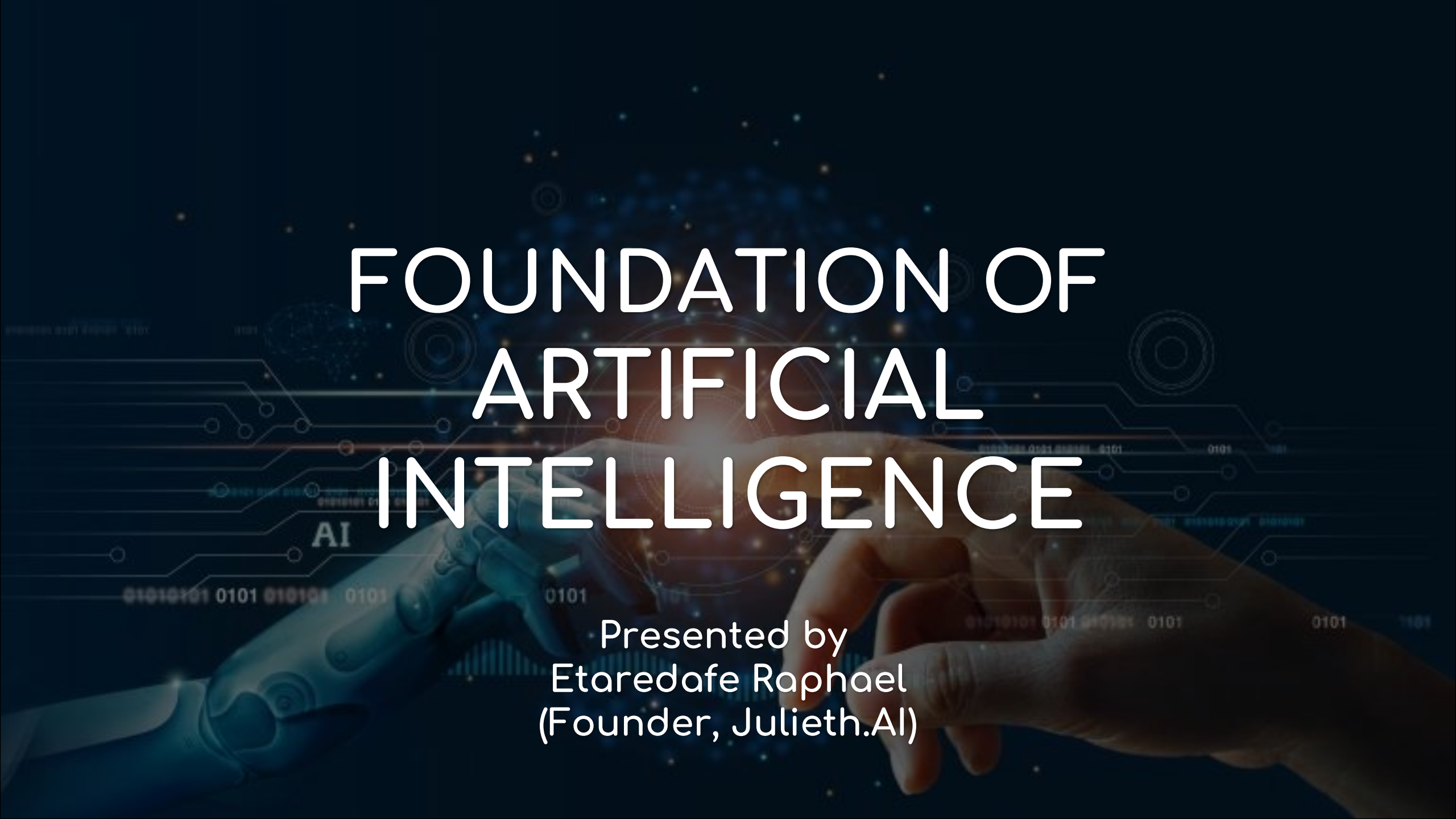


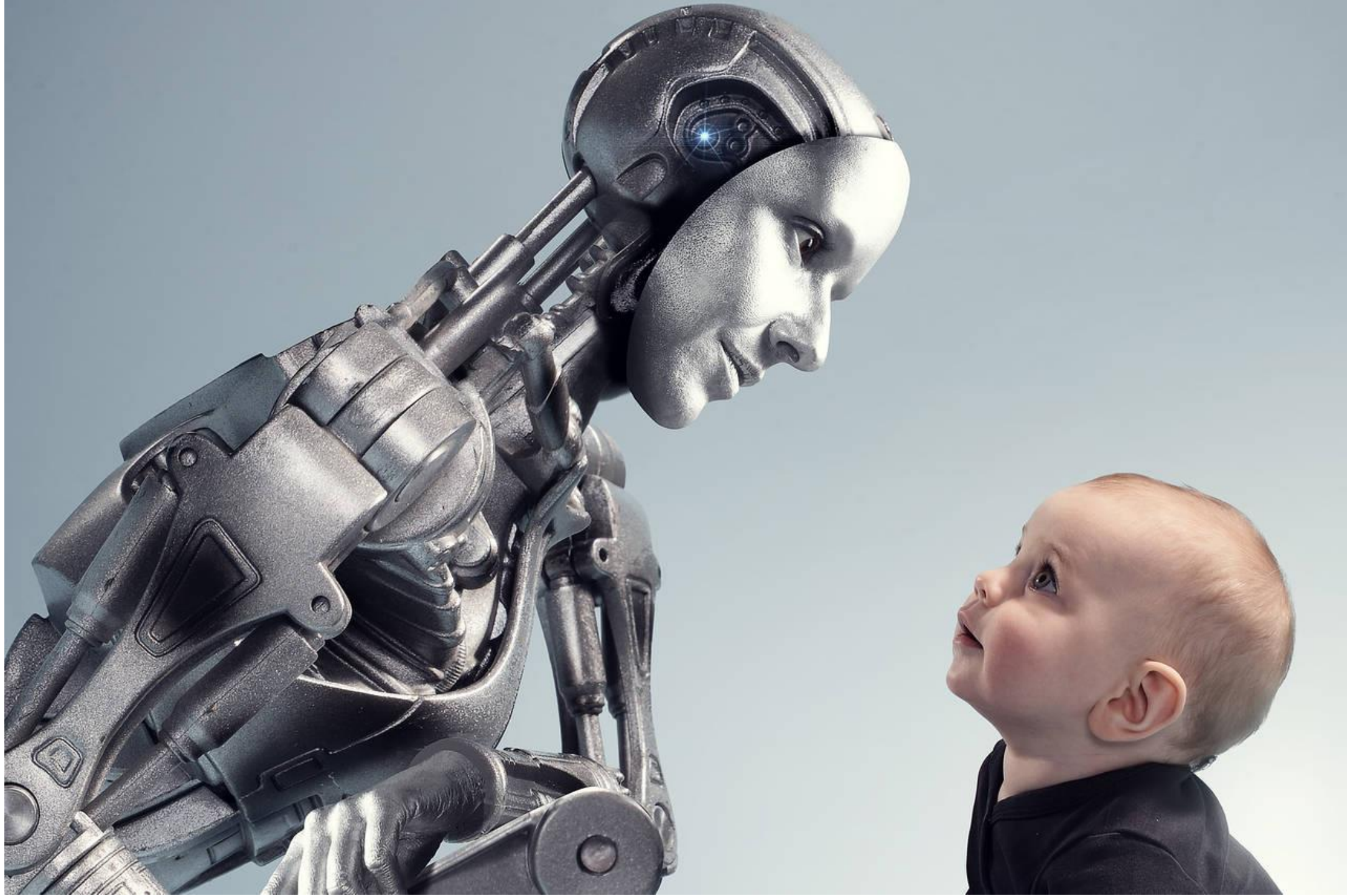
FOUNDATION OF ARTIFICIAL INTELLIGENCE

Presented by
Etaredafe Raphael
(Founder, Julieth.AI)

AI, THE FOUNDATION

An intuitive framework for understanding artificial intelligence.

Intelligence demonstrated by **MACHINES**, as opposed to natural intelligence displayed by humans.



- We will define AI and describe how it's impacting our rapidly changing world
- Simplify the field of AI into five core research areas
- Bringing each research area to life with stories and examples

What is Artificial Intelligence ???

Artificial Intelligence is the **AUTOMATION** of activities we normally attribute to HUMAN THINKING and rationality (logic), such as PROBLEM-SOLVING, DECISION-MAKING, and LEARNING.

