IT Fundamentals

AI
AND
BEYOND

FRONTLINE®

AI and Beyond

- What is Artificial Intelligence (AI)?
- AI Use in Your Home
- Future of AI

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Outcomes

- Understand the Basic Technology of Artificial Intelligence (AI).
- Understand how AI is being used in your Home.
- Understand how AI will be Used in the Your Home in the Future.
- Understand the Security and Privacy Issues of AI Use.
- Know the Steps You should take to Protect your Security and Privacy when AI is used in Your Home.

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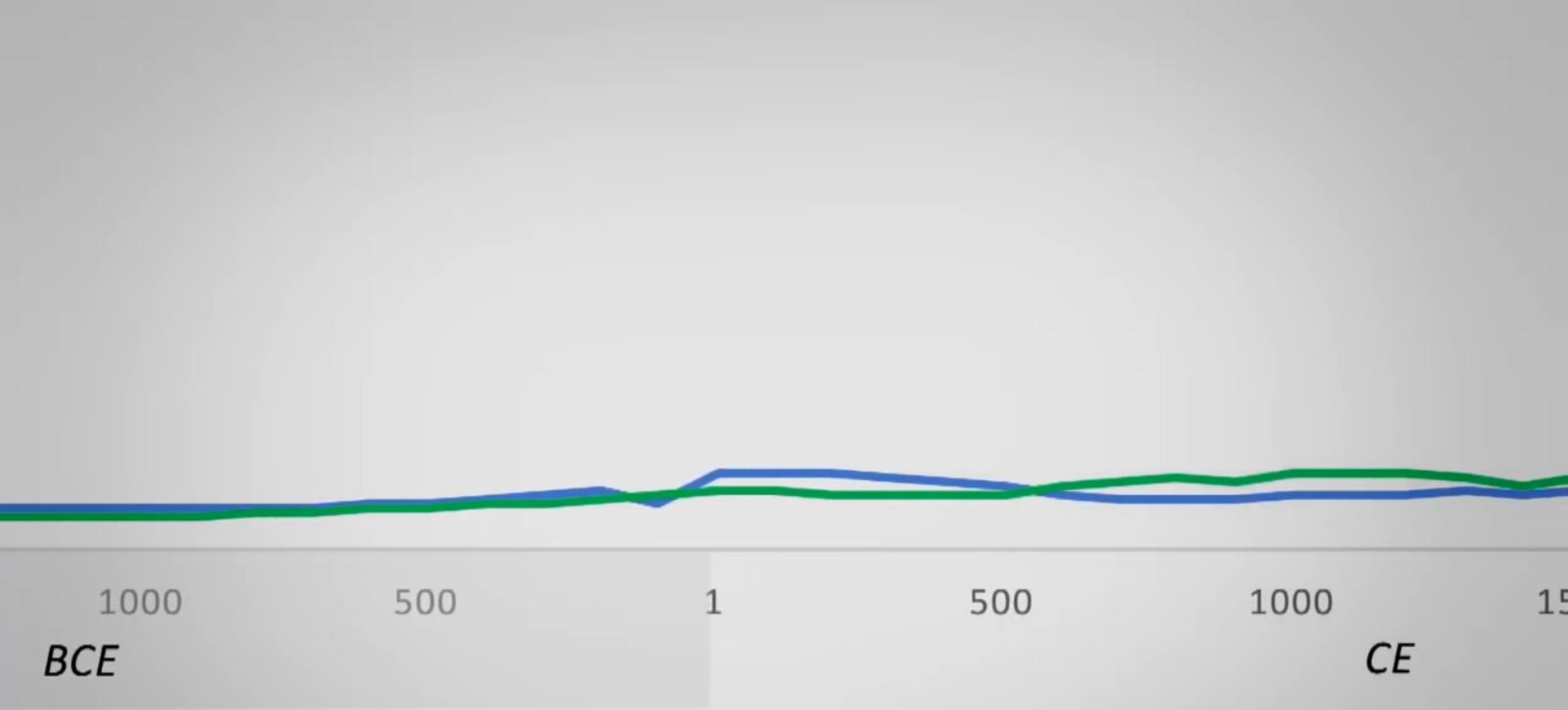

