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Artificial Intelligence
Is it time to try it again?

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The history of modern AI

AI 1.0

1950

Alan Turing publishes “Computing Machinery and Intelligence,” a paper from which the Turing Test emerged.

1956

John McCarthy coins the term “artificial intelligence,” defining it as "the science and engineering of making intelligent machines."

AI 2.0

1980s

Rebirth of AI due to "expert systems," which are programs that answer questions or solve problems using logical rules.

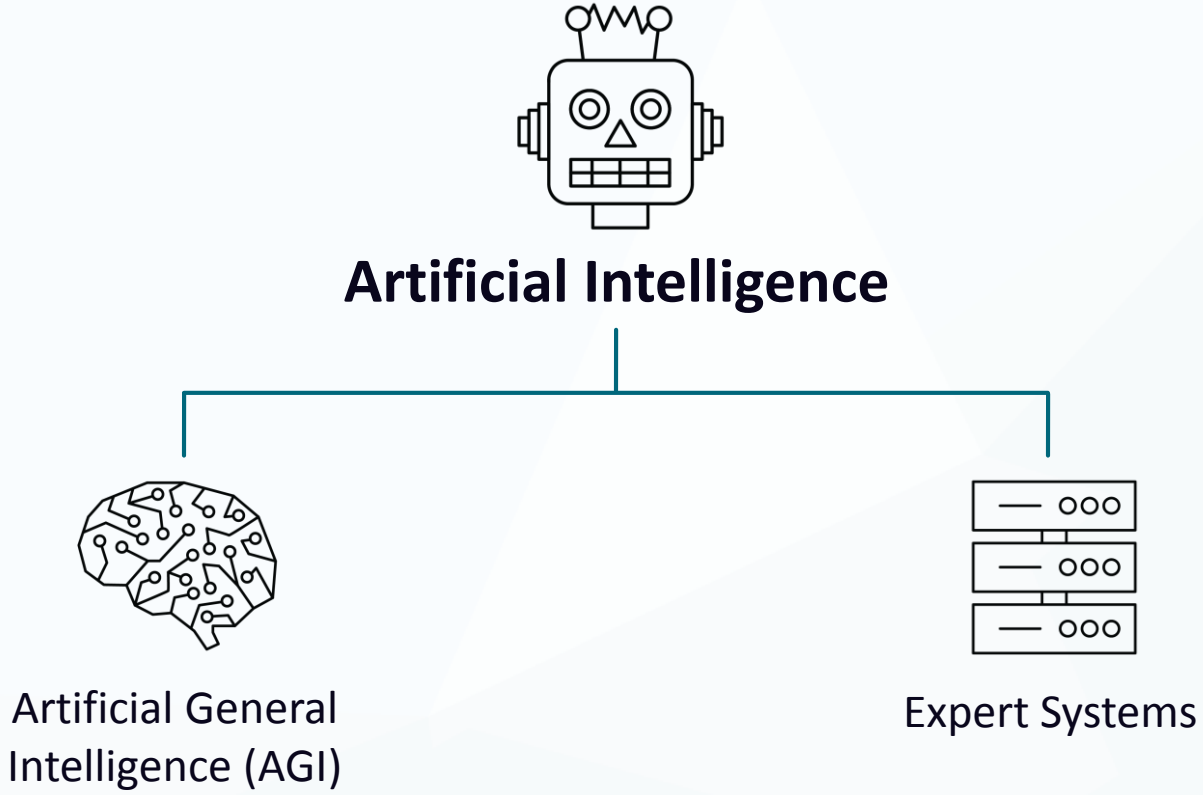
AI 3.0

2000s

Deep learning, a family of machine learning methods based on learning data representations, breaks through.

Deep learning breakthroughs enable scalable AI to solve business concerns, such as Hadoop in 2007 and Darwin™ in 2018.

Artificial intelligence



AI is only 60 years old

And experts broadly believe we will achieve AGI

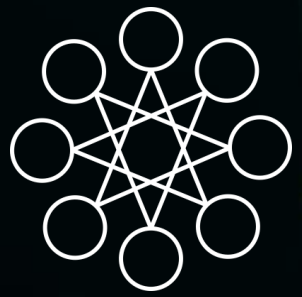
EXPERT GROUP	RESPONSE RATE	10% LIKELIHOOD	50% LIKELIHOOD	90% LIKELIHOOD
PT-AI	43%	2020	2048	2080
AGI	65%	2022	2040	2065
EETN	10%	2020	2050	2093
TOP100	29%	2022	2040	2075
COMBINED	31%	2022	2040	2075

Figure 1: Median dates for human-level AI from AI expert groups (Bostrom, 2014).

