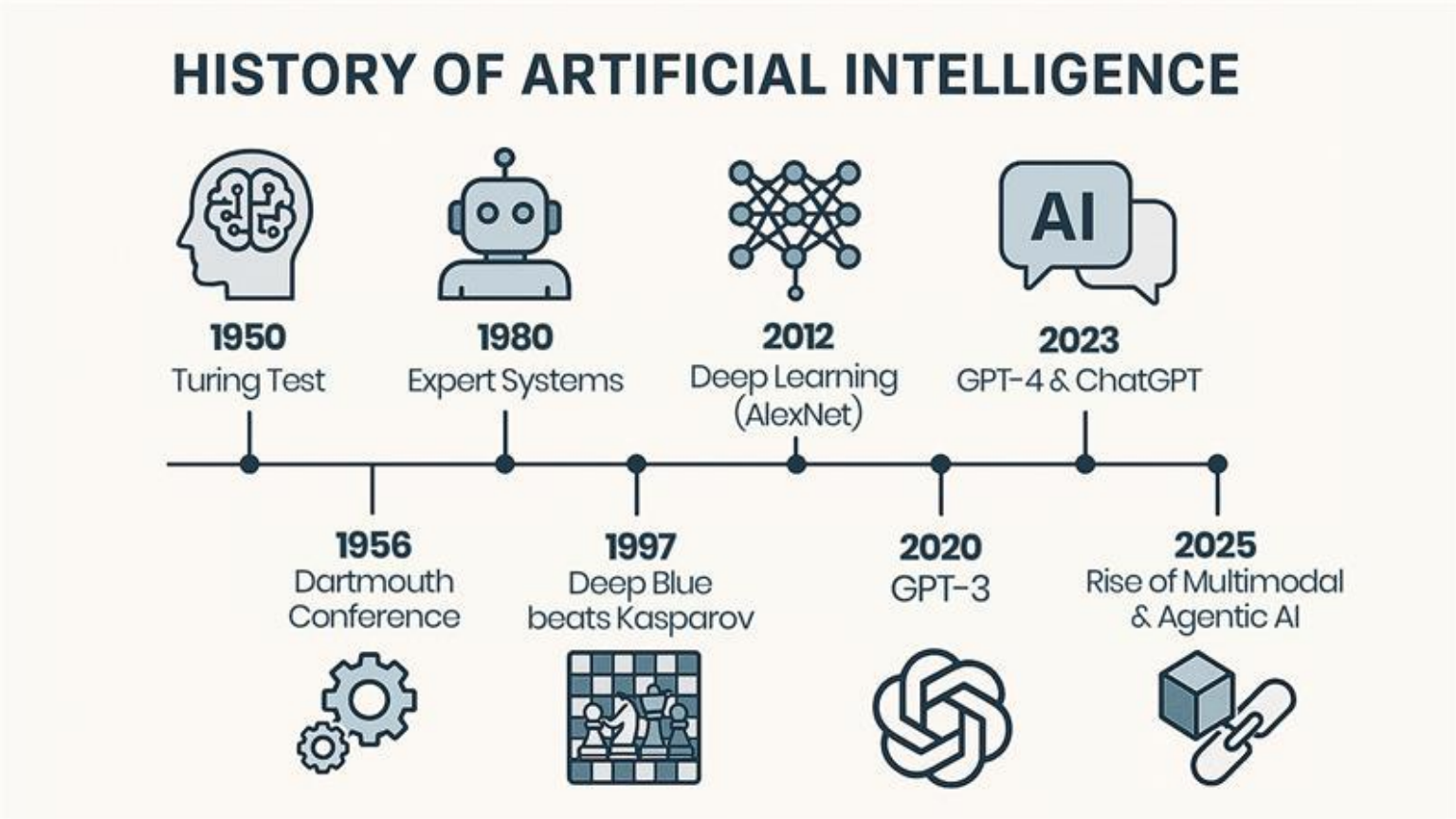
Evolution of AI

+-75 Tahun Perjalanan

Evolution of berhitung



Evolution of AI



https://kivrogloupараskevi.substack.com/p/bonus-episode-a-brief-history-of

Timeline Sejarah AI

Rule Based & Expert Systems

1950 - 1980
AI awal dengan logika dan aturan

Machine Learning Era

1990 - 2010
AI belajar dari data

Deep Learning Revolution

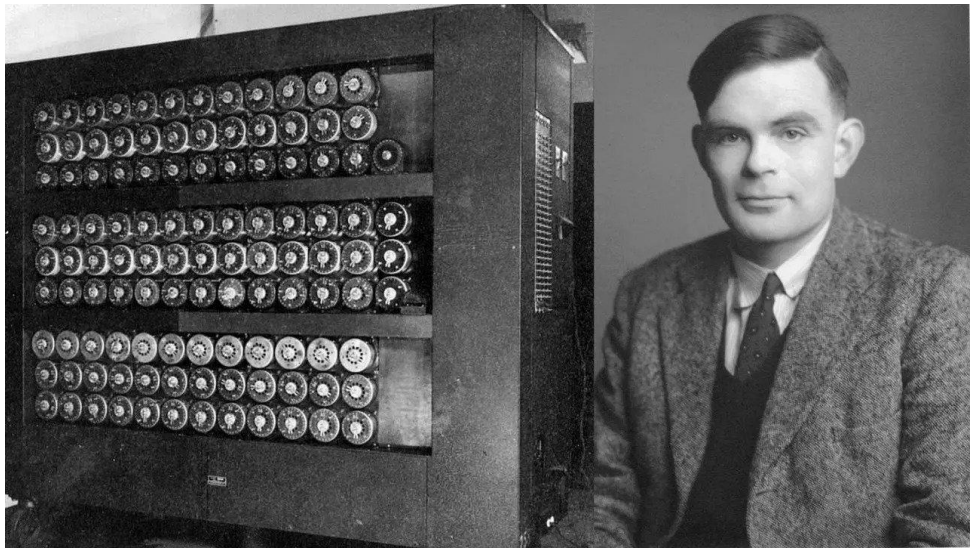
2010 - 2020
Jaringan saraf yang kompleks

Large Language Models (LLM)

2020 - Now
AI memahami dan menghasilkan teks

Agentic AI

2023 - Now
