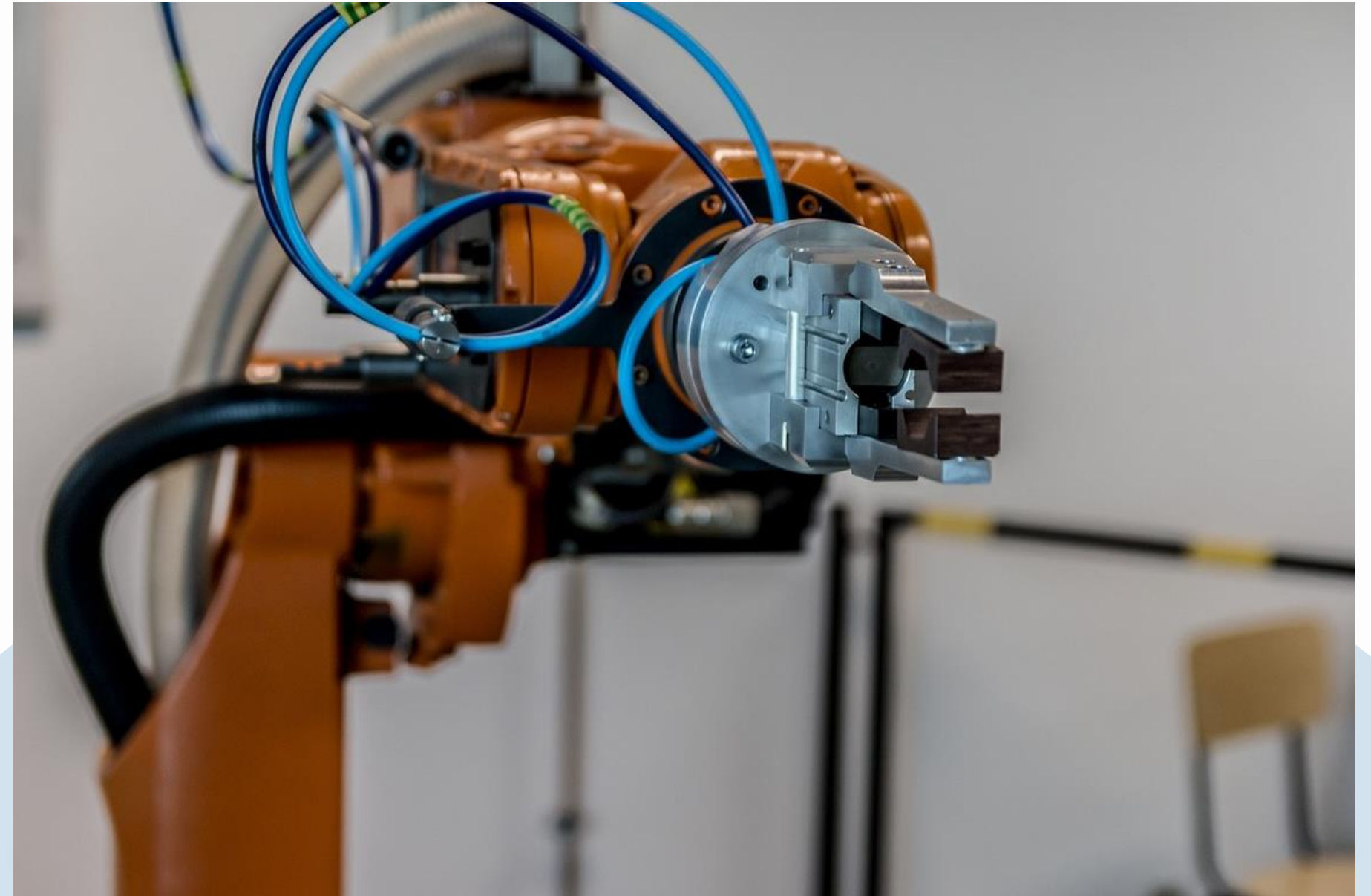


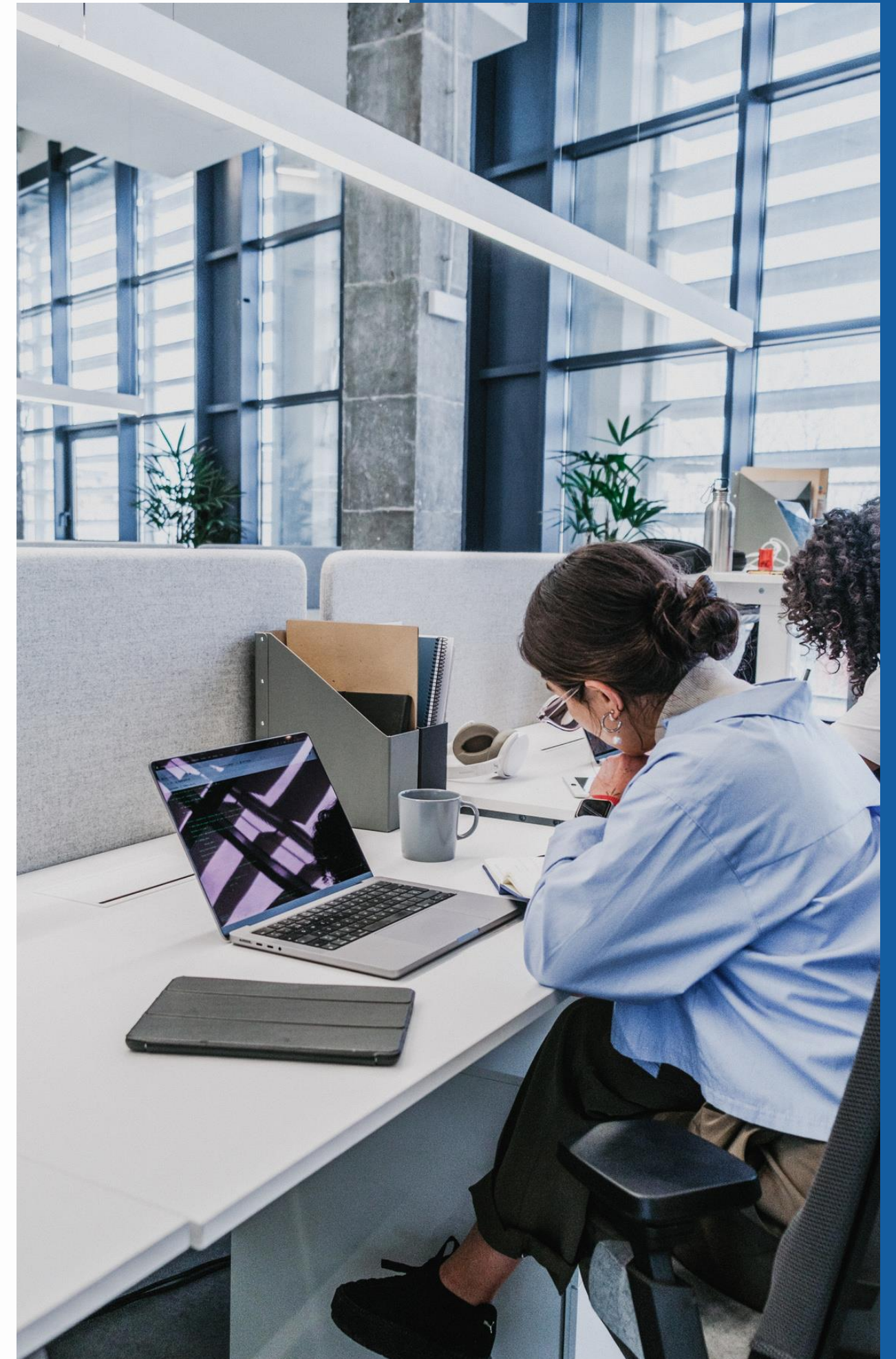
Working Smart: Automating Administrative Tasks with AI

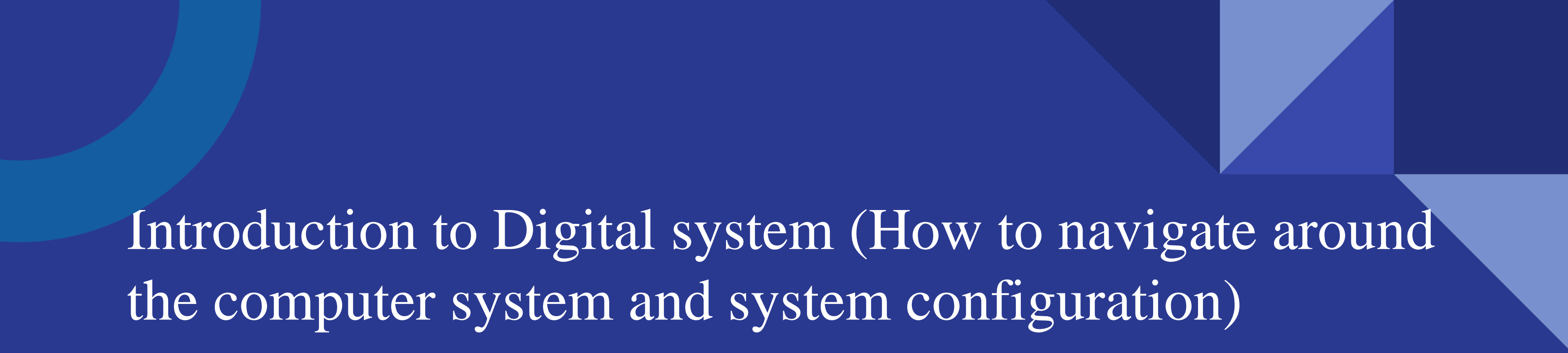
Dr. Chika Yinka-Banjo
Associate Professor of Computer
Sciences, University of Lagos.