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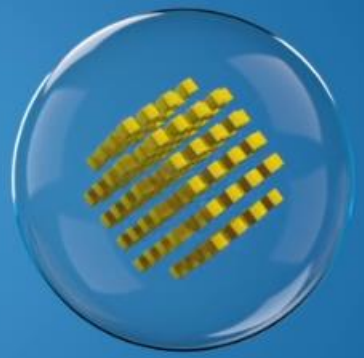
Artificial Intelligence

Machine Learning



Deep Learning

Artificial Intelligence (AI) Primer

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AI Definitions

- Artificial Intelligence: Machines that can learn form experience and operate without specific instructions; includes visual perception, logical reasoning and learning – "thinking machines".
- Machine Learning: Computer algorithms that learn from data to predict patterns and outcomes.

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AI Definitions

- Neural Networks: Algorithms with a hidden layer of nodes.
- Deep Learning: A specific kind of neural network with many layers.
- Predictive Modeling and Analytics: The general practice of building models to predict specific outcomes.

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AI Definitions

- Expert System: An interactive and reliable computer-based decision-making system which uses both facts and heuristics to solve complex decision-making problems. It is considered at the highest level of human intelligence and expertise. The purpose of an expert system is to solve the most complex issues in a specific domain.

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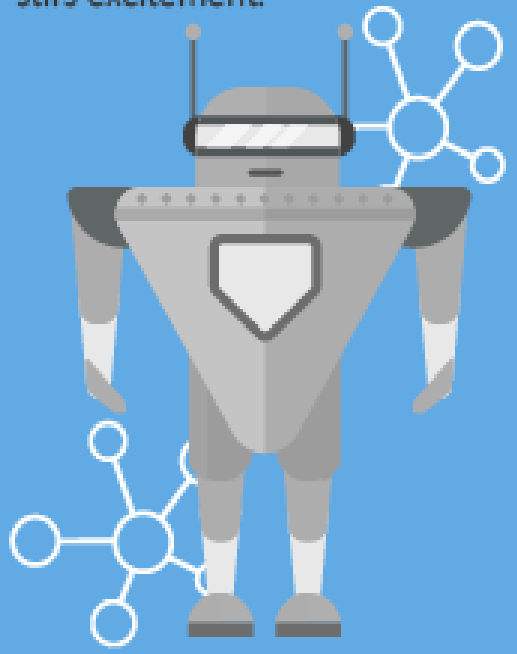
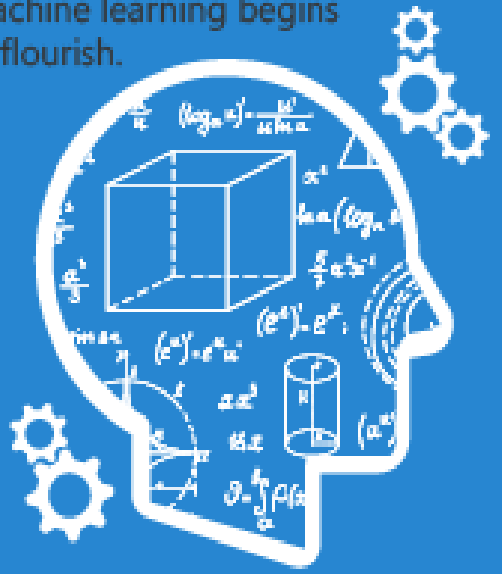
ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



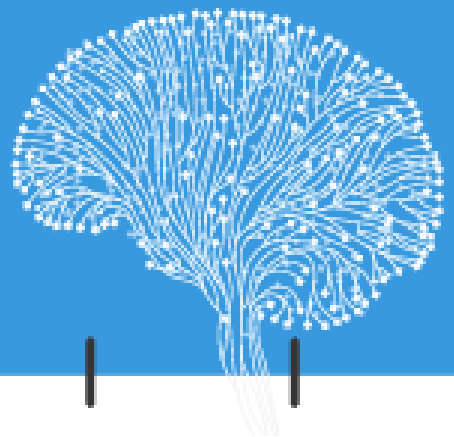
MACHINE LEARNING

Machine learning begins to flourish.



DEEP LEARNING

Deep learning breakthroughs drive AI boom.