How is AI impacting our world?

Business

In one study, researchers found that Fortune500 companies that proactively adopted AI technology have 3–15% higher self-reported margins than their competitors. These early success signals have triggered a wave of investment, motivating VCs and Corp. Dev. departments alike to spend tens of billions of dollars each year to develop and scale new AI capabilities.

Societal Implications

"**AI is the new electricity**. Just as 100 years ago electricity **transformed industry after industry,** AI will now do the same."
- Andrew Ng

- We will define AI and describe how it's impacting our rapidly changing world
- **Simplify the field of AI into five core research areas**
- Bringing each research area to life with stories and examples

Understanding AI

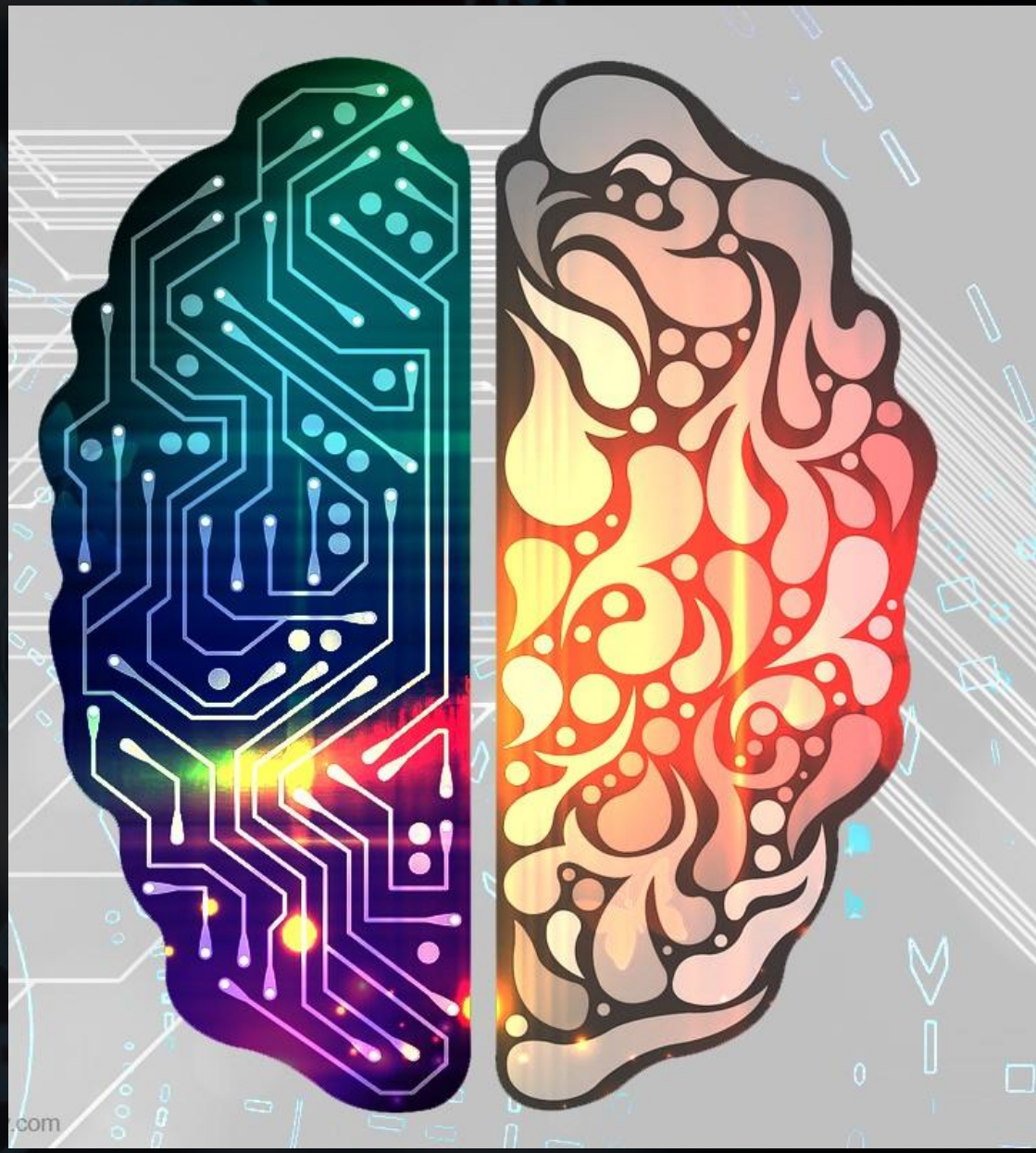
In their 1995 classic Artificial Intelligence: A Modern Approach, Berkeley's Stuart J. Russell and Google's Peter Norvig broke AI into **FIVE DISTINCT RESEARCH AREAS** originating from the Total Turing test:

- Machine Learning
- Expert Systems
- Computer Vision
- Natural Language Processing
- Robotics

Machine Learning

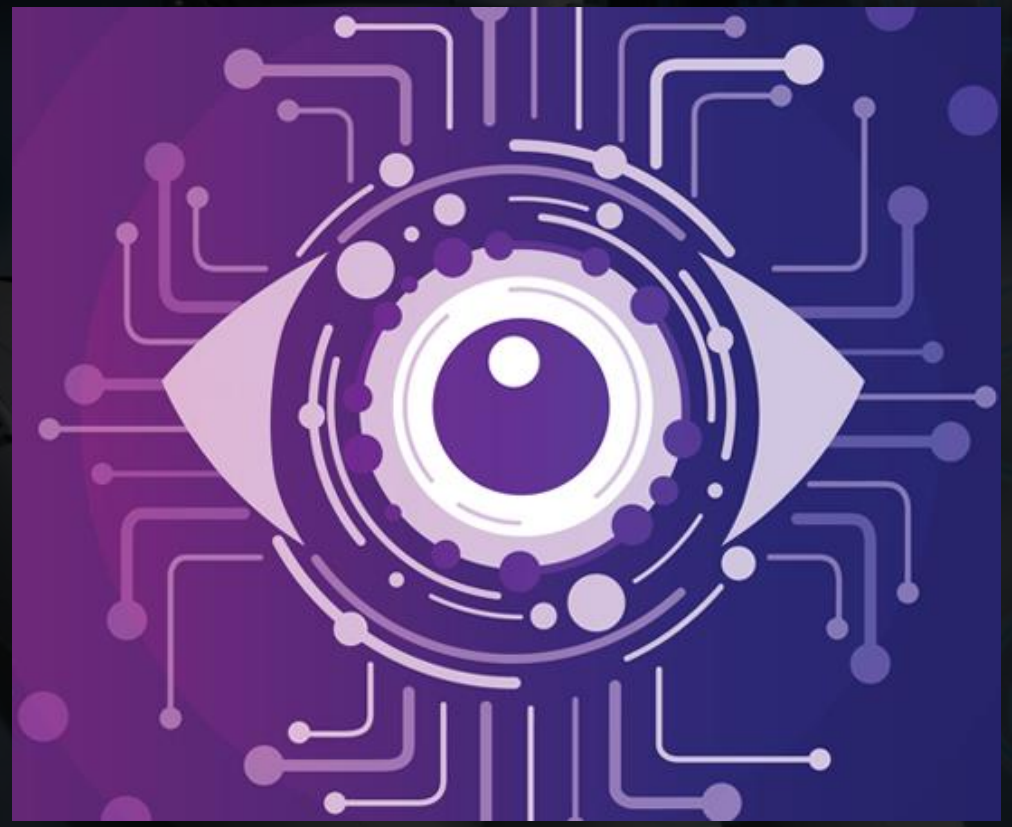
Machine learning (ML) is the science of *empowering* machines to make *decisions* without *human intervention*.

- Supervised learning
- Unsupervised learning
- Semi - supervised learning
- Reinforcement learning



Expert Systems

An expert system (ES) is an artificial agent which *leverages* pre-programmed *knowledge* to offer *advice* or make *decisions*.



Computer Vision

Computer vision (CV) is the automatic extraction, analysis, and interpretation of images or videos. CV converts photos and videos into numerical arrays, enabling ML algorithms to draw inferences, make predictions, and even generate new images based on user-defined inputs.