Why is AI 3.0 working?

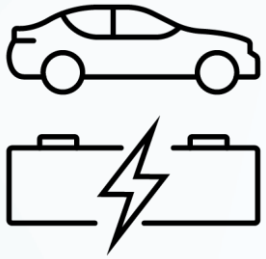
Compute Power

Abundance of Data



Algorithm & Research Breakthroughs

Success of AI 3.0 across industries



TESLA

IBM Watson

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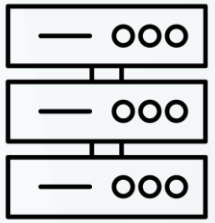
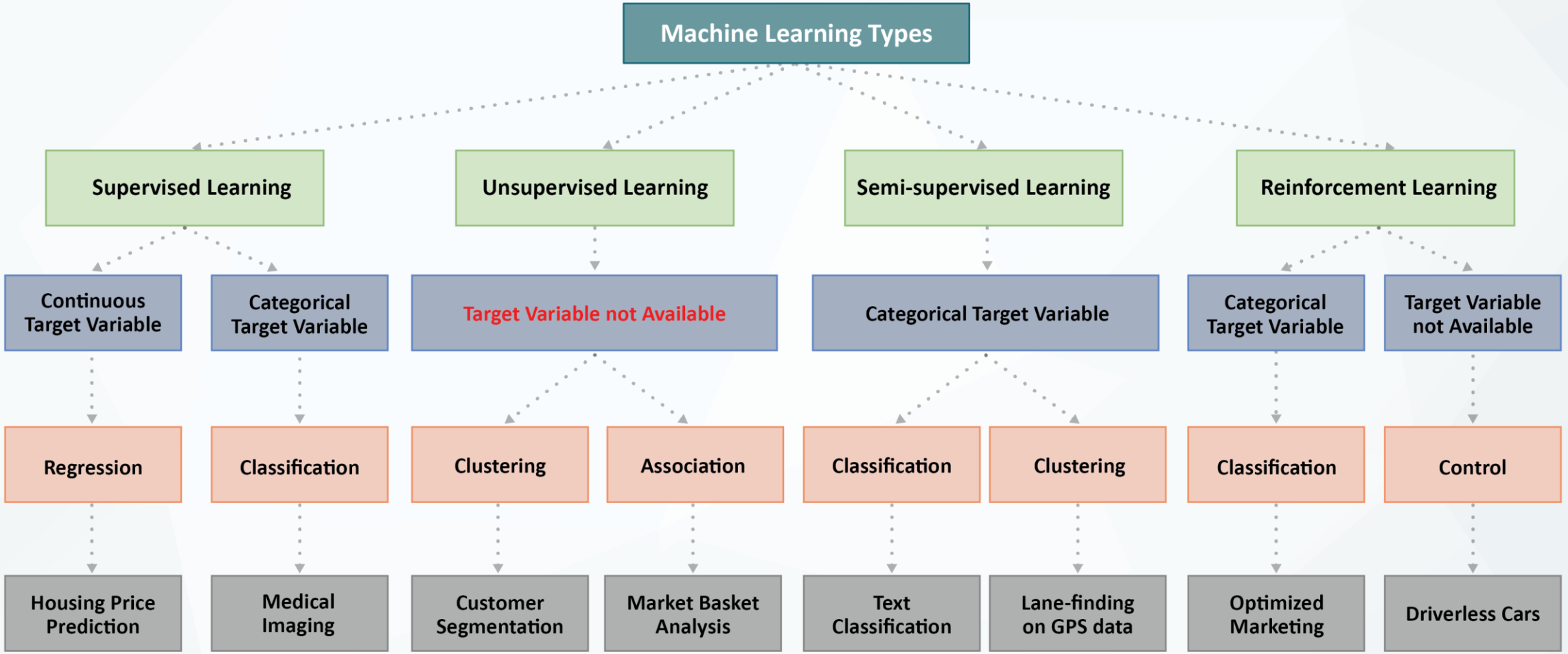
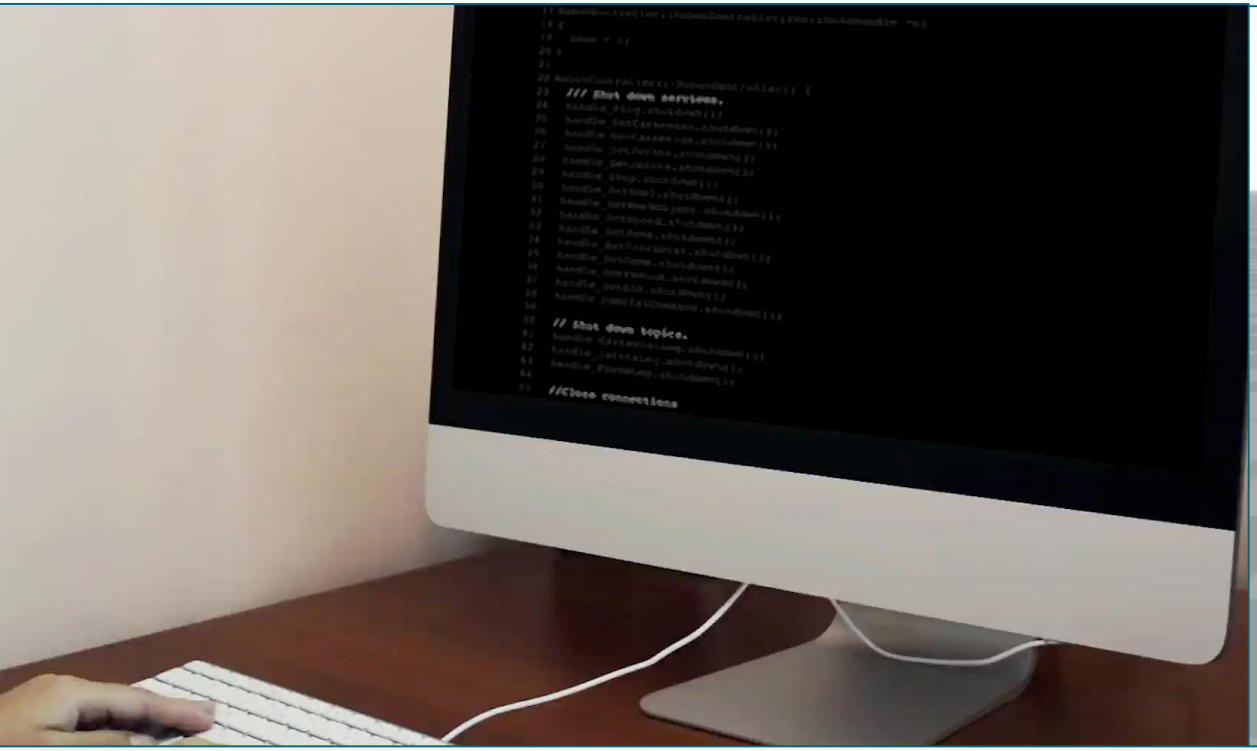


