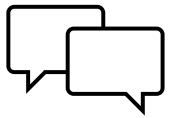
Introduction to AI and Generative AI

AI Definitions, Achievement Timeline, Corporations and Current Landscape

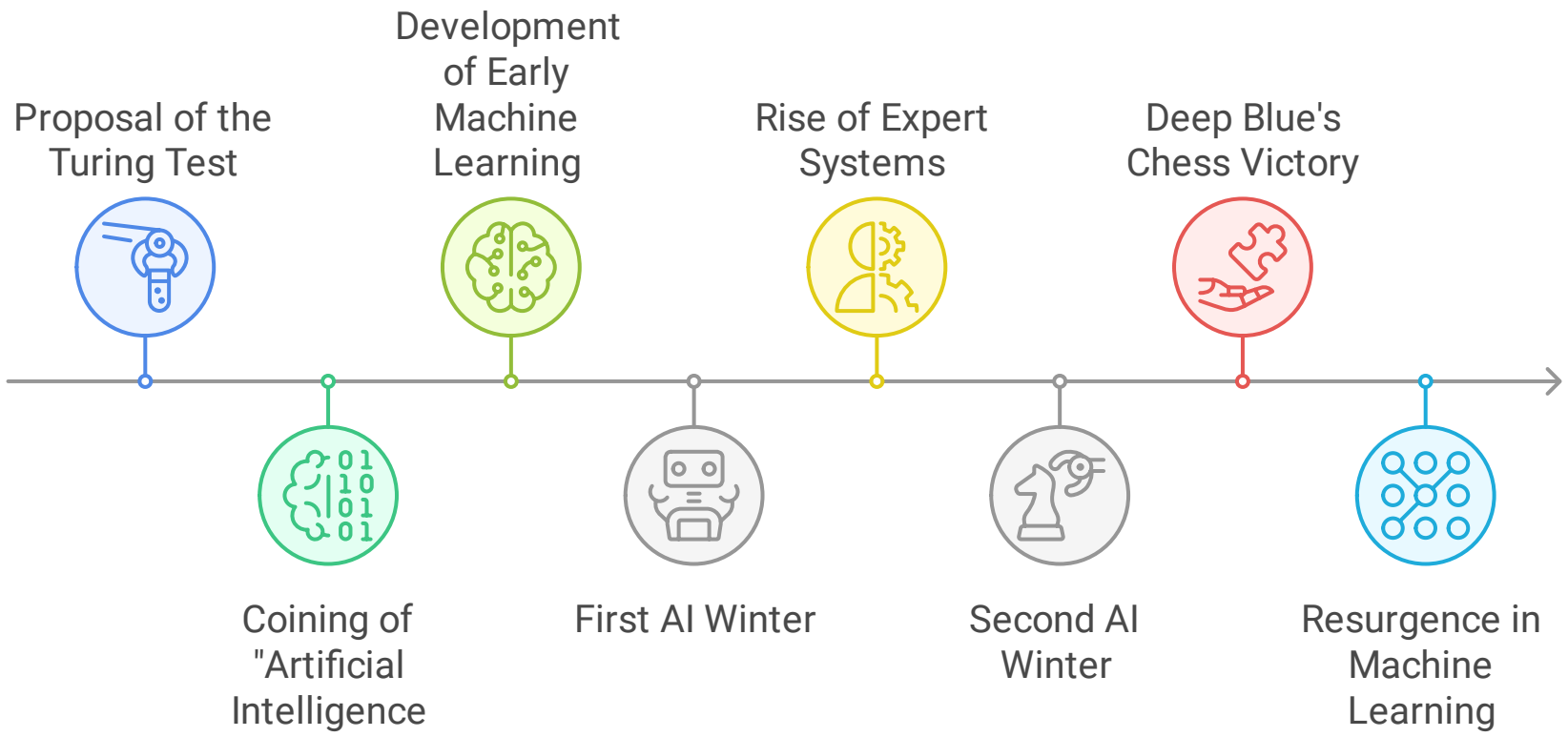
A Definition of Artificial Intelligence (AI)

- **Definition**: AI is the simulation of human intelligence by machines.
- **Applications**: AI is used in a wide range of fields, including healthcare, finance, and robotics.
- **Example**: AI in everyday life (e.g., advanced virtual assistants like ChatGPT, which offers speech capabilities and enhanced conversational abilities).