1950's 1960's 1970's 1980's 1990's 2000's 2010's

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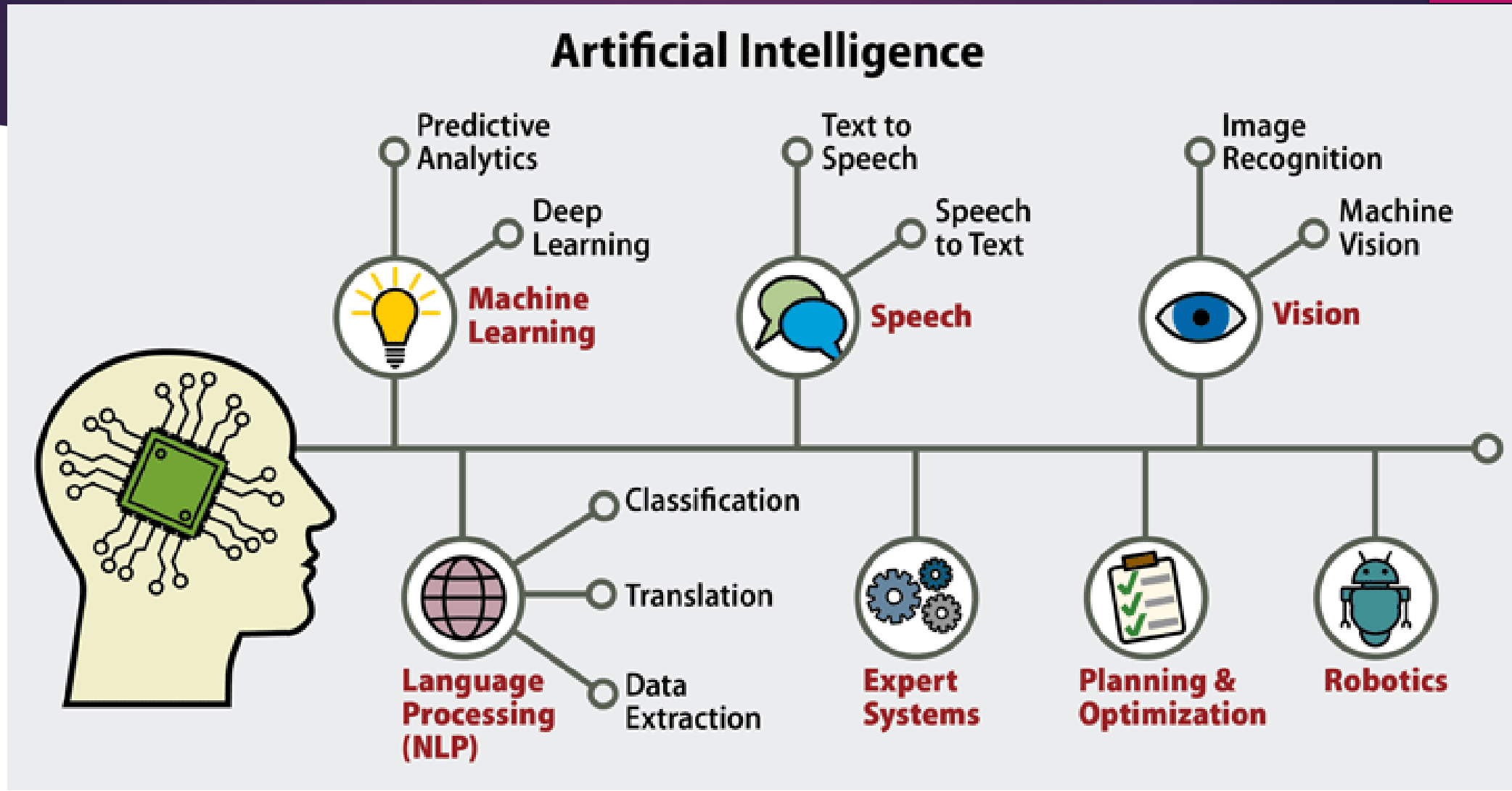