Google

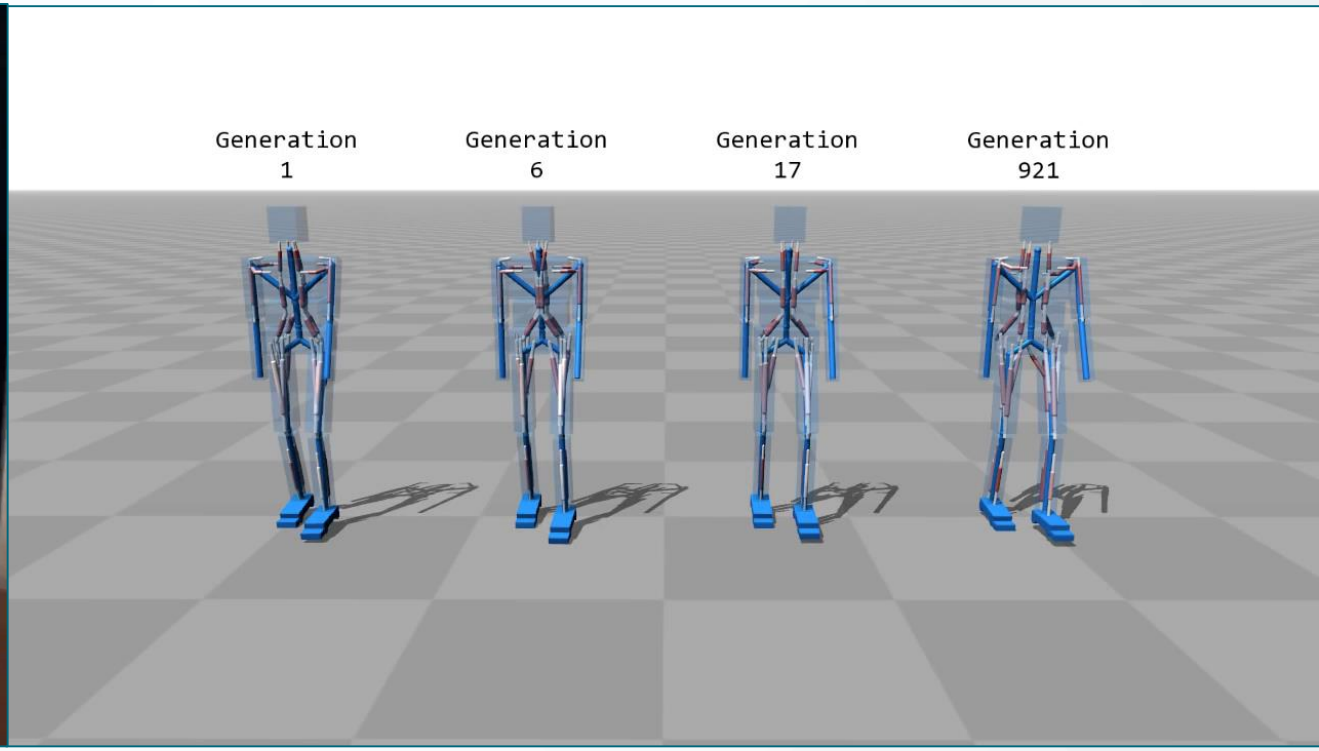
Families of machine learning



Reinforcement Learning: The path to Automation

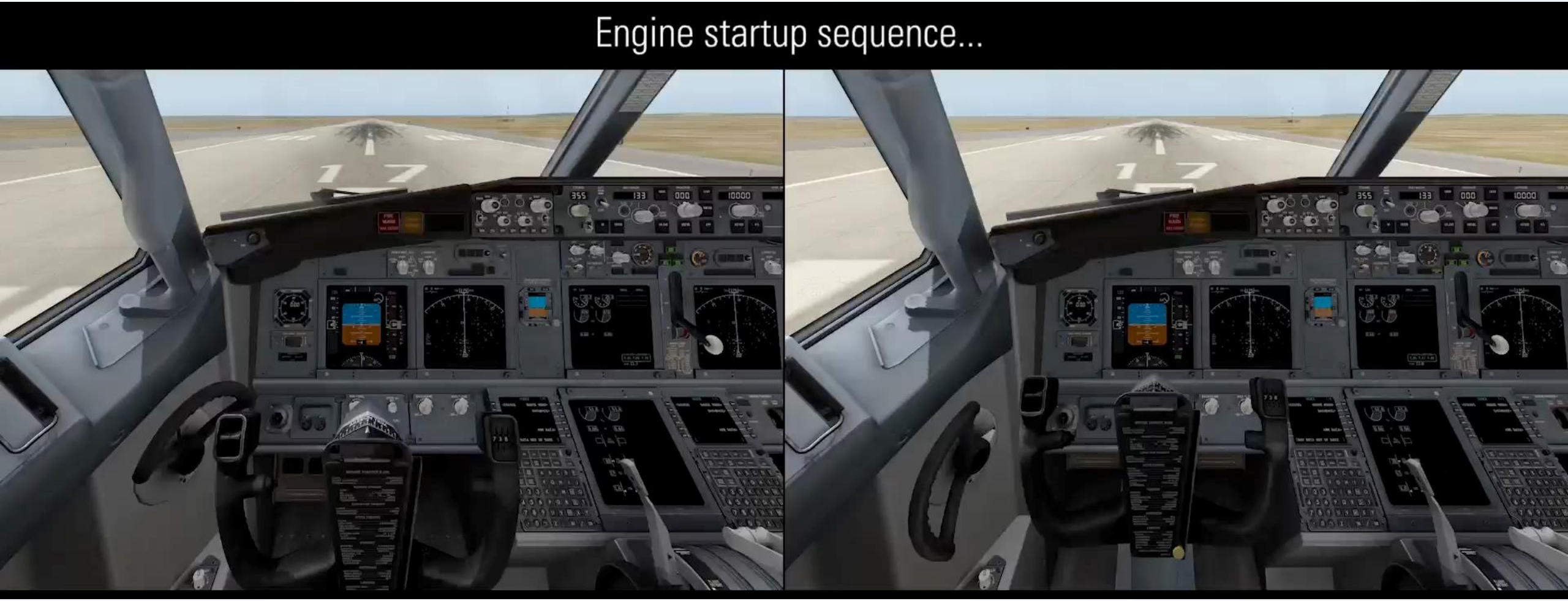


Explicit Instructions “If-Then-Else”