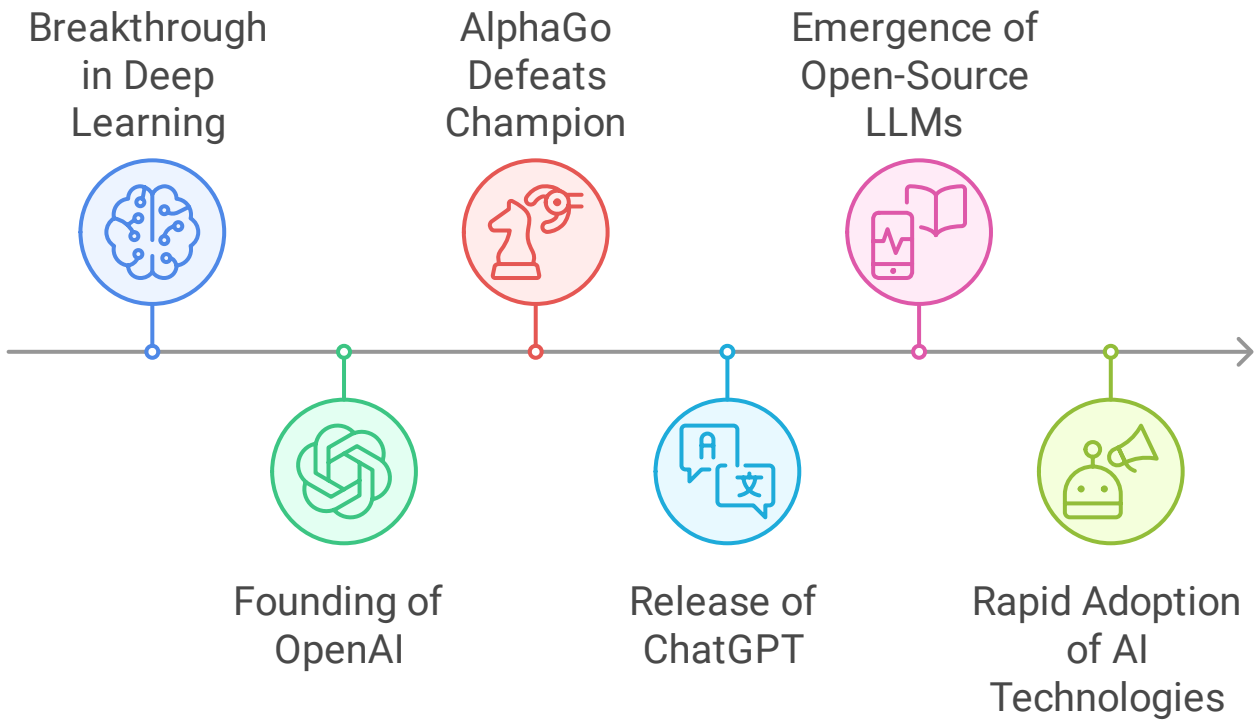


- **Discussion**: How do you currently interact with AI in your daily life? Spend a few minutes sharing your thoughts.

AI Development Timeline (1950-2000)