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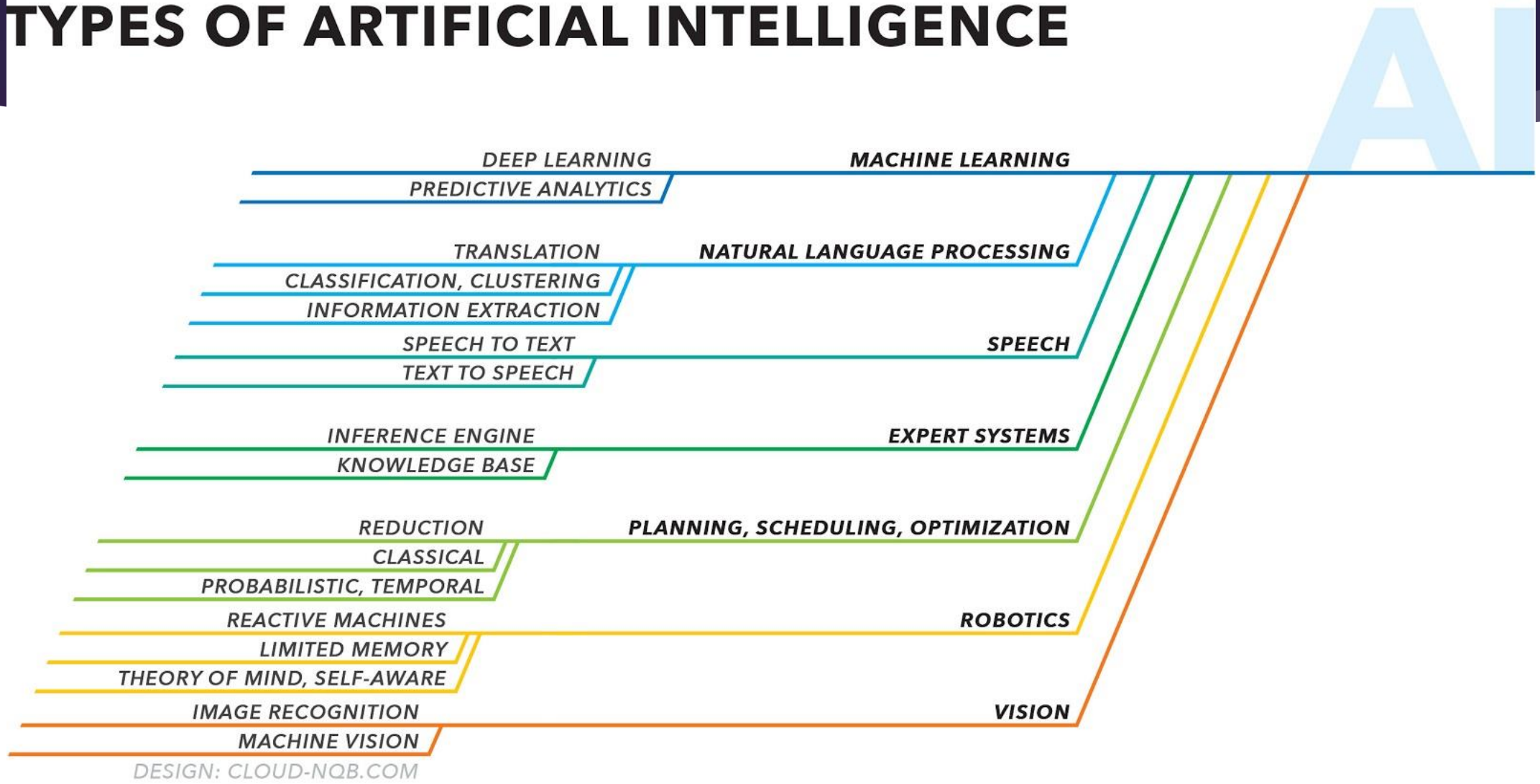
TYPES OF ARTIFICIAL INTELLIGENCE