AI otonom yang berinteraksi



Era 1 – Rule-Based AI (1950-1980)

Karakteristik:

- Berbasis IF-THEN rules yang di hardcoded
- Expert systems untuk domain spesifik
- Determenistik & Predictable

Contoh:

- ELIZA (1966) - Chatbot psikoterapis pertama
- MYCIN (1970s) - Diagnosa penyakit

Contoh Simple Chatbot

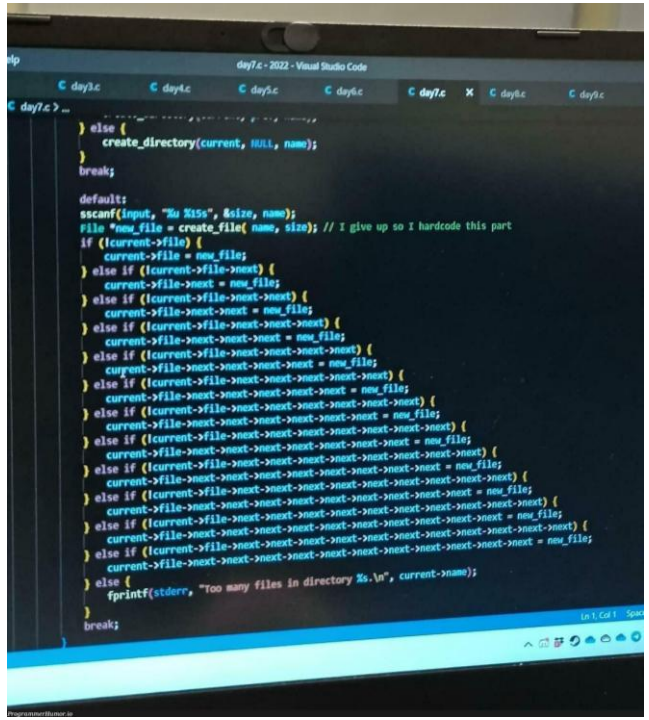
```
Input: "I'm feeling sad"
  Rule: IF input contains "sad"
        THEN respond "Why do you feel sad?"

Input: "My dog died"
  Rule: IF input contains "my [X]"
        THEN respond "Tell me more about your [X]"
```