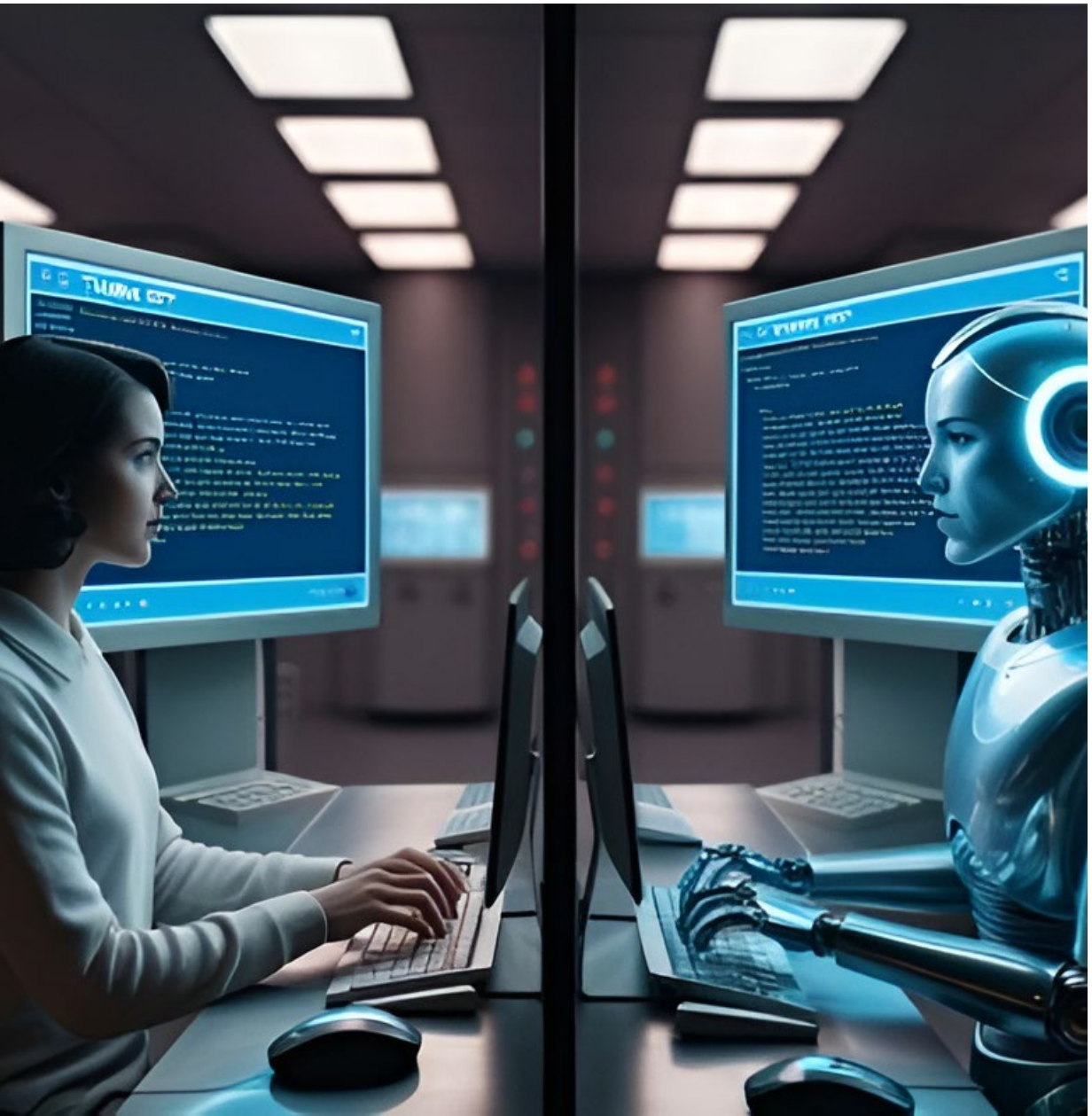


AI Development Timeline (2000-Present)



Foundational Milestones in Artificial Intelligence

The Turing Test (1950s)



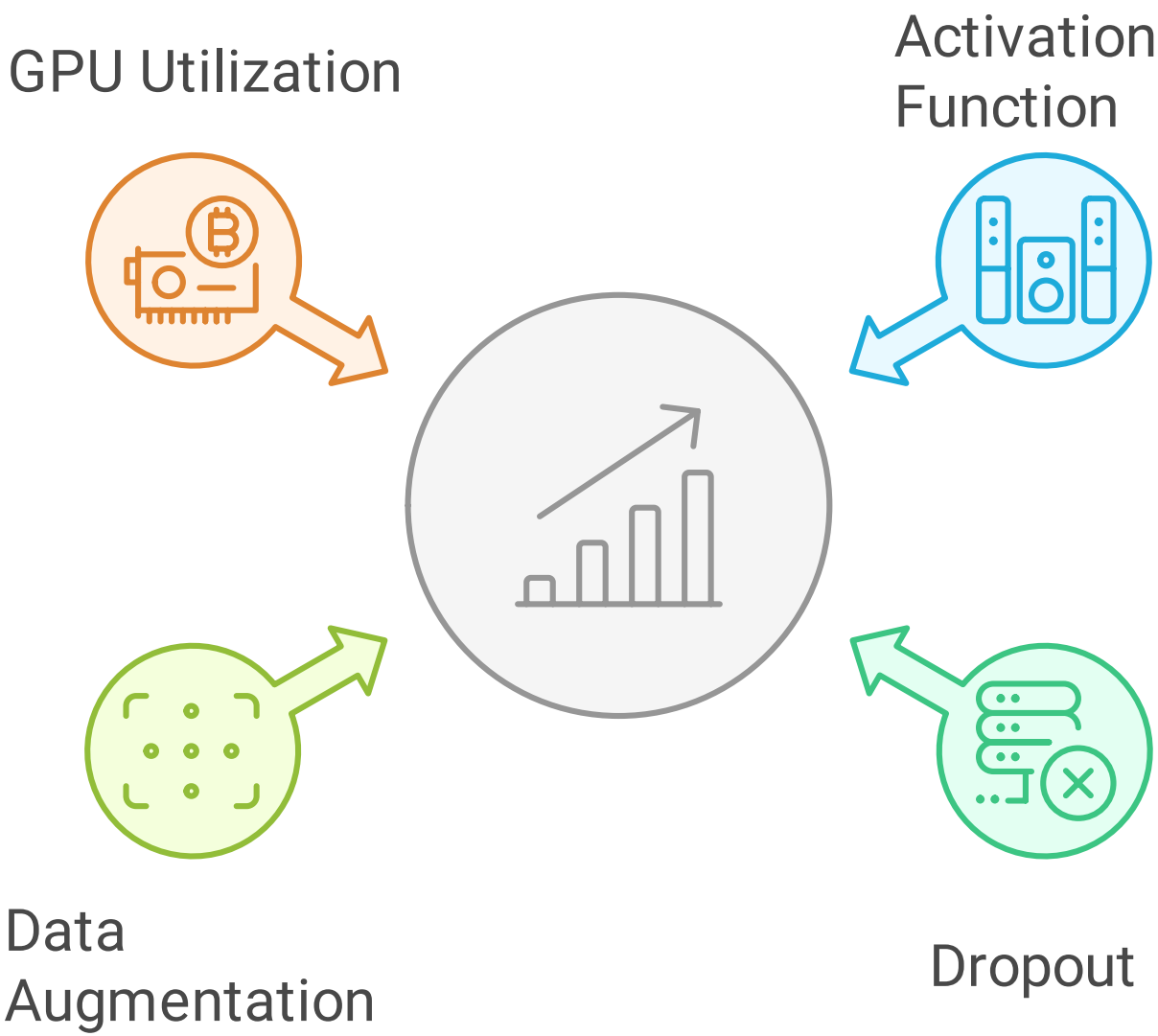
How It Works

- A human evaluator engages in a text-based conversation with both a machine and a human without knowing which is which.
- If the evaluator cannot reliably tell the machine apart from the human, the machine is considered to have passed the Turing test.