Genetic/Evolutionary Algorithms (AI Technique) Geijtenbeek et. al.

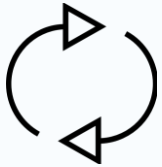
Safety through automation



Where SparkCognition excels

Natural Language Processing & Vision

- Enables recall of answers, in context
- Analysis of human readable text for clues, insights and evidence

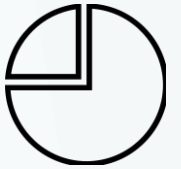


Automated Model Building (AMB)

- Watches data and derives rules
- Incorporates human feedback to strengthen or dismiss conclusions
- Automatically learns from feedback and greater volumes of data
- More data = more accuracy, capability & insight

Deep Learning, Reasoning, and Reinforcement

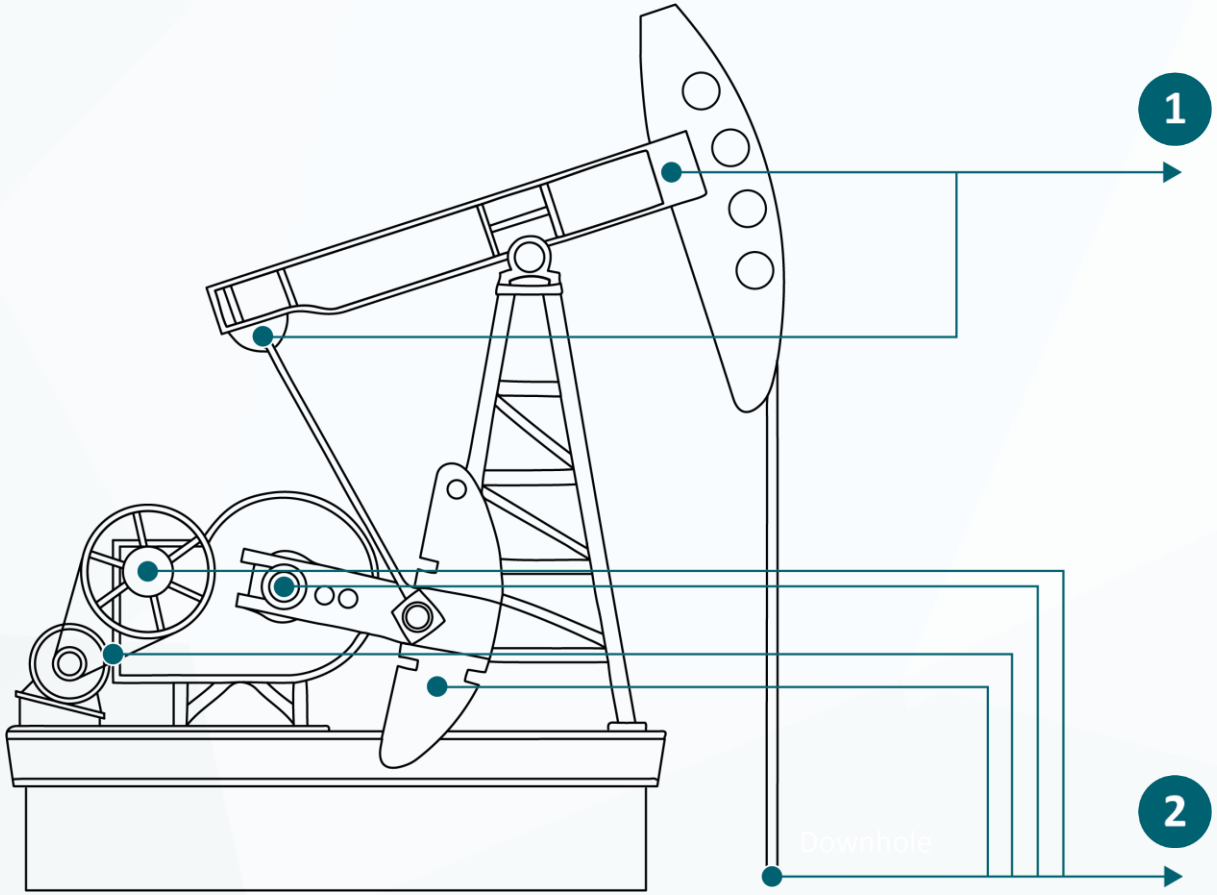
- Improves accuracy
- Learns complex patterns
- Scales efficiently: High speed, large data implementations
- Make decisions in the absence of training data