Overview

- ▶ Introduction to Digital system (How to navigate around the computer system and system configuration)
- ▶ Introduction/How did we get here
- ▶ Intro to AI, Machine Learning and Robotics
- ▶ Introduction to AI in Institutional Administration
- ▶ AI in Communication & Collaboration
- ▶ AI for Smart Document Management
- ▶ Bonus: Hands-On AI Demonstrations
- ▶ Conclusion



The background of the slide is a solid dark blue. In the top-left corner, there are decorative elements: a large, light blue curved shape and a cluster of smaller, darker blue geometric shapes, including triangles and squares, arranged in a pattern that suggests a digital or architectural theme.

Introduction to Digital system (How to navigate around the computer system and system configuration)

1. Purpose / Use Case

- Office work? → Basic specs are fine.
- Gaming or design? → High-end GPU, CPU, and cooling matter.
- Programming? → Depends on the language/tools. More RAM and SSD help.
- Video editing or 3D rendering? → Fast CPU, GPU, and lots of RAM.

2. Processor (CPU)

- The “brain” of the system.
- Intel Core i5/i7 or AMD Ryzen 5/7 are solid for most users.
- For high-performance needs, go i9, Ryzen 9, or even Xeon/Threadripper.

3. Memory (RAM)

- 8 GB: Basic tasks.
- 16 GB: Comfortable for multitasking, creative work, and coding.
- 32+ GB: For heavy-duty tasks like video editing, virtual machines, etc.

4. Storage

- SSD > HDD in speed.
- 256 GB SSD minimum, ideally 512 GB or more.
- Optional: Additional HDD for mass storage (e.g., 1–2 TB).

5. Graphics (GPU)

- Integrated GPU: Fine for basic work.
- Dedicated GPU (NVIDIA/AMD): Needed for gaming, rendering, etc.

6. Display (if laptop or all-in-one)

- Size: 13"–15" for portability; 17"+ for workspace.
- Resolution: Full HD (1920x1080) is a minimum. 4K for visual work.

7. Ports and Connectivity

- USB-C, HDMI, Ethernet, SD card slot—depending on your needs.
- Wi-Fi 6 and Bluetooth 5 are a plus.

8. Build Quality and Design

- Sturdy, reliable build—especially if portable.
- Keyboard and touchpad feel good?

9. Battery Life (for laptops)

- Depends on use, but 6–10 hours is a good target.

10. Operating System

- Windows, macOS, Linux—depending on what software you need.

11. Upgradability

- Can you upgrade RAM or storage later?

12. Support and Warranty

- Good brand support and warranty options can save stress later.

13. Budget

- Set a budget, then prioritize the specs that matter most for your use case.



How did we get here?



Basic Revolutions



```
graph TD; A[Basic Revolutions] --> B[Agriculture]; A --> C[Industrial]; A --> D[Information];
```

Agriculture

Industrial

Information

Agriculture Revolution



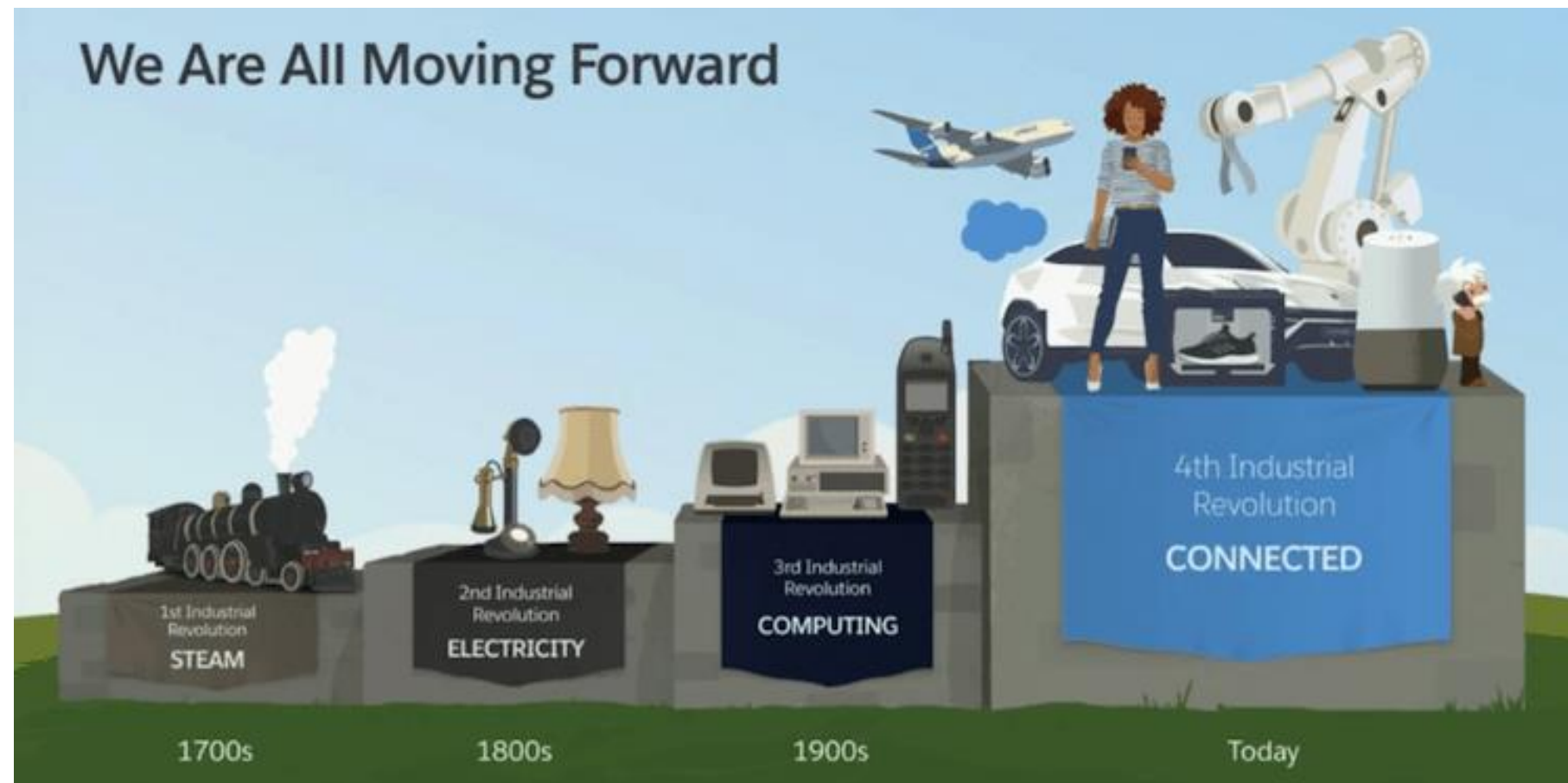
From:

- Lots of farmers
- Most people farm
- Poorly used land
- Hand tools
- Not much food

To:

- Very few farmers
- Many work in factories
- Better used land
- Machines
- Plenty of food