Purpose

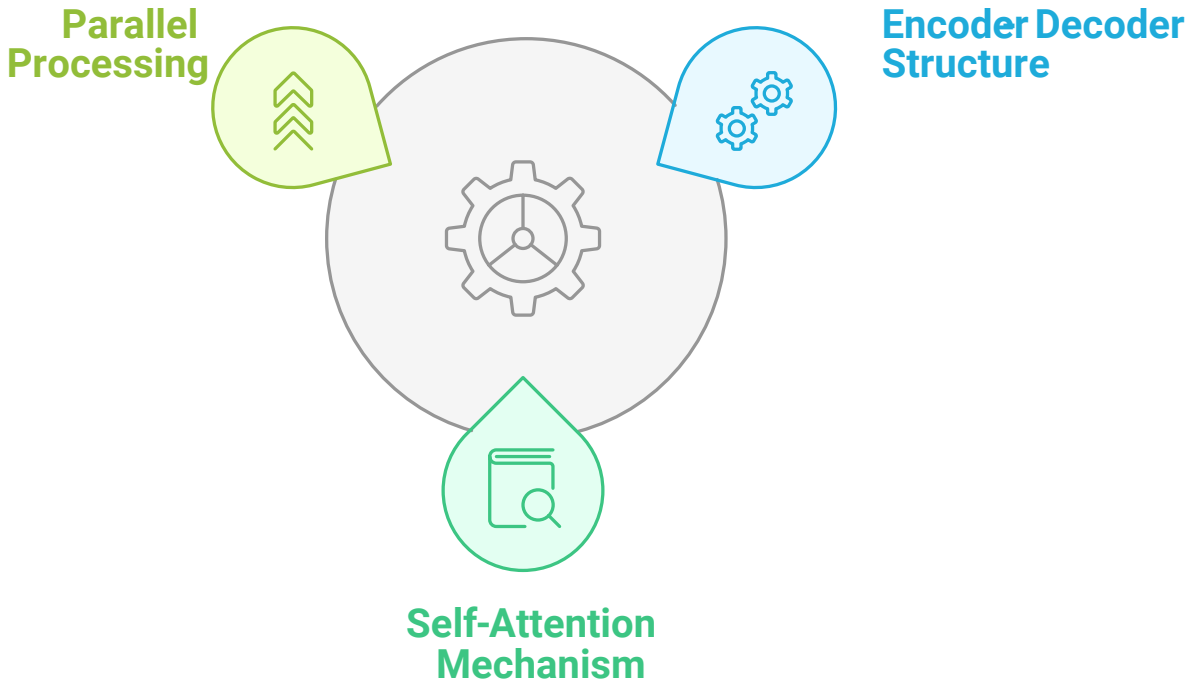
- Turing designed the test to operationalize the question, "Can machines think?" by shifting the focus to observable behavior rather than inner processes.

AlexNet (2012)



- **Architecture**: AlexNet is a deep convolutional neural network (CNN) with eight layers
- **Training**: It was trained on the ImageNet dataset, containing over a million images across 1,000 categories, utilizing GPUs to handle its 60 million parameters.
- **Innovations**: Introduced the ReLU activation function for faster training, used dropout to prevent overfitting, and implemented data augmentation techniques to enhance model robustness.

Transformers (2017)



- **Architecture**: Transformers utilize an encoder-decoder structure to process input sequences and generate outputs.
- **Self-Attention Mechanism**: This mechanism allows the model to weigh the importance of different words in a sentence, capturing dependencies regardless of their position.
- **Parallel Processing**: Unlike traditional recurrent models, transformers process all words in a sequence simultaneously, leading to faster training and improved performance.