Demo: https://www.masswerk.at/elizabot/

https://aptikma.co.id/sejarah-chatbot-pertama-kali-diciptakan-hingga-saat-ini/

Limitation of Rule-Based AI



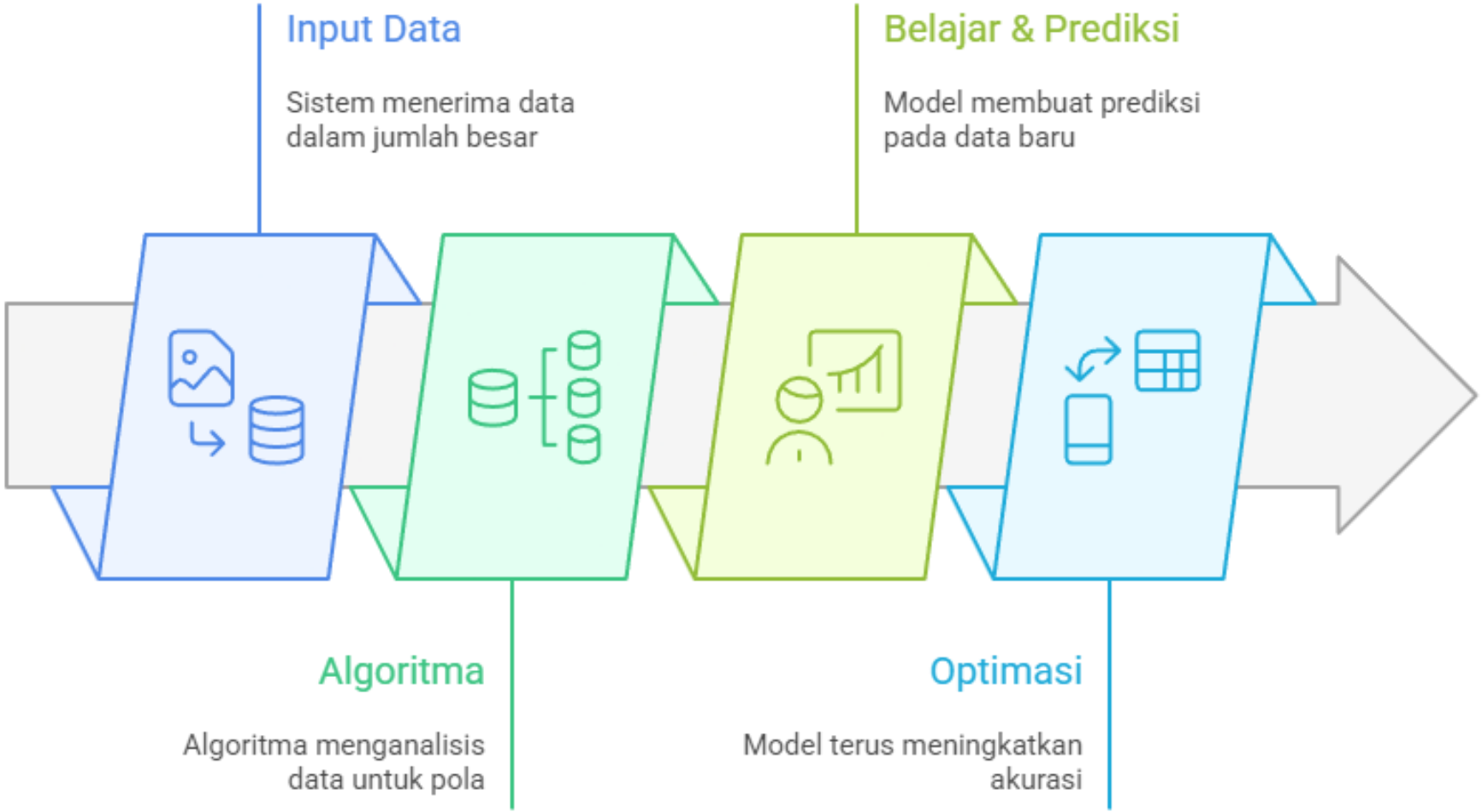
- Tidak bisa handle situasi yang tidak diprediksi
- Scaling nightmare (butuh rules untuk semua case)
- Tidak bisa "belajar" dari data
- Maintenance sangat sulit