Industrial Revolution



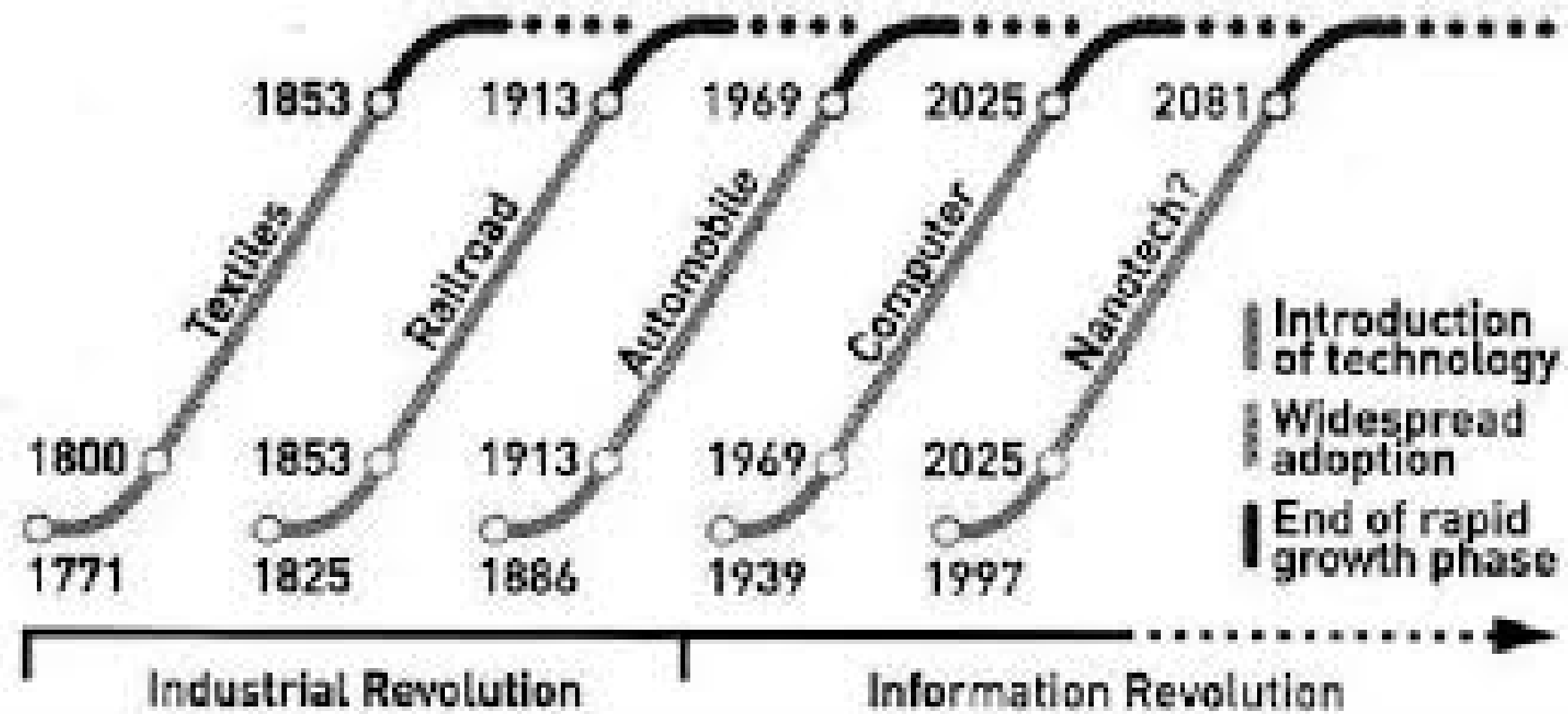
- **The Industrial Revolution.**
- Began in England during the 1780's and spread 1st to the US and Europe
- Factories made it possible to do secondary activities cheaply and efficiently providing more goods and improving peoples lives

Information Revolution



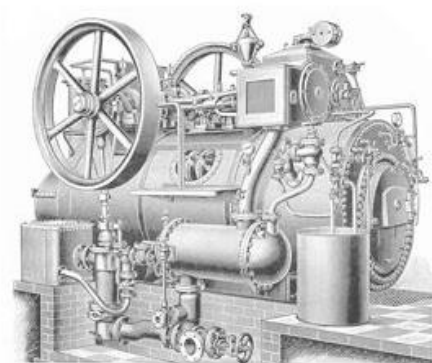
The Post-Industrial or Information Revolution.

- Tertiary and Quaternary activities are facilitated by computers and internet providing information and entertainment services cheaply and efficiently
- The basic values for the Information Revolution is
 - globalization,
 - spreading ideas, and
 - reshaping societies and economies



First

Mechanical production
steam, water



1784: First power loom

Second

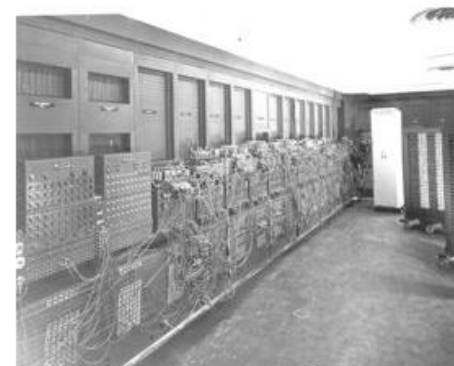
Mass production
electricity



1870: First assembly line,
Cincinnati slaughterhouses

Third

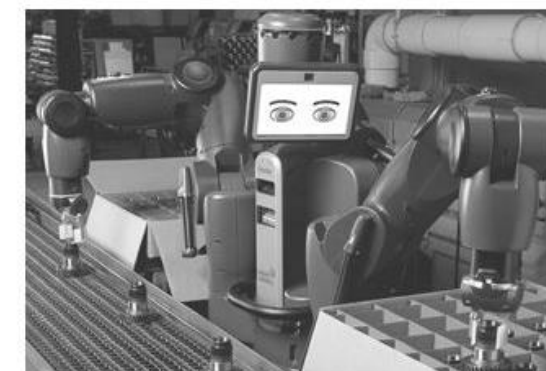
Digital
IT, Electronics



1969: First programmable
logic controller (PLC)