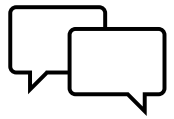
Notes in the Age of AI

NotebookLM

Activity

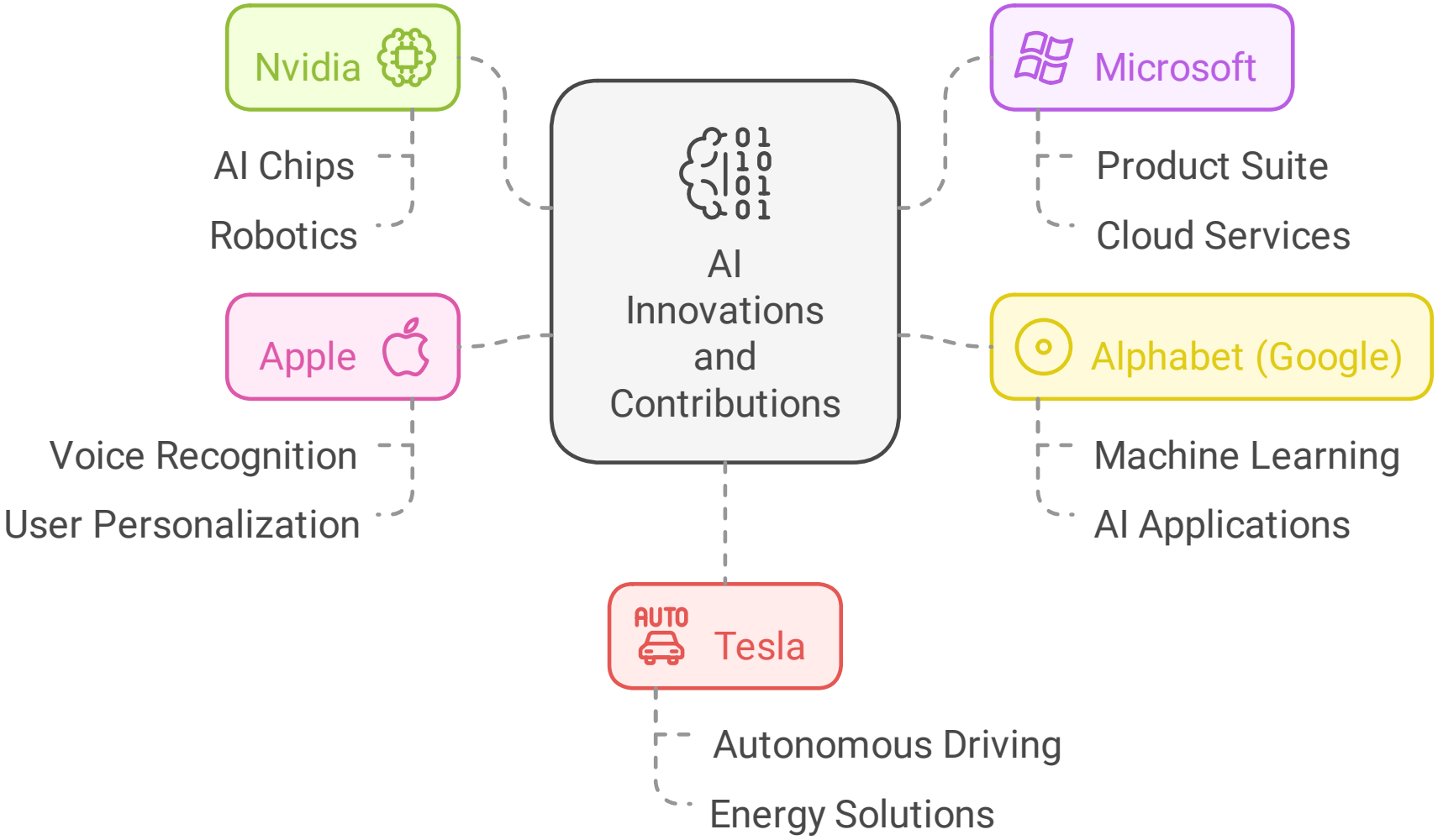
- **Task**:
  - Investigate NotebookLM and evaluate its main use-cases.
  - Use NotebookLM to create a study summary of NotebookLM.
  - Share your summary on MST.

- **Instructions**:
  - Explore the features and capabilities of NotebookLM.
  - Identify key use-cases (e.g., Ai-powered summarization, audio overviews, content organization, chats and analytics).
  - Prepare a note on NotebookLM, summarizing your findings.
  - Discuss what you have found with your team and compare notes.