Era 2 – Machine Learning (1990-2010)

Teknik Utama:

- Decision Trees
- Support Vector Machines (SVM)
- Random Forests
- Naive Bayes

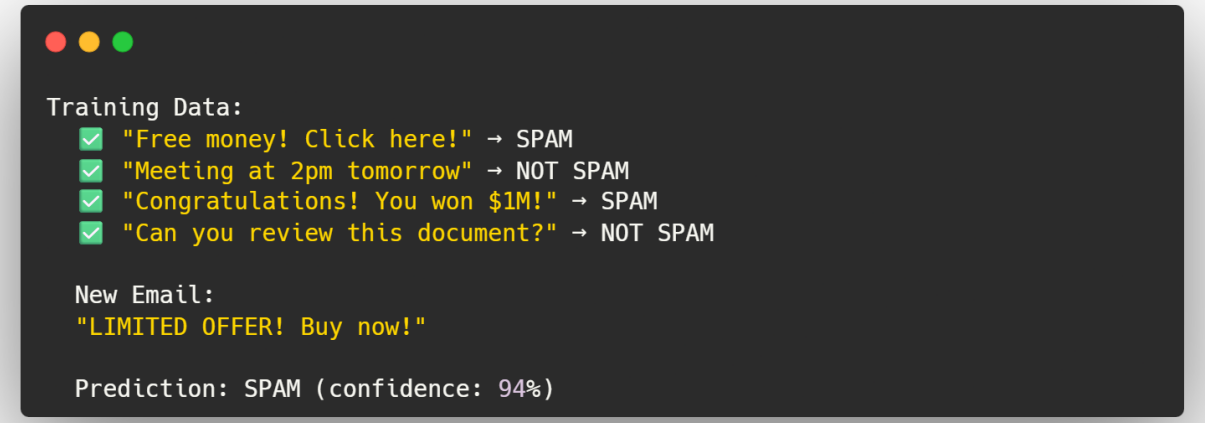
Proses Machine Learning

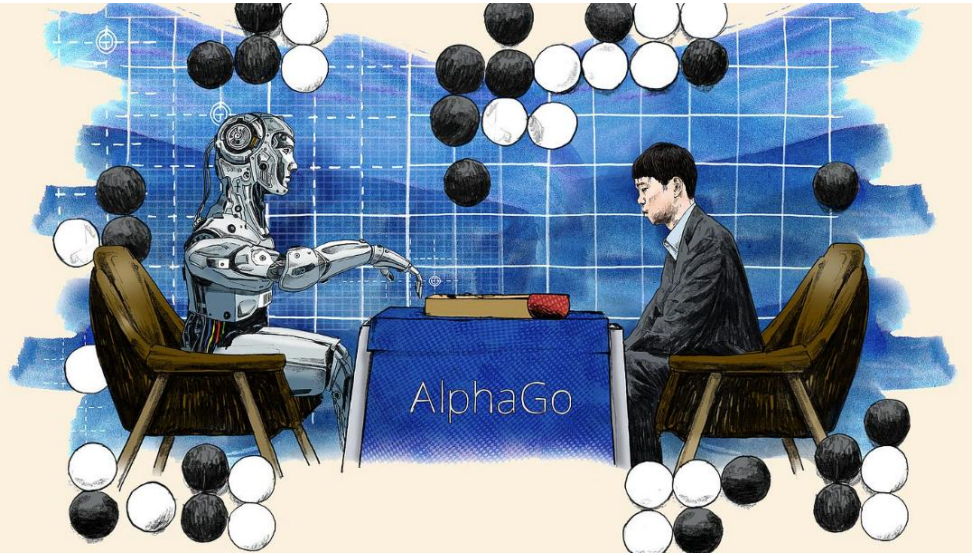


Contoh ML

- Email Spam Filter
  - Training: 1000 spam emails + 1000 normal emails
  - Result: Bisa klasifikasi email baru

- Netflix Recommendations
  - Training: User behavior + ratings
  - Result: "You might also like..."