Fourth

Cyber-physical systems
physical + digital + biological

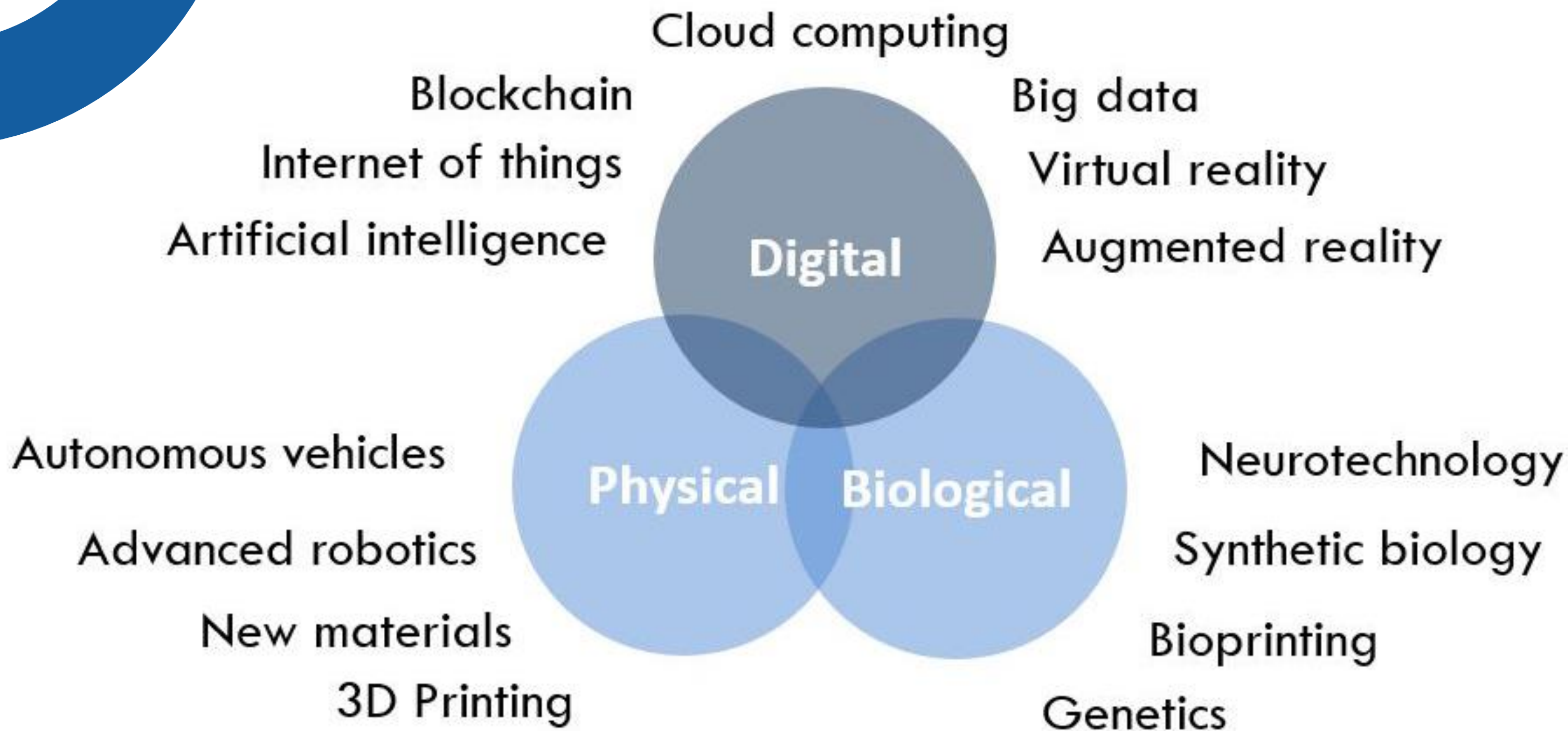


Today: Cyber-physical
systems and robots learning
from humans

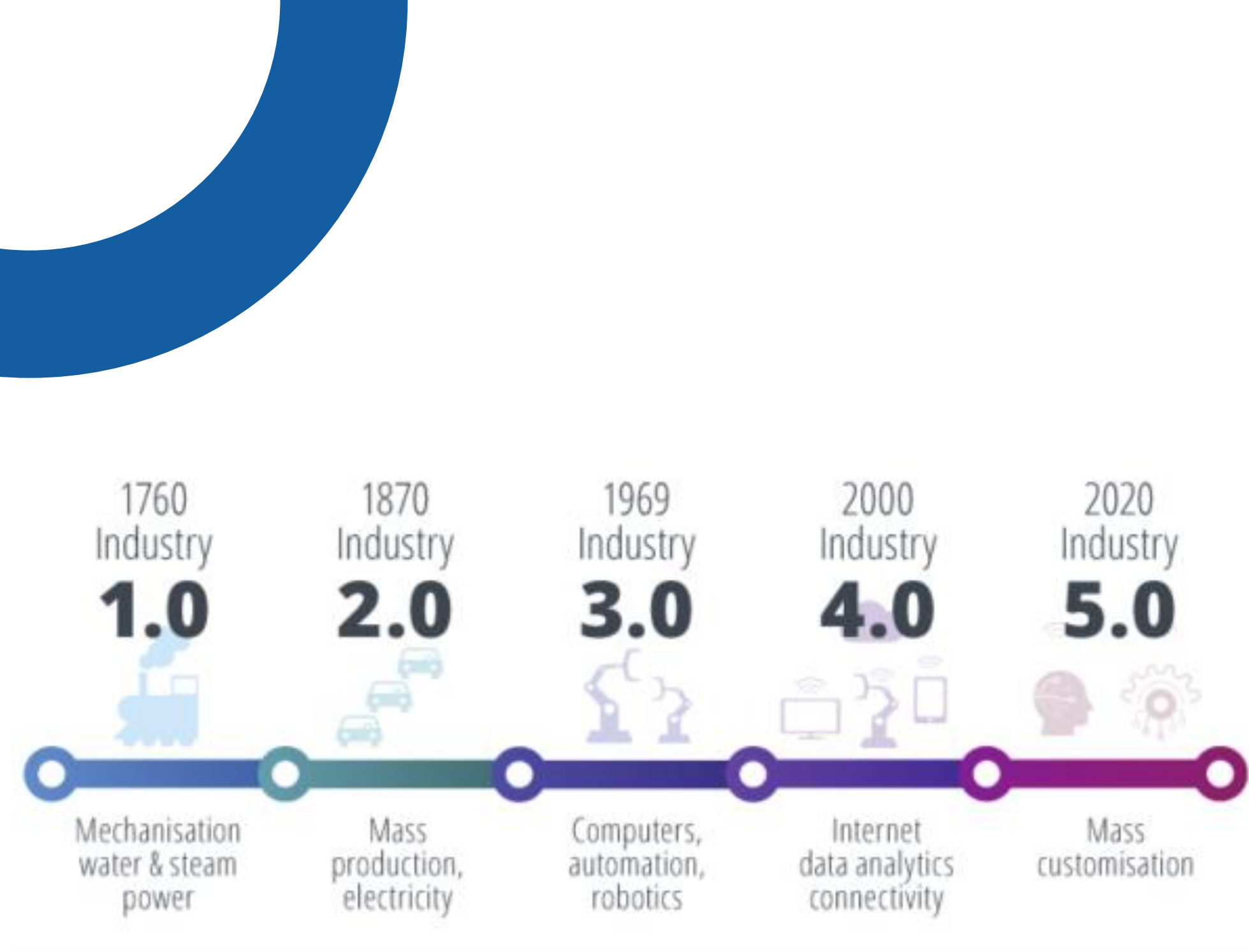
Fourth Industrial Revolution



- The fourth industrial revolution, something unique and unprecedented is happening: the boundaries between physical, digital and biological worlds are blurring
- Dramatically changed the way we relate to one another, live, work, and educate our children. These shifts are enabled by smart technologies, including artificial intelligence, big data, augmented reality, blockchain, the Internet of Things, and automation.



Source: John Grill Centre for Project Leadership and Silicon Valley Innovation Center



1.0 The Steam-Powered Revolution: Example: Steam engines powered big ships, allowing them to travel across oceans faster, which helped with trade and exploration.

2.0 The Electricity Revolution: Example: Electricity made it possible to have refrigerators, which kept food fresh for longer, making life easier.

3.0 The Computer Revolution: Example: Computers helped send astronauts to the moon by calculating their trajectory and navigation.

4.0 The Internet Revolution: Example: The internet allows us to video chat with friends and family, even if they are far away.

5.0 The Smart Technology Revolution: Example: Smart thermostats can learn when to heat or cool your home to save energy and money.

6.0 The Sustainability and Green Revolution: Example: Electric cars use batteries instead of gasoline, reducing air pollution and greenhouse gases.



History of Artificial Intelligence

1950

The time when it all started.

1955

John McCarthy coined term 'Artificial intelligence'.

1974

Computers became faster & affordable

1980

The year of Artificial Intelligence.

2000

Landmark of AI establishment achieved.

Intro to Artificial Intelligence

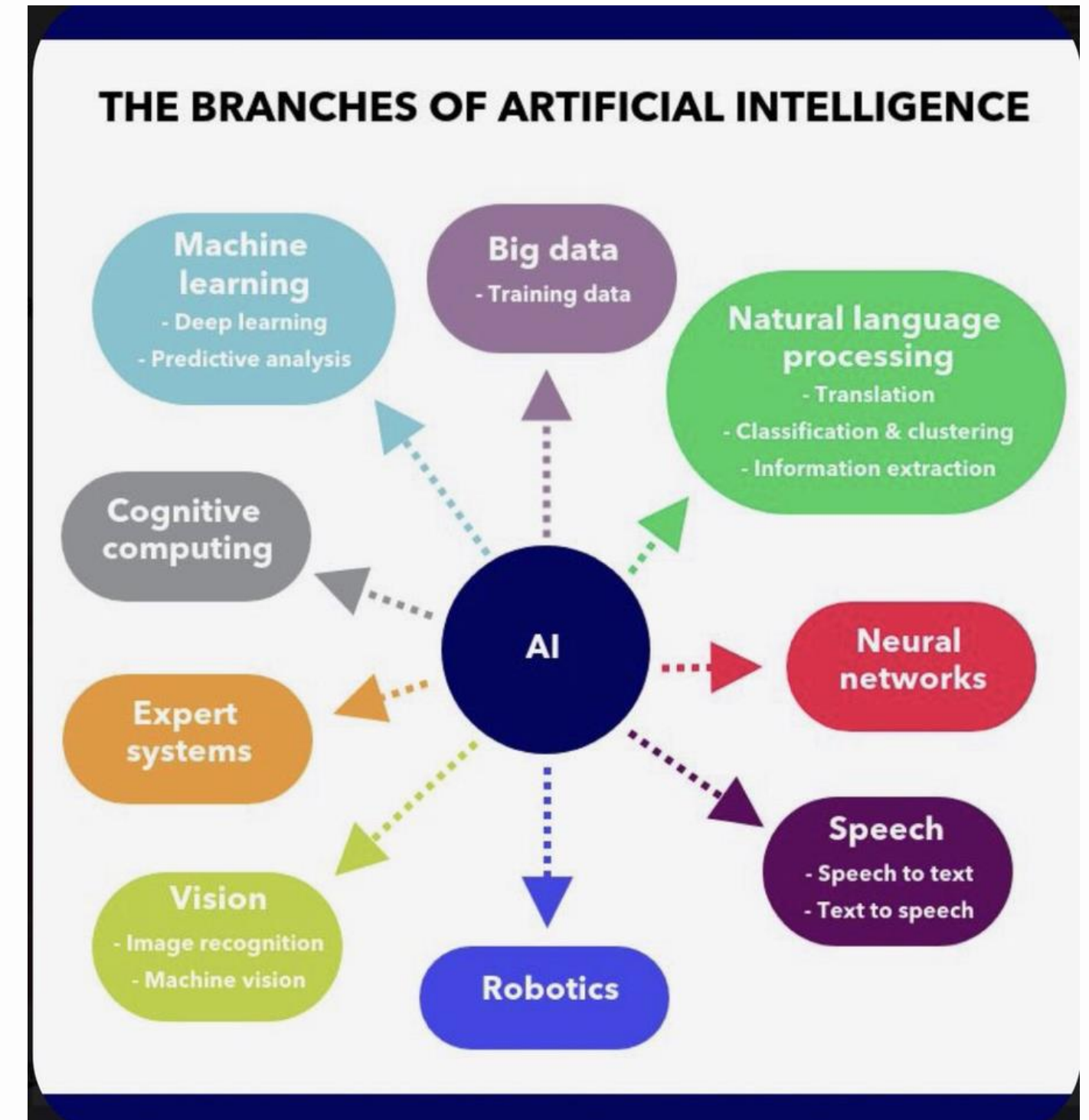
- **Definition:** Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans.