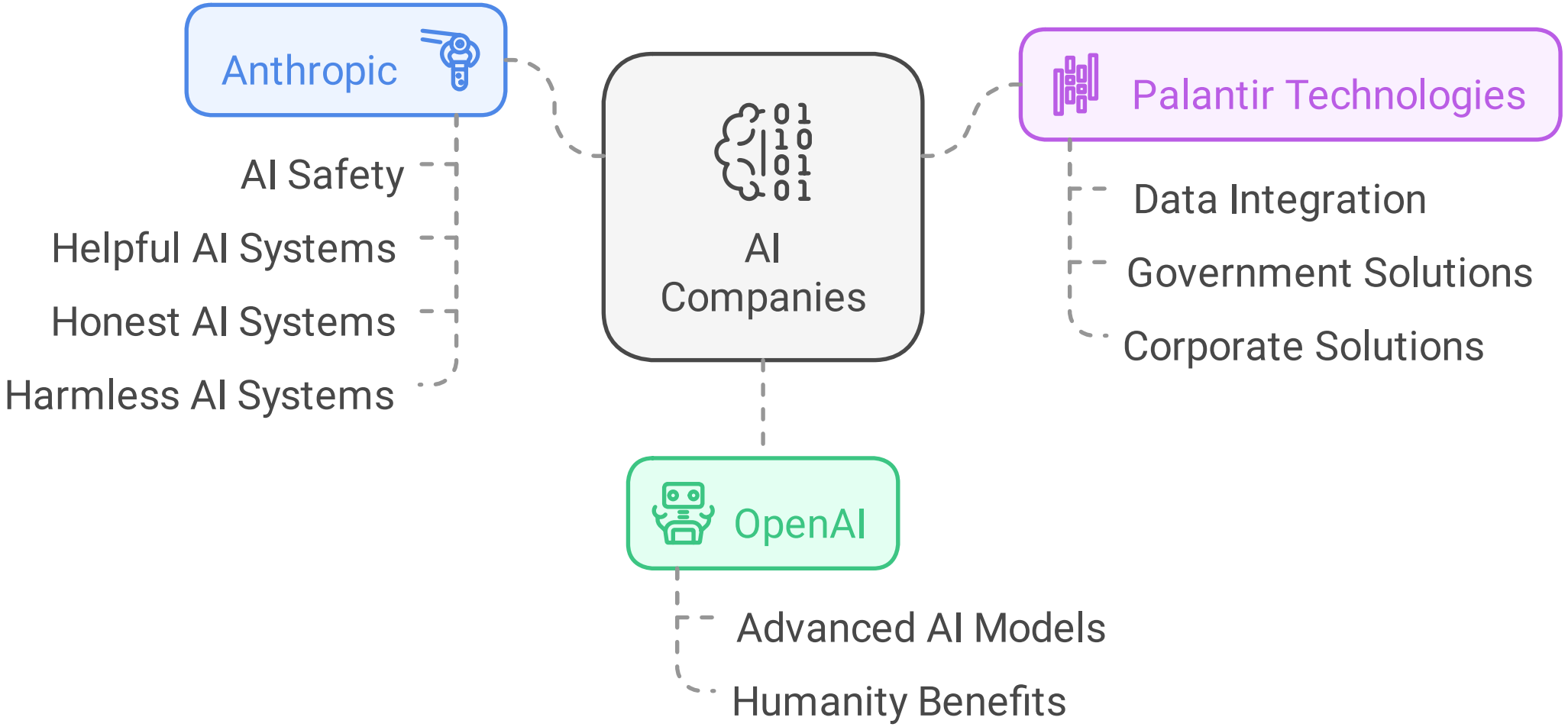


Major AI Corporations and Institutions

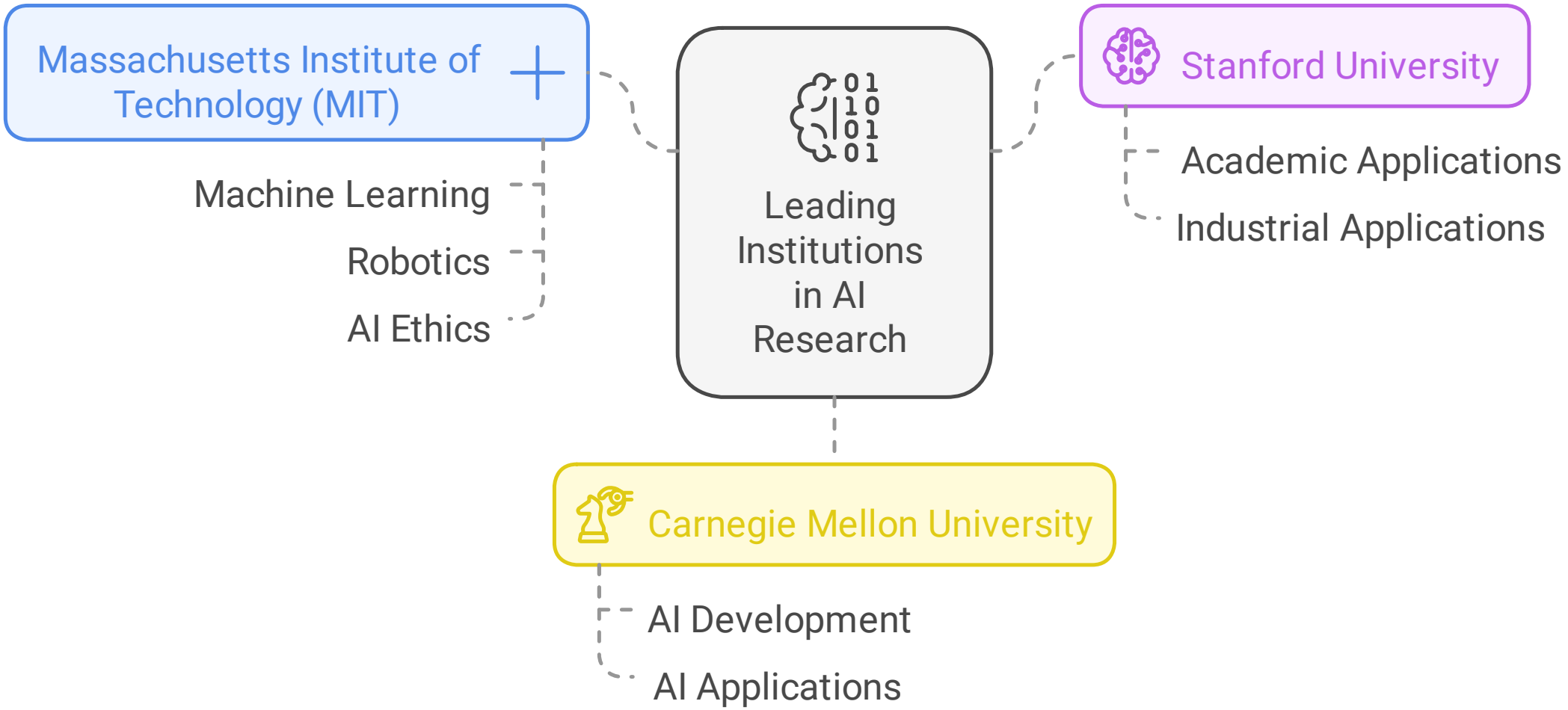
Dominant US Corporations



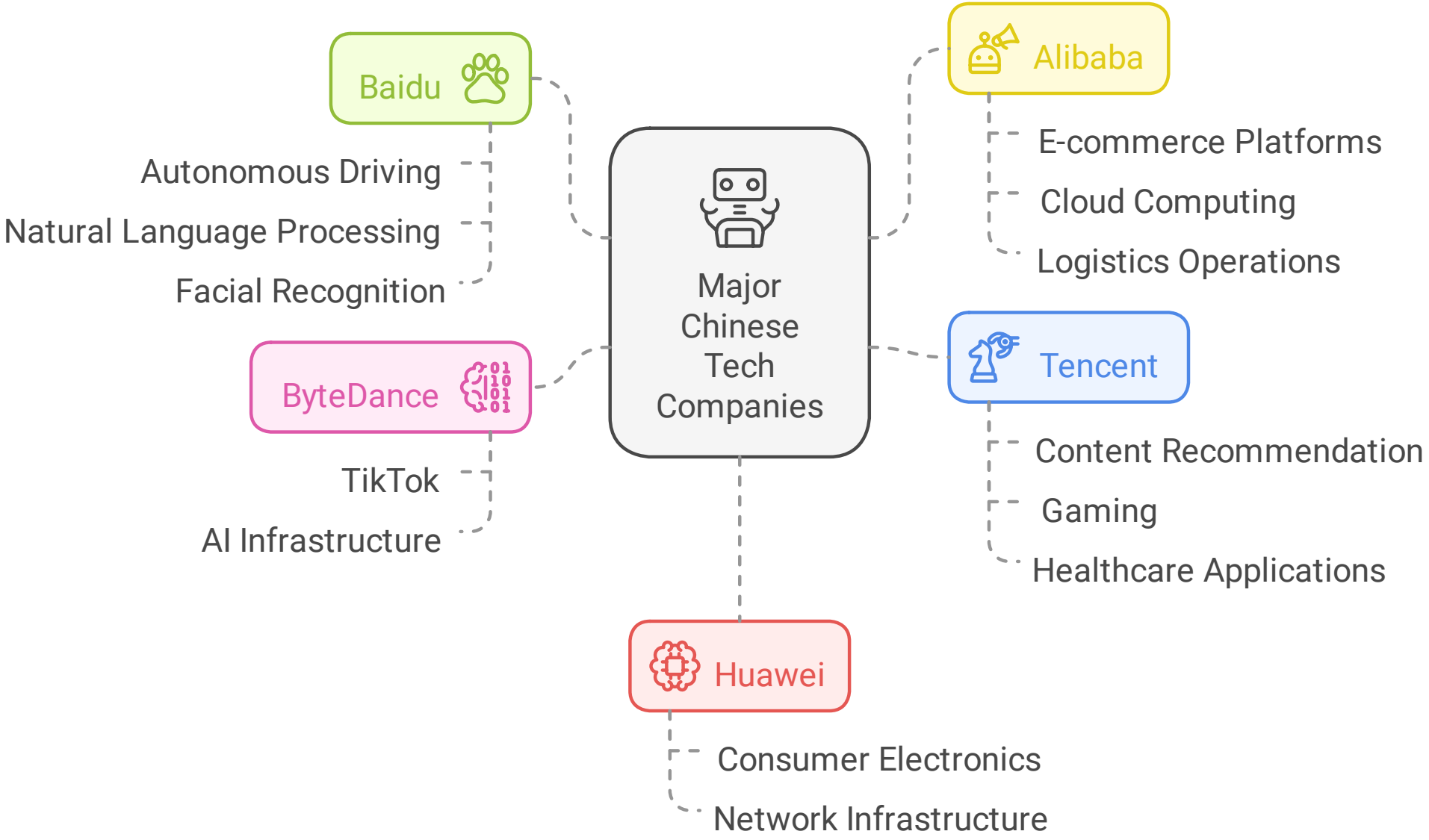
Specialized AI Firms



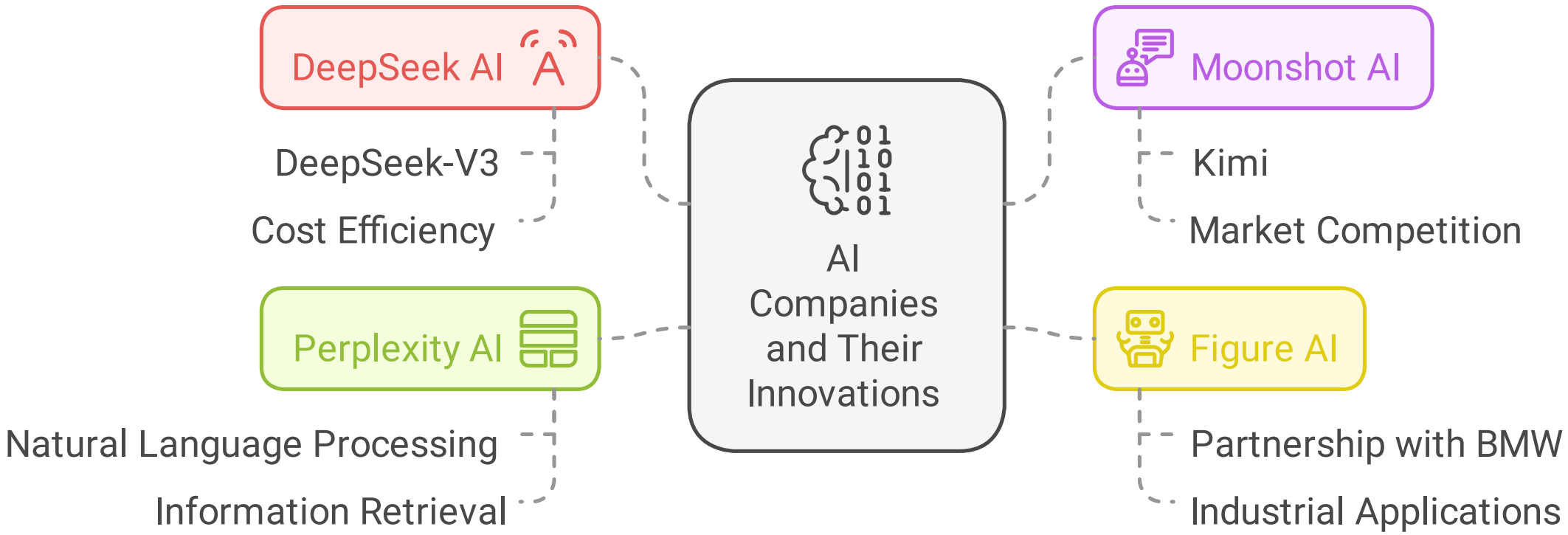
Leading Research Institutes



Asian Heavy-Hitters



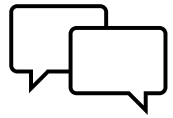
Emerging


DeepSeek AI
DeepSeek-V3
Cost Efficiency
Perplexity AI
Natural Language Processing
Information Retrieval
AI Companies and Their Innovations
Moonshot AI
Kimi
Market Competition
Figure AI
Partnership with BMW
Industrial Applications

The AI Landscape

... it’s bigger than you think

Activity