Era 3 – Deep Learning Revolution (2010-2020)

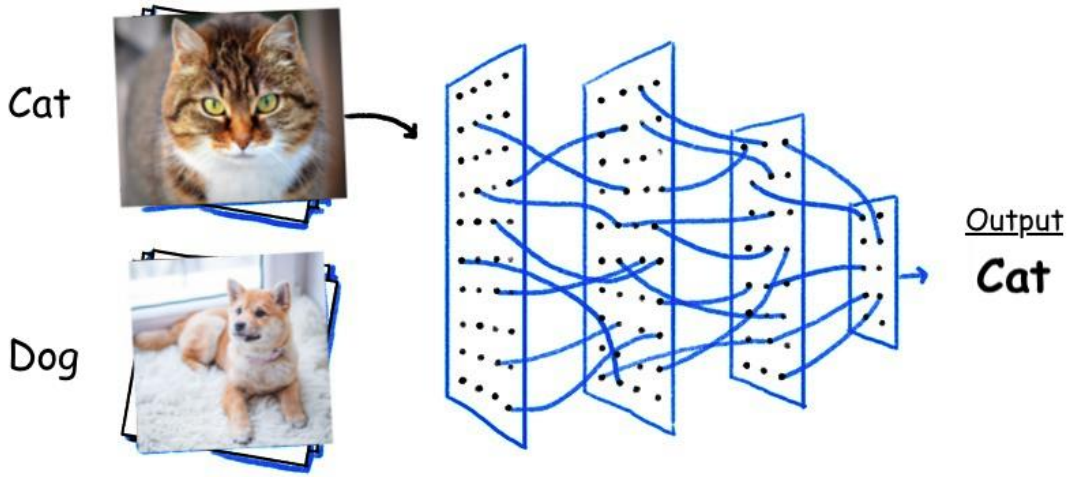
Key Innovations:

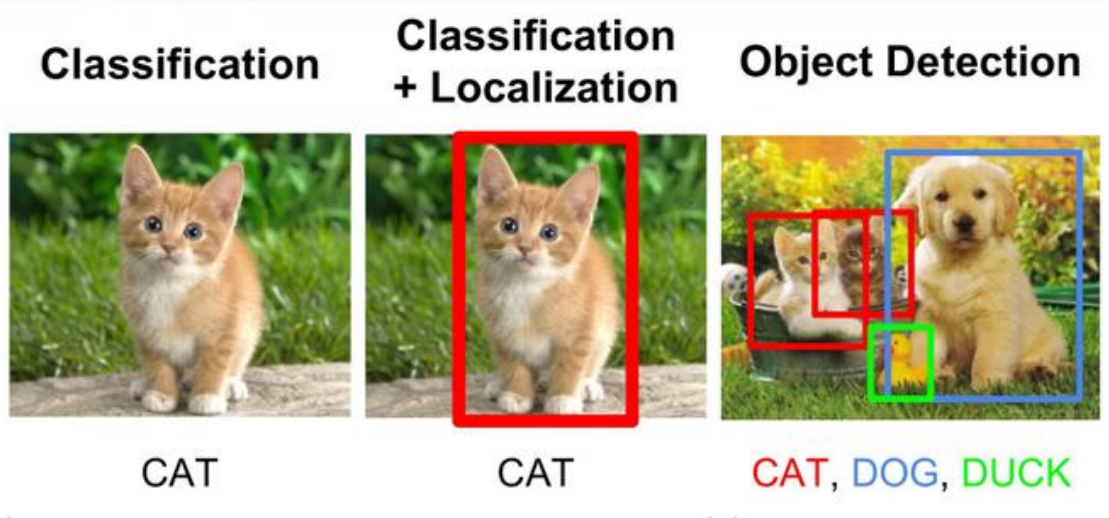
- Convolutional Neural Networks (CNN) → Vision
- Recurrent Neural Networks (RNN) → Sequences
- Transformer Architecture → Language