Key Concepts

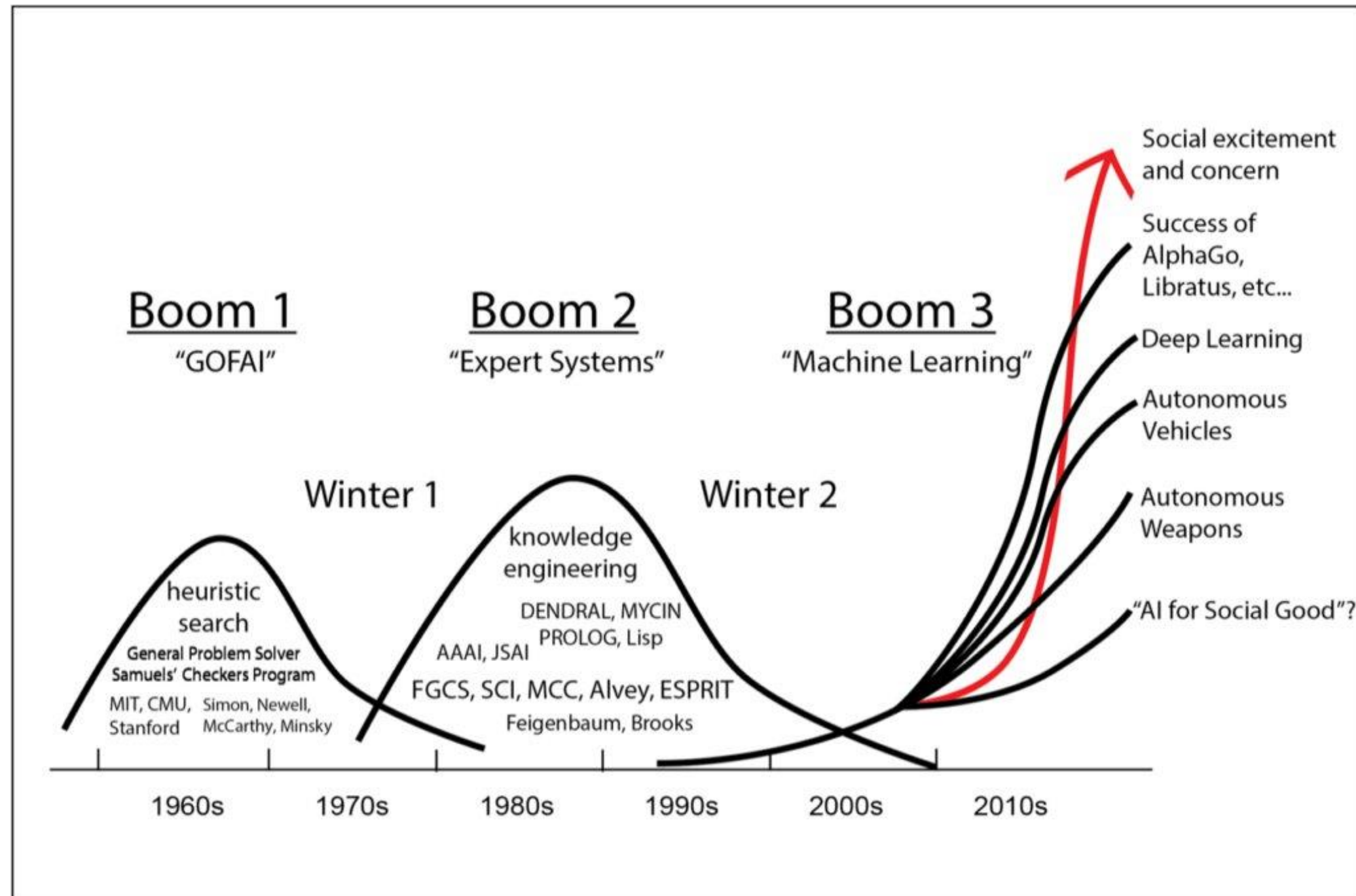
Artificial Intelligence is a huge field with many subfields focussing on various aspects of intelligence including;

- Machine Learning (ML)
- Robotics
- Natural Language Processing (NLP)
- Computer Vision

and many others.



AI Flips and Flops Since Dartmouth



Heuristic Search

Rule-Based Systems

Data-Driven Systems

- Neural Networks
- Machine Learning
- Deep Learning

And the rest is an "unfolding history"

TYPES OF AI

- Artificial Narrow Intelligence
- Artificial General Intelligence
- Artificial Super Intelligence

3 Types of Artificial Intelligence

Artificial Narrow Intelligence (ANI)



Stage-1

Machine Learning

- Specialises in one area and solves one problem



Siri



Alexa



Cortana

Artificial General Intelligence (AGI)



Stage-2

Machine Intelligence

- Refers to a computer that is as smart as a human across the board

Artificial Super Intelligence (ASI)

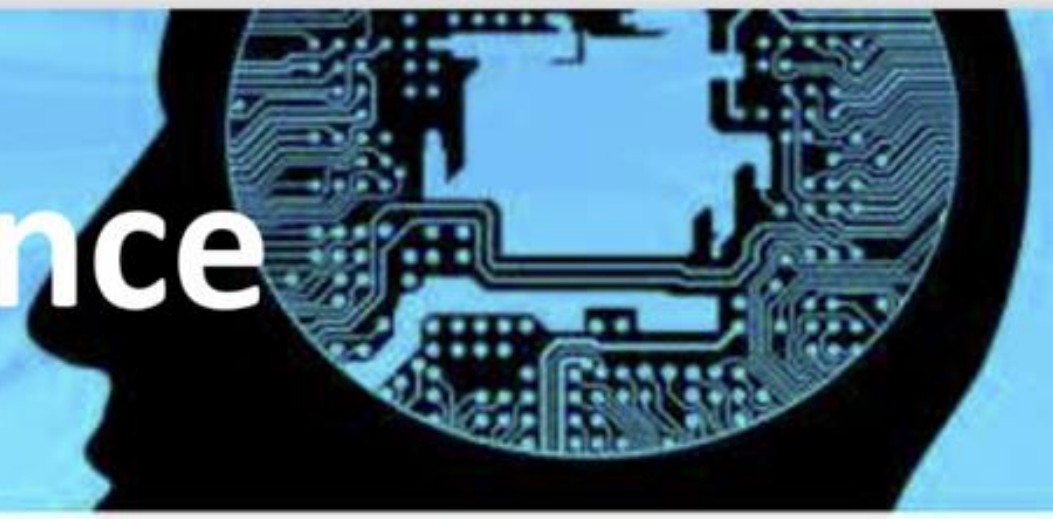


Stage-3

Machine Consciousness

- An intellect that is much smarter than the best human brains in practically every field

Natural Vs Artificial Intelligence



Attributes	NI (Human)	AI (Machine)
The ability to use sensors (eyes, ears, touch, smell)	HIGH	LOW
The ability to be creative and imaginative	HIGH	LOW
The ability to learn from experience	HIGH	LOW
The ability to be adaptive	HIGH	LOW
The ability to afford the cost of acquiring intelligence	HIGH	LOW
The ability to use a variety of information source	HIGH	HIGH
The ability to acquire large amount of external information	HIGH	HIGH
The ability to make complex calculations	LOW	HIGH
The ability to transfer information	LOW	HIGH
The ability to make a series of calculations rapidly and accurately	LOW	HIGH

 Save for Later

Artificial Intelligence

- Planning and Scheduling
- Natural Language Processing
- Computer Vision
- Expert Systems
- Robotics
- Automated Reasoning
- Fuzzy Logic
- Cognitive Computing
- AI Ethics
- Speech Recognition

Machine Learning

- Knowledge Representation
- Dimensionality Reduction
- Decision Trees
- Support Vector Machines
- Ensemble Learning
- Feature Engineering
- Unsupervised Learning
- Semi-Supervised Learning
- Reinforcement Learning
- Classification

Neural Networks

- Perceptrons
- Convolutional Neural Networks (CNNs)
- Long Short-Term Memory (LSTM)
- Generative Adversarial Networks (GAN)
- Dropout
- Multi-Layer Perceptron (MLP)
- Backpropagation
- Activation Functions
- Recurrent Neural Networks (RNN)
- Self-Organizing Maps (SOMs)
- Deep Belief Networks (DBNs)

Deep Learning

- Deep Neural Networks (DNNs)
- Deep Convolutional Neural Networks (CNNs)
- Deep Reinforcement Learning
- Capsule Networks
- Transfer Learning
- Generative Adversarial Networks (GANs)