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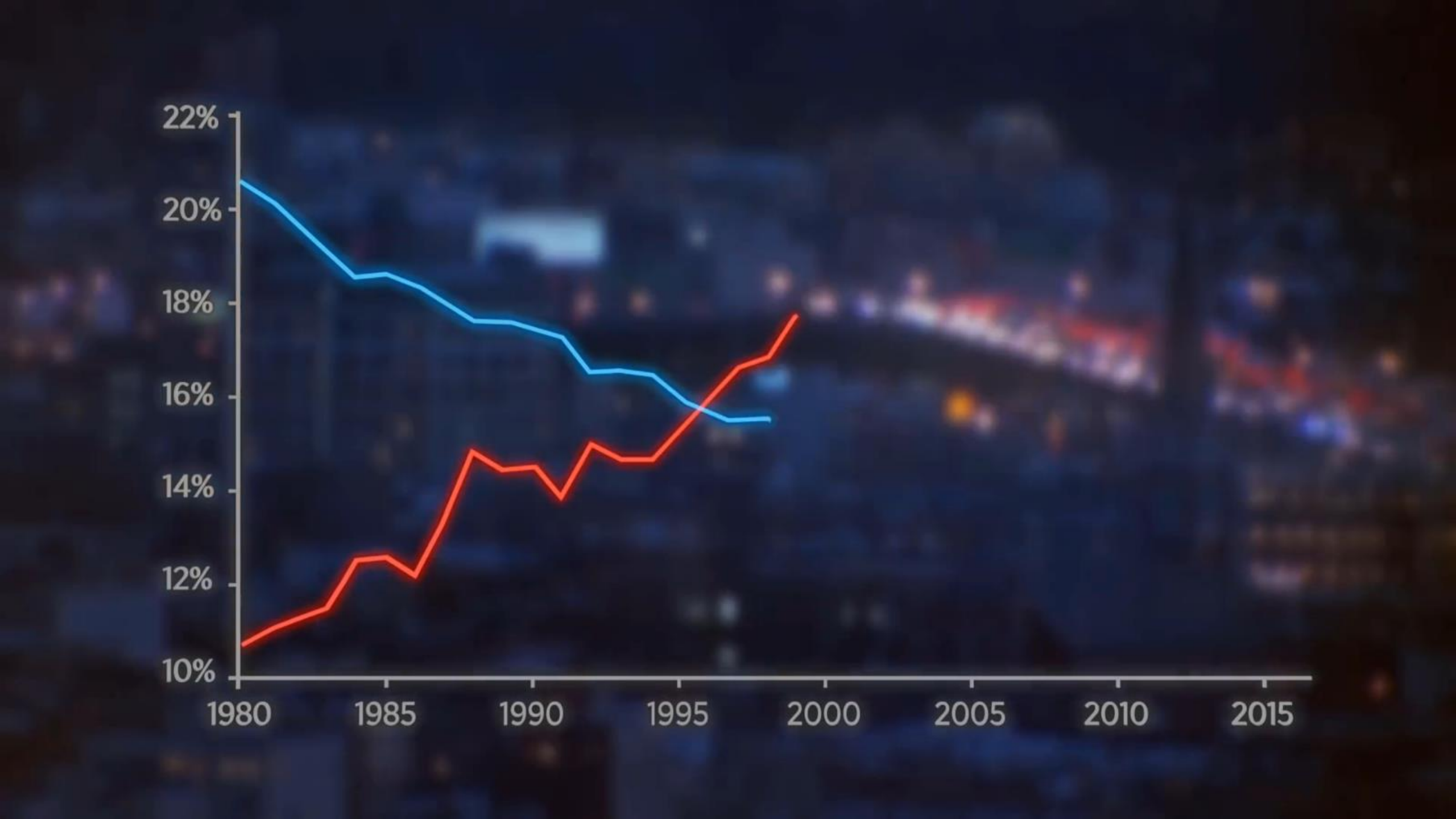
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Challenges of AI