- Click the following link to load the 2024 MAD (ML, AI & Data) Landscape: https://mad.firstmark.com/
- Use the sliders and + - buttons to navigate.
- Spend a few minutes scrolling around - It's a big world. You can click on any logo for more information on the company. Try to toggle between Landscape and Card.
- Make a note of any companies that you know about, admire or in which you have interest.
- Discussion: Discuss with your group 
- Select three companies that interest you.
- Make a note in MST, with your reason for selection.

Activity

Ai

Kahoot!

Lesson 01

Summary of Material Covered

Lesson 01 Review

- **Overview of AI & Generative AI**:
  Explains AI & Generative AI definitions and key applications in healthcare, finance, and robotics.
- **Key AI Achievements**:
  Covers major milestones: Turing Test, machine learning, expert systems, Deep Blue, AlphaGo, AlexNet, and transformers.
- **Top AI Institutions**:
  Highlights leading companies: Nvidia, Microsoft, Alphabet, Tesla, OpenAI, and key research institutions like MIT and Stanford together with prominent Chines firms Baidu, Tencent and emerging startups like Moonshot and Perplexity.
- **AI Landscape 2024**:
  Provides a snapshot of AI sectors: infrastructure, kernels, applications, and data analytics.

Thank you

School of Infocomm

C240 AI Essentials and Innovations