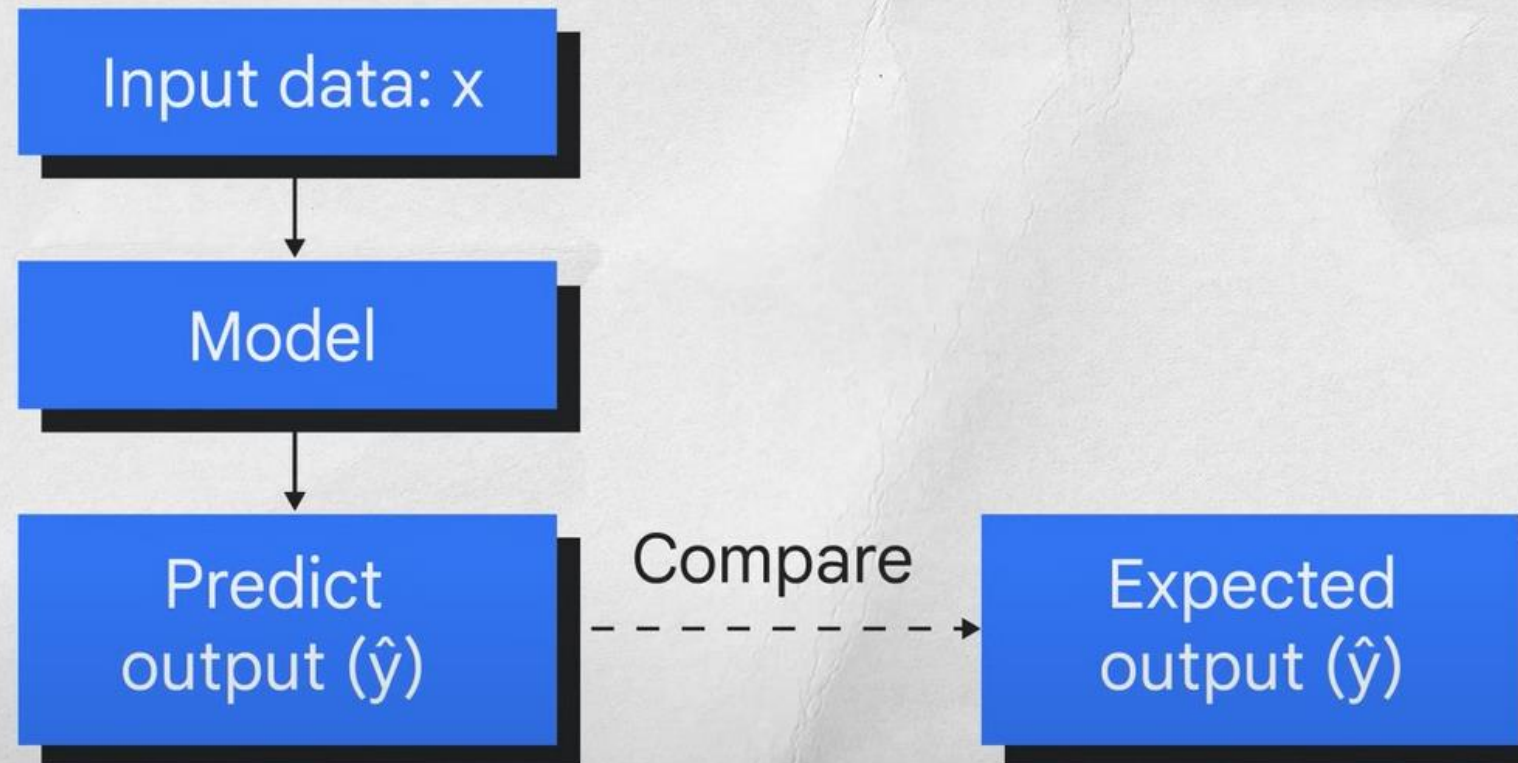
Generative AI

- Language Modeling
- Transfer Learning
- Transformer Architecture
- Self-attention Mechanism
- Natural Language Understanding
- Text Generation
- Summarization
- Dialogue Systems

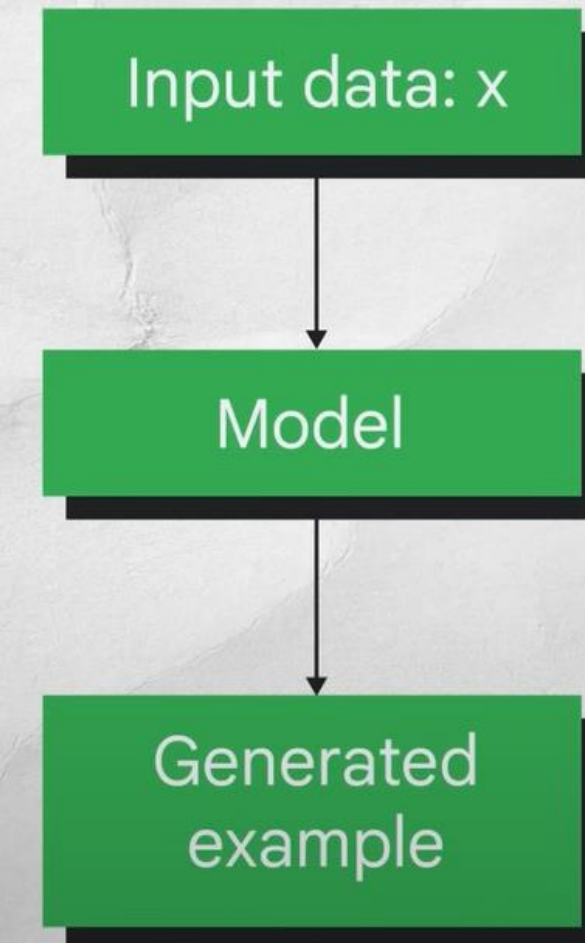
Deep learning is a type of machine learning that uses artificial neural networks, allowing them to process more complex patterns than machine learning.

Gen AI is a subset of deep learning, which means it uses Artificial Neural Networks, can process both labeled and unlabeled data, using supervised, unsupervised, and semi-supervised methods. Large Language Models are also a subset of Deep Learning.

Supervised learning



Unsupervised learning



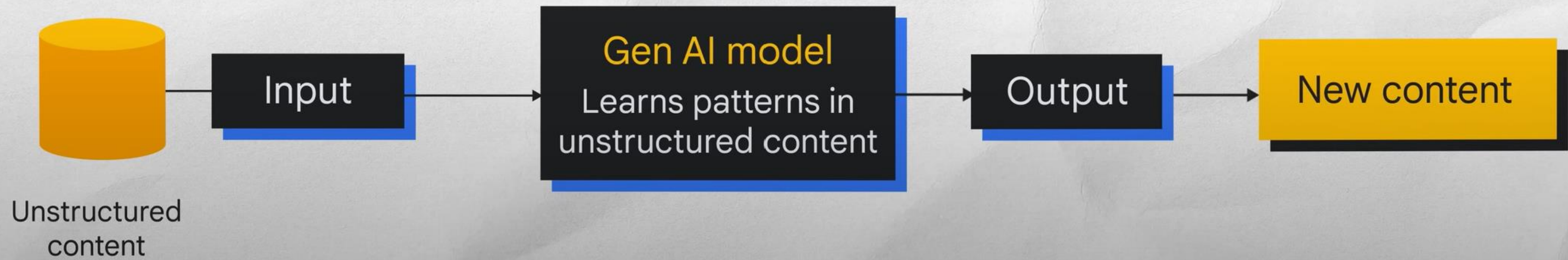
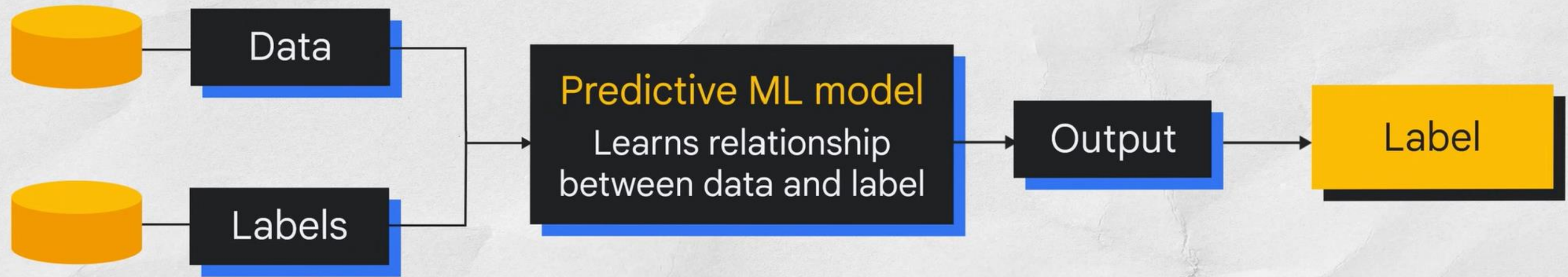


● Not gen AI when y is:

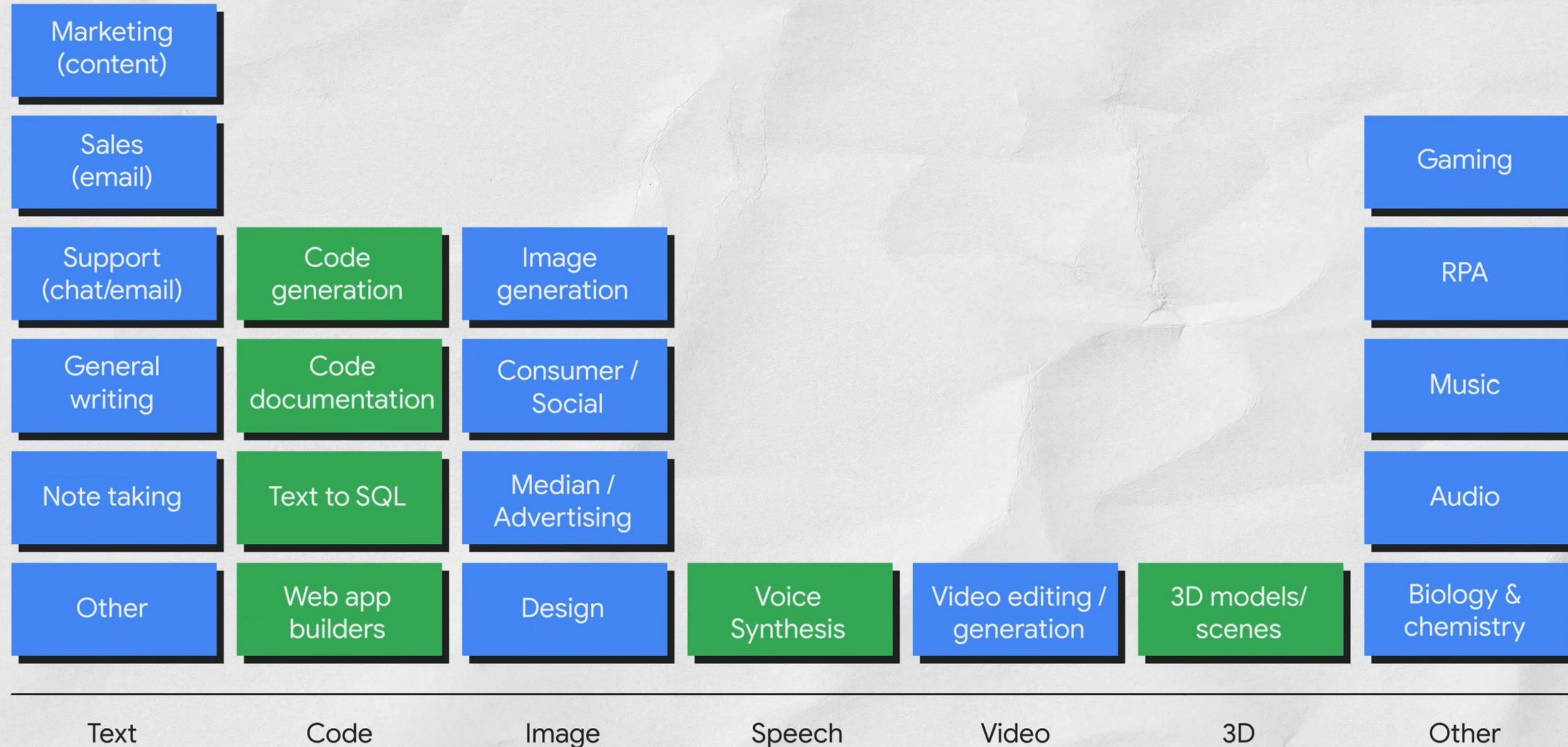
- ◆ Number
- ◆ Discrete
- ◆ Class
- ◆ Probability

● Is gen AI when y is:

- ◆ Natural language
- ◆ Image
- ◆ Audio



Generative AI applications landscape



Introduction to AI in Institutional Administration

AI for Smart Document Management

Prompting

Summarize a text of x

Generate a poem in the style of x

Give me a list of keywords based on semantic similarity of x

Large Language Model

Output

Summarization

Writing

Keyword extraction

Data

Text
Image
Speech
Structured data
3D signals

Training



Foundation
model

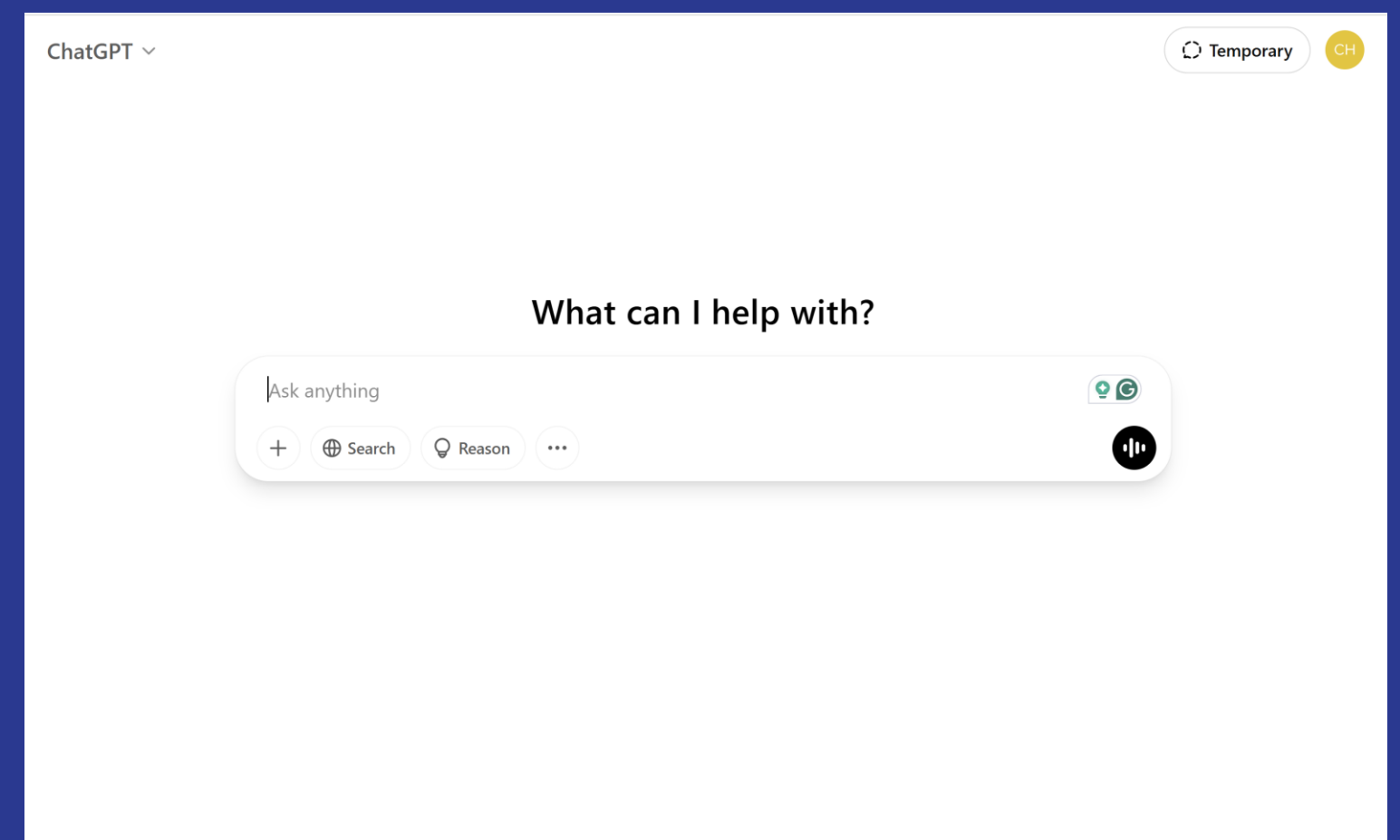
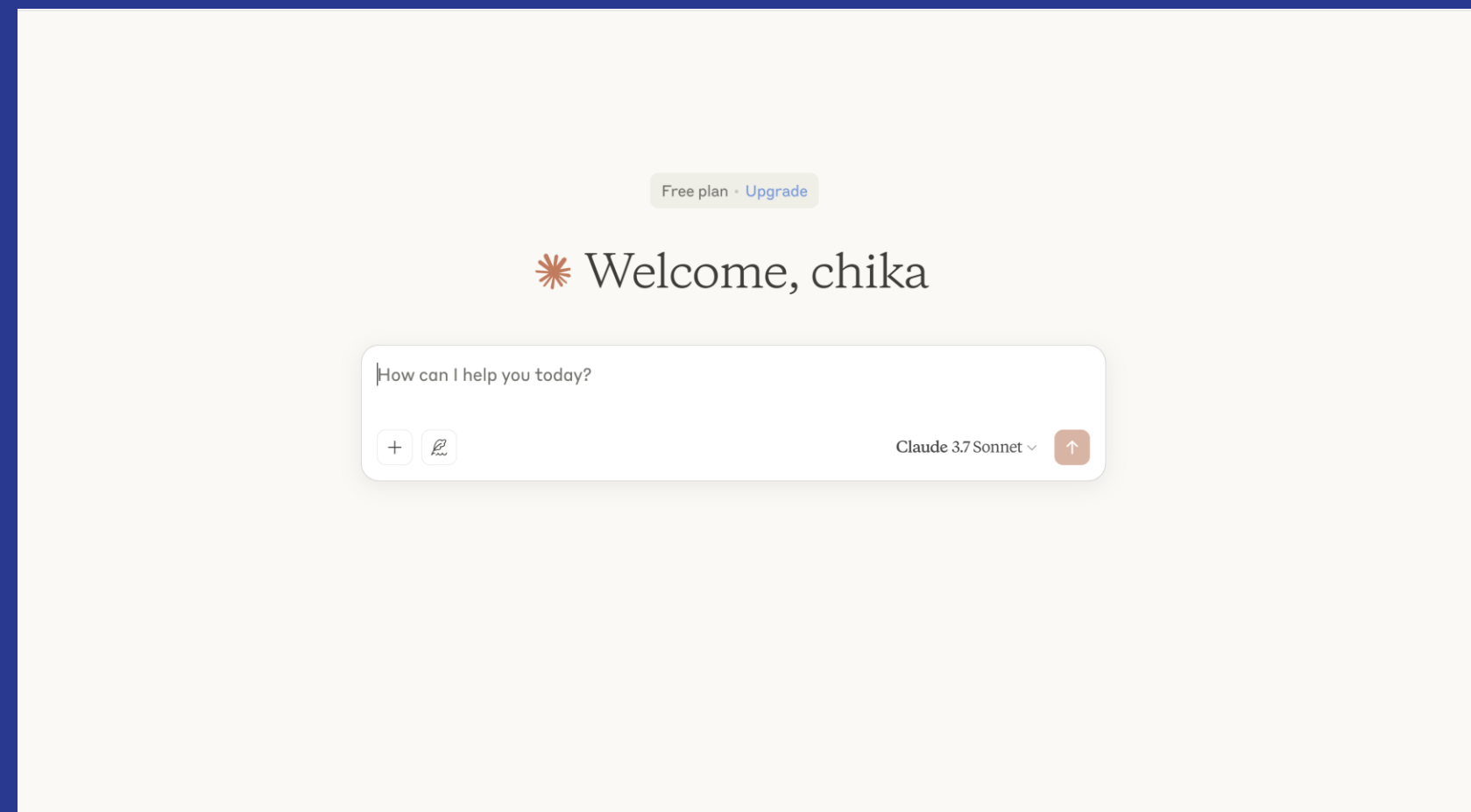
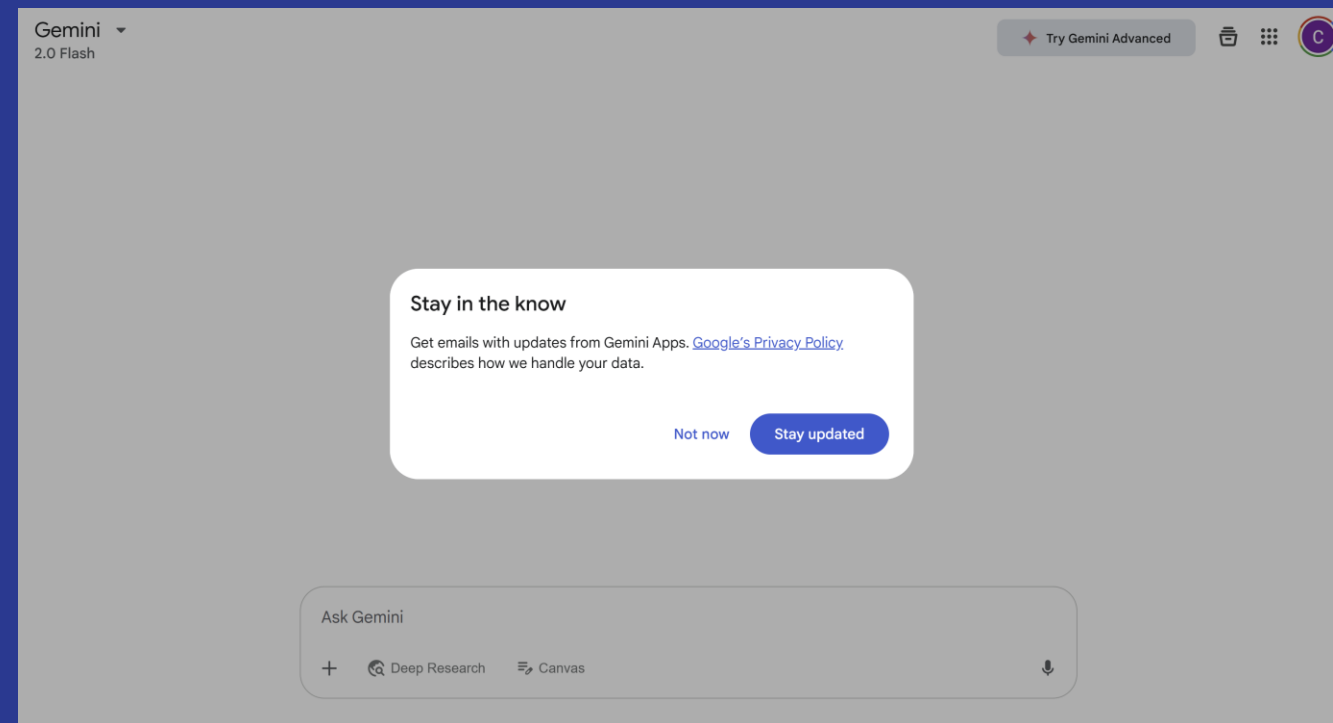
Adaption