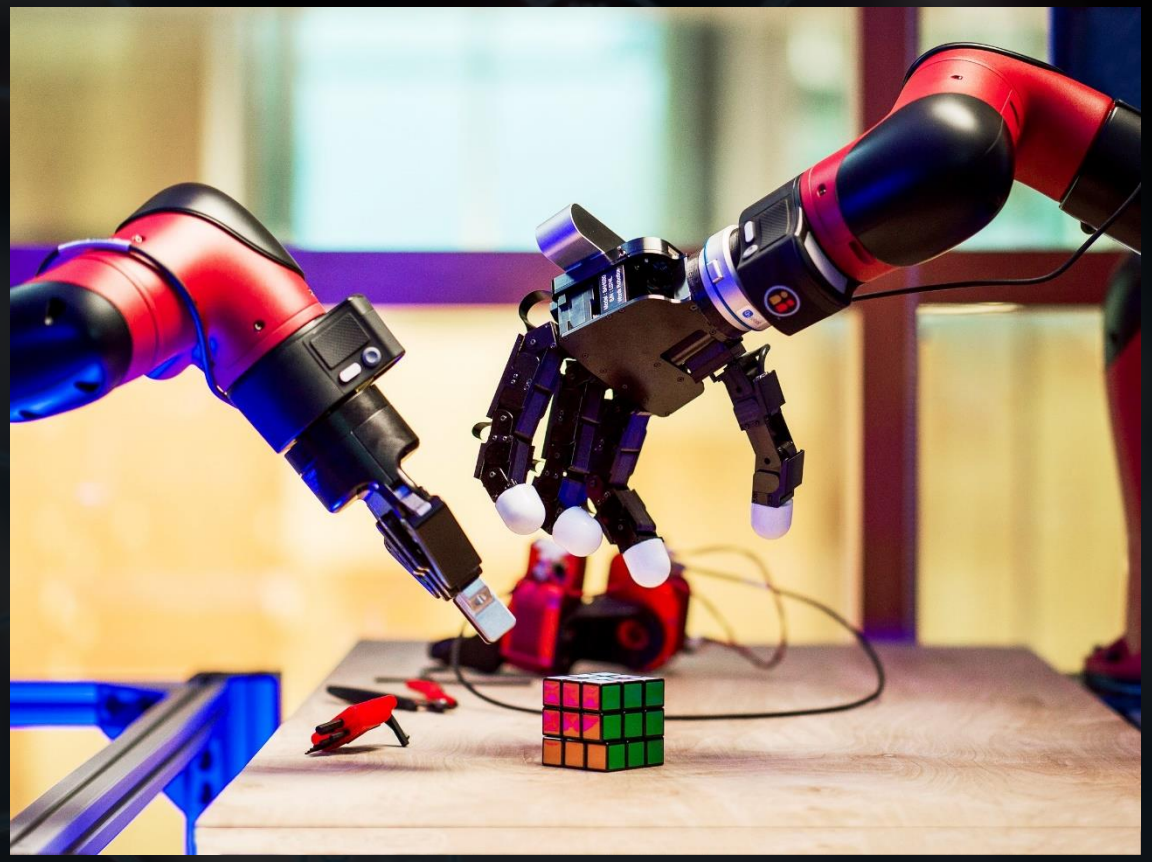
Natural Language Processing

Natural language processing (NLP) is the automatic extraction, analysis, and generation of human language. NLP algorithms parse sentences in various ways (e.g., splitting by word, splitting by letter, reading both left-to-right and right-to-left, etc.) to automatically draw inferences about the writer's meaning and intent.

SIRI
ALEXA
CORTANA
JULIETH

Robotics

Robotics is the science of designing, constructing, operating, and applying robots to solve human problems. Robots come in thousands of shapes and sizes, making it difficult to nail down the precise meaning of the term. Joseph Engelberger, a pioneer in industrial robotics, said it best:



"I can't define a robot, but I know one when I see one."
- Joseph Engelberger

Conclusion

Russell and Norvig's framework provides a useful structure for thinking about AI, but these five categories aren't meant to be mutually exclusive; the most exciting innovations of the last decade have occurred within their intersections. This disciplinary blending will only become more pronounced as time goes on: *delivery drones, self-driving cars, and artificial general intelligence* must tightly integrate all five disciplines if they are to succeed. Still, every complicated problem has to be broken down into its core components before it can be solved, and this five-discipline framework provides a **FOUNDATIONAL MENTAL MODEL FOR UNDERSTANDING AI.**