Powerful Visualization with Explainable AI

- Provides transparency and evidence about what the cognitive system is learning and proposing
- Presents data elegantly – Analyst friendly interface, easy feedback
- Elevates evidence / reasoning for machine decisions

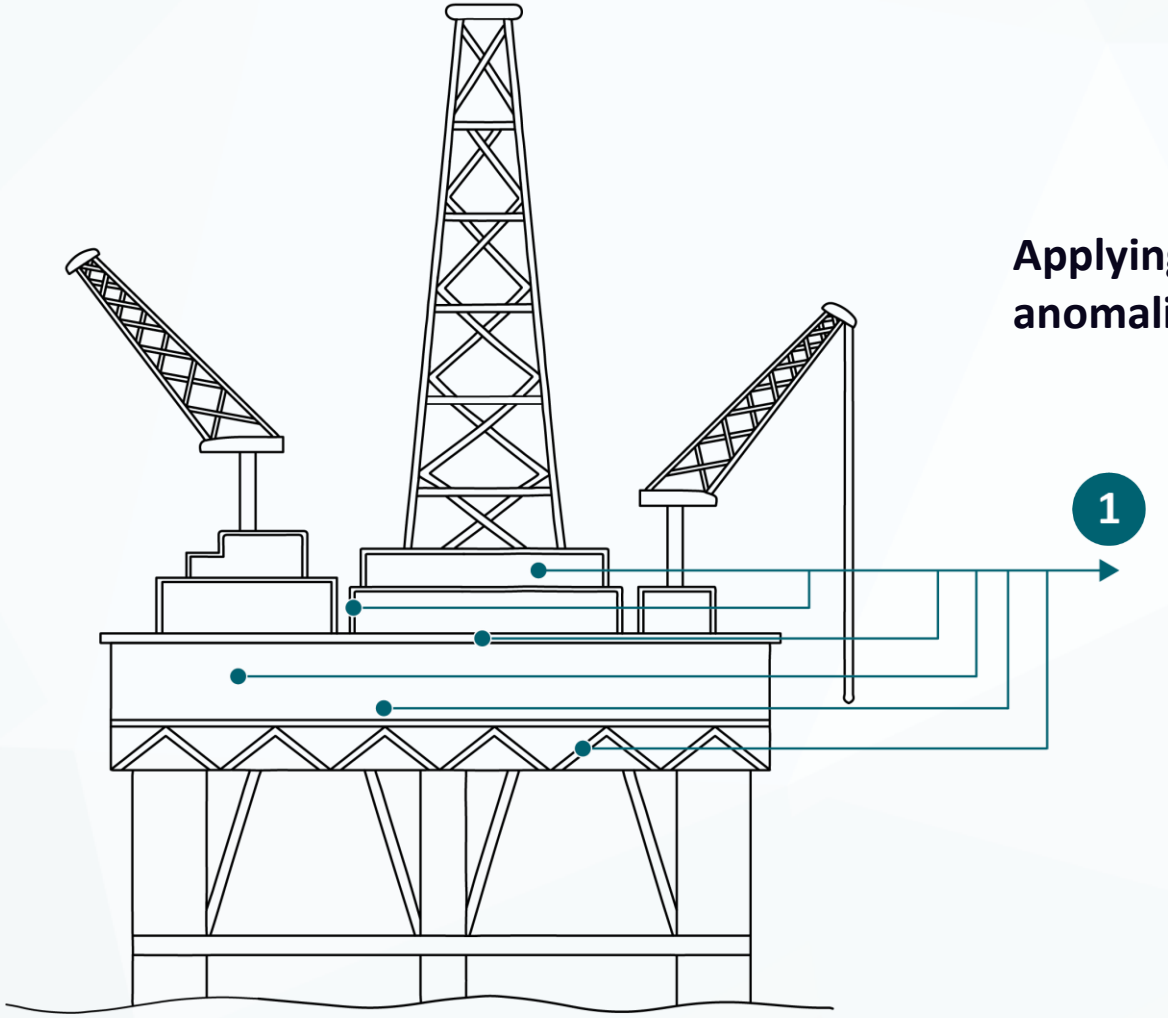
Predictive analytics for workovers and artificial life systems