Tasks

Question Answering
Sentiment analysis
Information extraction
Image captioning
Object recognition
Instruction following

Bonus: Hands-On AI Demonstrations

Gemini
Claude
ChatGPT



Exercises

1. Writing Emails

Example Use Case:

Sending a meeting reminder.

Prompt:

“Write a professional email reminding the finance team about the budget review meeting scheduled for Friday at 2 PM in Conference Room B. Keep it brief and polite.”

AI Output Example:

Subject: Reminder: Budget Review Meeting – Friday at 2 PM

Dear Team,

This is a friendly reminder about our upcoming budget review meeting scheduled for Friday at 2:00 PM in Conference Room B.

Please ensure you bring any relevant reports or data needed for discussion.

Looking forward to seeing you all there.

Best regards,

[Your Name]

2. Writing Proposals

Example Use Case:

Proposing a new digital filing system.

Prompt:

“Draft a proposal for implementing a digital filing system to improve document management in the HR department. Include the problem, proposed solution, benefits, and next steps.”

AI Output Example (summary):

Title: Proposal for a Digital Filing System

Problem: The current manual filing process is time-consuming and prone to errors.

Solution: Adopt a cloud-based digital filing system with secure access and search features.

Benefits: Faster retrieval, enhanced security, reduced paper use.

Next Steps: Evaluate vendors, train staff, and implement a 3-month pilot program.

3. Writing Memos

Example Use Case:

Informing staff of a new office dress code policy.

Prompt:

“Write a memo to all staff about a new business casual dress code policy starting May 1st. Keep it informative and respectful.”

AI Output Example:

To: All Staff

From: Admin Office

Date: [Today's Date]

Subject: New Dress Code Policy Effective May 1st

We would like to inform all staff that a new business casual dress code policy will be implemented starting May 1st. This change is aimed at promoting a professional yet comfortable workplace environment.

Please ensure your attire aligns with the updated policy. A detailed guideline will be circulated shortly.

Thank you for your cooperation.

4. Writing Minutes of Meetings

Example Use Case:

Minutes from a weekly admin team meeting.

Prompt:

“Generate meeting minutes for a 30-minute admin team meeting held on April 8, 2025. Discussed: facility updates, scheduling issues, and new supply orders.”

AI Output Example:

Meeting Minutes – Admin Team

Date: April 8, 2025

Time: 10:00 AM – 10:30 AM

Attendees: John, Maria, Amina, Carlos

1. Facility Updates:

- Air conditioning maintenance scheduled for April 15

2. Scheduling Issues:

- Overlapping lunch shifts noted; revised schedule to be circulated

3. Supply Orders:

- New printer ink and stationery ordered; expected delivery next week

Next Meeting: April 15, 2025, 10:00 AM

5.Writing Letters

Example Use Case:

Writing a formal letter of appreciation to a staff member.

Prompt:

“Write a formal letter thanking a staff member, Mr. Paul Njeri, for his outstanding support during the annual audit. Make it sincere and professional.”

AI Output Example:

[Institution Letterhead]

April 10, 2025

Mr. Paul Njeri

[Department Name]

Dear Mr. Njeri,

On behalf of the administration, I would like to extend our sincere appreciation for your outstanding support during the recent annual audit. Your attention to detail, professionalism, and commitment greatly contributed to the success of the process.

We are grateful for your dedication and proud to have you as part of our team.

Yours sincerely,

[Your Name]

[Your Title]

Numerous AI applications cater to administrative documentation. Here are a few examples.

- **Jasper AI:** Ideal for drafting business proposals, emails, and press releases.
- **Copy.ai:** Generates polished corporate communications, including marketing content.
- **DocuSign AI:** Assists in contract management by extracting key details from legal agreements.
- **Microsoft Copilot:** Integrated into Office Suite, helping automate report generation and summaries.
- **Notion AI:** Enhances note-taking and task organization by summarizing meeting discussions and action items.

THANK YOU!



Dr. Chika Yinka-Banjo

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Sciences, University of Lagos.

 cyinkabanjo@unilag.edu.ng