AHA Moment:

- 2012: ImageNet - AI beats humans di image recognition
- 2016: AlphaGo - AI mengalahkan juara dunia Go

Contoh + Demo Deep Learning





https://teachablemachine.withgoogle.com/train/image

Era 4 – Large Language Models (LLM) (2020-Now)

Foundation Models:

- BERT (Google, 2018)
- GPT-3 (OpenAI, 2020) - 175B parameters
- ChatGPT (2022) - Viral moment
- GPT-4 (2023) - Multimodal
- Claude, Gemini, Llama, dst

Karakteristik:

- Memahami konteks
- Generate text yang natural
- Multi-task: translate, summarize, code, dll

Apa yang bisa dilakukan LLM dalam pengembangan aplikasi?

Menulis & Kreativitas

Menghasilkan konten kreatif seperti essay, puisi, dan script.

Penalaran

Memecahkan masalah matematika dan teka-teki logis.

Pengkodean

Menulis dan men-debug kode dari deskripsi.

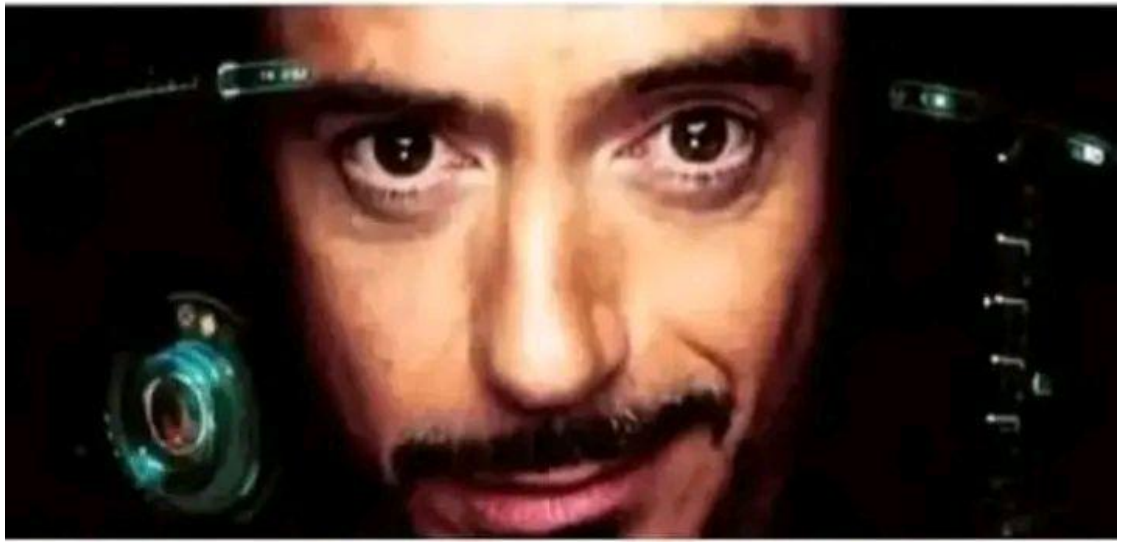
Penerjemahan & Ringkasan

Menyediakan dukungan multi-bahasa dan ringkasan dokumen.