- Combining daily production data, mechanical sensor recordings and static well properties
- Predicting major failure modes
- Determining main signals of failure

- Predict workover needs
- Predict anticipated production post-workover

For large offshore production platform

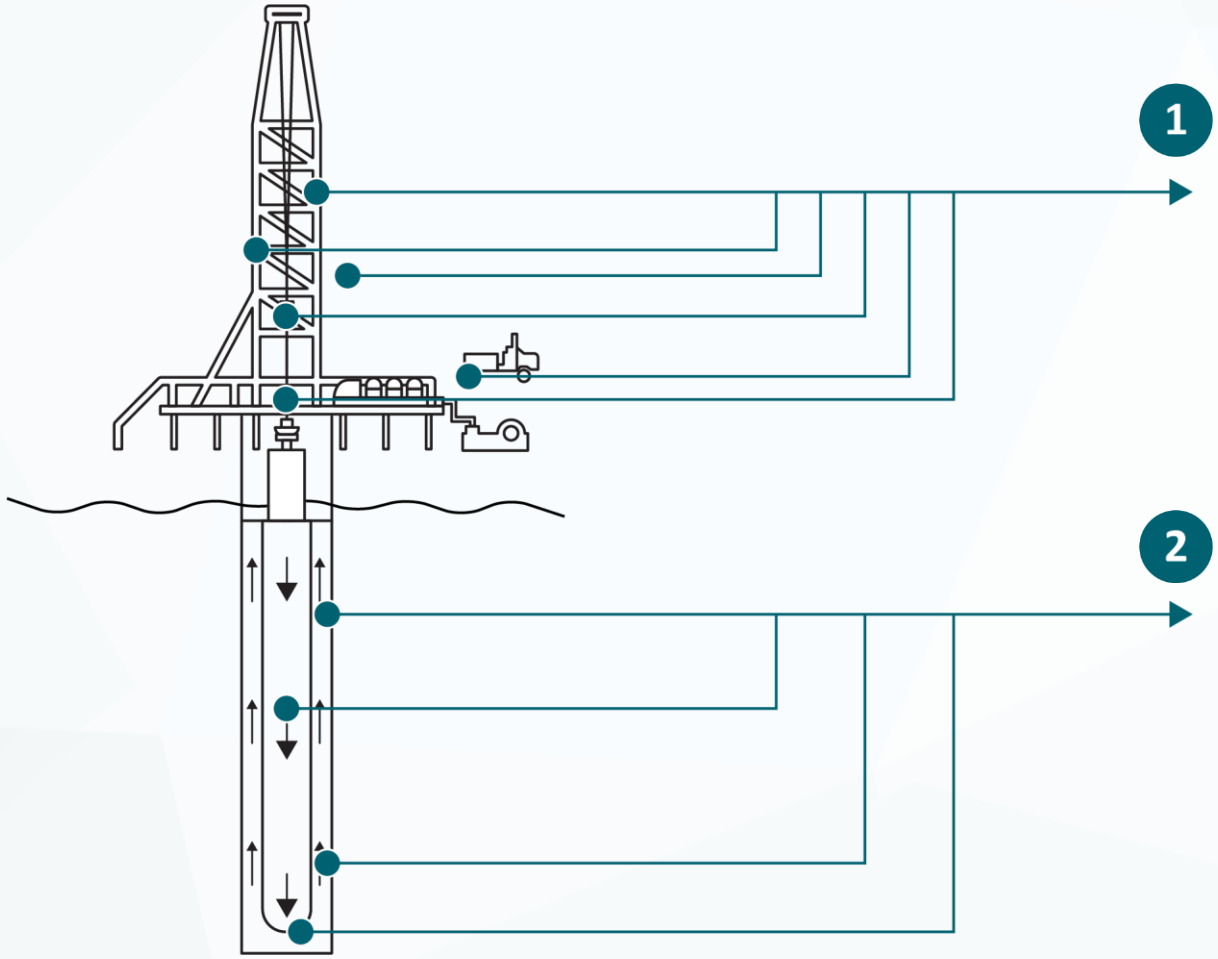


Applying unsupervised learning to detect anomalies for an offshore production system