- Technical
- Social
- Legal
- Safety

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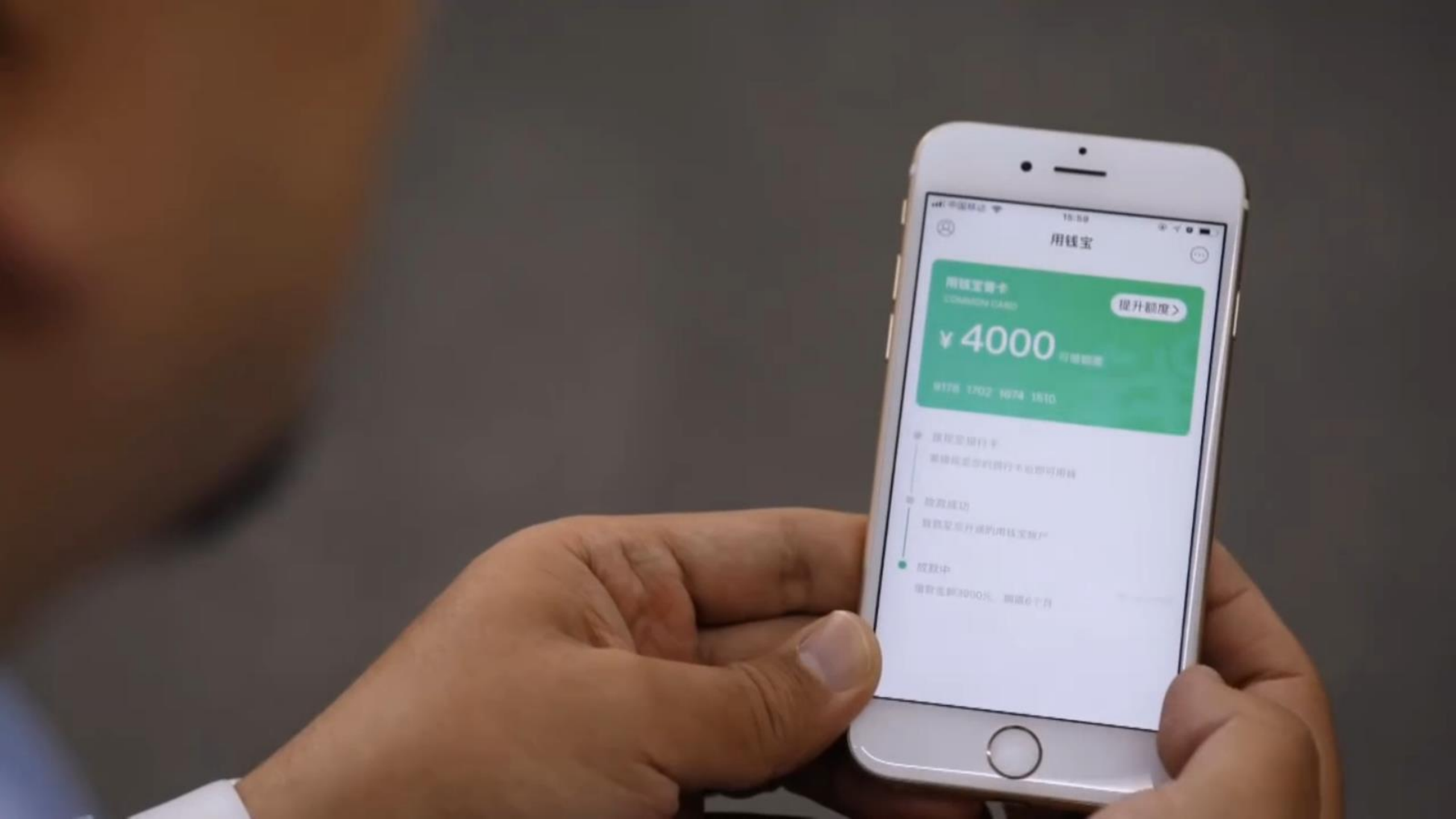
Google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FRONTLINE

Generative AI

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What is Generative AI (GenAI, GAI)

- AI capable of Generating Content
  - Text
  - Images
  - Videos
  - Other Data
  - Generative Models

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What is OpenAI

- **Transparency and Collaboration:** OpenAI advocates for open access to AI research and development, fostering collaboration and knowledge-sharing within the AI community.
- **Safety and Ethics:** The organization prioritizes the safe and ethical development of AI, addressing potential risks like bias and misuse of AI technology.
- **Governance and Policy Research:** OpenAI actively conducts research on AI governance and policy frameworks to ensure responsible AI development and implementation.