Agentic AI Era

DARI LLM KE AGENTIC AI

Jarvis, tolong anunya
Sedikit digitukan



Masalah Besar dengan LLM Tradisional

- Knowledge Cutoff
- No Real-World Access
- Hallucination
- No Action Capability

Demo LLM

- https://console.groq.com/
- https://chat.deepseek.com/
- https://chatgpt.com/
- etc

The Solution: Tool-Using AI

Evolusi: LLM + Tools = Power!

```
User: "Apa cuaca di Bangil?"
  ↓
AI thinks: "Saya perlu data real-time"
  ↓
AI calls: get_weather(location="Bangil")
  ↓
Tool returns: "32°C, Sunny"
  ↓
AI responds: "Cuaca di Bangil saat ini 32°C dan cerah"
```

How Agentic AI Solving problems

ReAct -> Reasoning + Acting

Era 5 – Agentic AI (2023-Now)

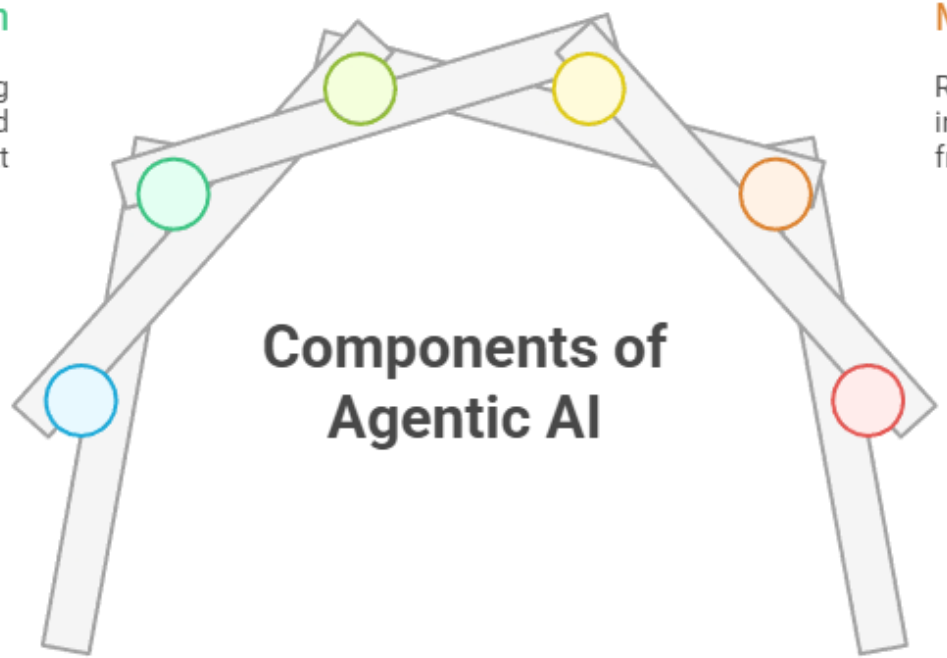
Definition:

- AI system yang bisa secara AUTONOMOUS:
  - Merencanakan langkah-langkah
  - Menggunakan tools
  - Bertindak di environment
  - Mencapai goals tanpa hand-holding

Perbedaan Utama:

- LLM Traditional → Responsive (Q&A)
- Agentic AI → Proactive (Goal-oriented)

Anatomy of an AI Agent



Planning

Breaks down goals into actionable steps

Tools

Executes actions such as search and API calls

Perception

Enables understanding of the environment and context

Memory

Retains past interactions and learns from them

Brain (LLM)

Responsible for reasoning and decision-making

Execution

Carries out the planned actions

Agent vs Traditional AI

```
#Traditional AI (ChatGPT Basic):

  User: "Research dan buatkan laporan tentang AI"
  AI: "Saya bisa bantu outline... [generates text]"
  → User harus manual research & compile
```

```
#Agentic AI:

  User: "Research dan buatkan laporan tentang AI"
  AI: "Oke, saya akan:
      1. Search Google Scholar [executing...]
      2. Read top 5 papers [executing...]
      3. Synthesize findings [executing...]
      4. Write report [executing...]
      5. Format as PDF [done!]"
  → Agent does everything autonomously
```

DEMO & AMA

ASK ME ANYTHING

Pre-Pertemuan 2 Homework

1. Install Claude Desktop dan antigravity.google

2. Experiment dengan AI tool di daily tasks

3. Think about: "Tool apa yang ingin kalian buat agar AI bisa akses?"

https://github.com/punkpeye/awesome-mcp-servers