1

- Monitoring over >10,000 tags to anticipate production loss events

For drilling applications



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- Predict failures on critical drilling systems
- Reduce maintenance and operating costs

2

- Predict drilling dysfunctions
- Optimize drilling

Research
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Graphics
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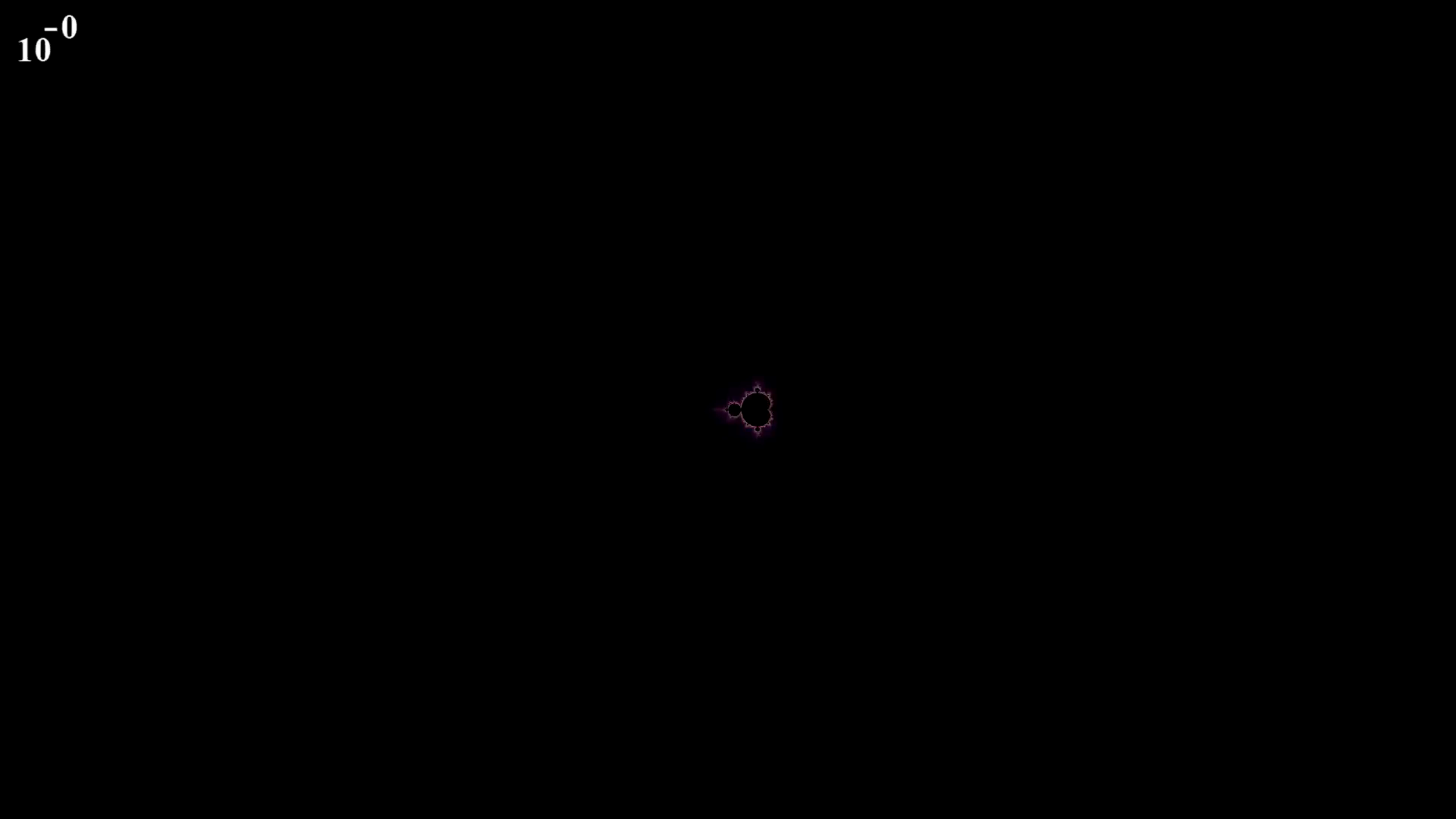
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