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Modalities

- Text
- Images
- Audio
- Music
- Video
- Robotics
- Computer Code
- Molecules
- Data
- CAD

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Generative Models

- NLP
  - Chat Generative Pre-Trained Transformer (GPT) – OpenAI (ChatGPT-3)
  - GitHub CoPilot
  - Bing
- Text to Image
  - Midjourney – Closed Design
  - DALL-E – Open API
  - Stable Diffusion – Open Source

Generative AI Tools

- GFP-GAN — Photo Restoration (Dev)
- Copy.ai — **CopyWriter**
- JADBio — **Auto**mated **Machine Learning for Drug Discovery**
- Notion.ai — **CopyWriter**
- Lumen5 — **Video Creator**
- Lalal.ai — **Audio Stem Splitter**
- Krisp.ai — Noise Cancellation Software
- Noah's Ark — Intelligent NFTs (iNFT)
- Illustroke — Text-to-SVG
- Rokoko AI — Video Motion Capture
- Perplexity AI — Querying Twitter using Natural Language
- Descript — Podcast Editor
- Browse.ai — Web Data Extractor
- AI Detector — Plagiarism(?) Detector

Open AI Tools

- Auto-GPT
- AgentGPT
- OpenAI Platform
- Jasper AI
- **Quillbot**

Issues

- Job Losses
- Race and Gender Bias
- Deepfakes
- Audio Deepfakes
- Cybercrime
- Misuse in Journalism
- Industry Giants
- Surveillance Capitalism

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FOUR

THE SURVEILLANCE CAPITALISTS

Artificial Intelligence (AI) Use in Your Home

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Smart Homes and AI Outline

- What is a Smart Home?
- Benefits of Smart Home Technologies
- Challenges of Smart Home Technologies
- How do Smart Home Technologies Work?
- Smart Home Product & Service Categories

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What is a Smart Home?

- A home equipped with:
- IoT enabled:
  - devices
  - services
  - systems
- that manages and monitors actions
- via a decentralized or centralized system that may include a:
  - home assistant, or
  - information hub, or
  - cloud-based application
- anywhere in the world.

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Benefits of Smart Home Technologies

- Energy efficiency savings.
- Medical alerts for elderly people living alone.
- Alerts and Actions:
  - Fire
  - Security
  - Water
  - Entertainment

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Challenges of Smart Home Technologies

- Nightmare for Digital Visitors.
- Complexity versus Usability.
- Need or fancy toy?
- Who will use the system?
- Operating Training?
- System maintenance?
- Who manages failures?
- Easy to learn?
- Easy to Use?
- Easy to make changes?
- Is security strong?
- What are the standards?

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How do Smart Home Technologies Work?

- Single Device or Service Mode.
- Multiple Devices, Services, and Protocols:
  - Proprietary Protocols
  - X10 Protocol
  - Insteon Protocol
  - ZigBee Protocol
  - Z-Wave Protocol
  - Zapier
  - IFTTT

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Smart Home Product & Service Categories

- Smart Home Appliances
- Smart Home Lighting
- Smart Home Entertainment
- Smart Home Personal Assistants
- Smart Home Energy Management
- Smart Home Monitoring
- Smart Home Security
- Smart Home Information Systems
- Smart Home Management Companies

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What AI is Used by Smart Home Category

Category	Speech	Vision	NLP	Machine Learning	Expert Systems	Robotics
Appliances	X		X		X	X
Lighting	X					
Entertainment	X	X	X	X	X	
Personal Assistants	X		X	X		
Energy Management	X		X	X	X	
Monitoring	X	X	X	X	X	
Security	X	X	X	X	X	
Information Systems	X	X	X	X	X	X
Management Companies	X	X	X	X	X	X

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Future of Artificial Intelligence (AI)

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Promotional video

Consumer AI Data Rights

- Know your AI data rights.
- Use the rights that you have.
- Fight for your AI data rights.
- 2020 Consumer Data Privacy Legislation
- Know what data companies can use and how they can use it.
- Support the development of effective laws and regulations.
- Support legislation that makes data tangible personal property.
- Support legislation that includes these legal provisions:
  - Right to explanation.
  - Right to be forgotten.
  - Right to appeal if you you've been harmed by an automated decision.
  - Right to request your information be removed completely from a records.
  - Right to appeal know how antibias laws work.
- Don't automatically defer to an AI decision but require an explanation.
- Be wary of socially loaded interpretations of artificial intelligence.

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Review

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