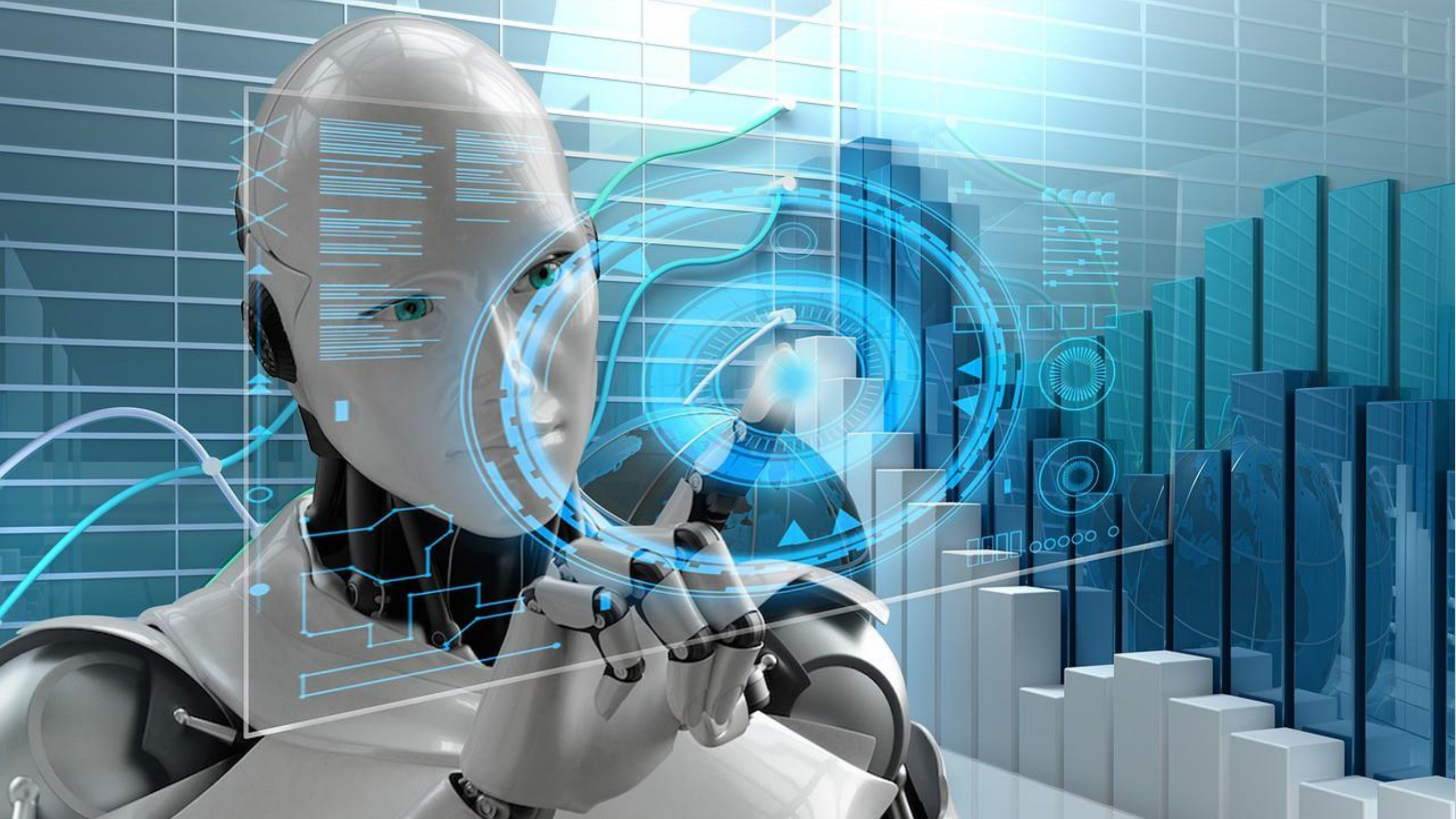
DATA SCIENCE

CONTENT

- Traditional Programming vs Machine Learning
- Common Terminology in this Field
- Artificial Intelligence vs Machine Learning vs Deep Learning
- Data Analytics vs Data Science vs Big Data
- How a Machine Learns?
- Applications of Data Science in Real Life
- Demo



Robots are cool,
but they are useless on their own.

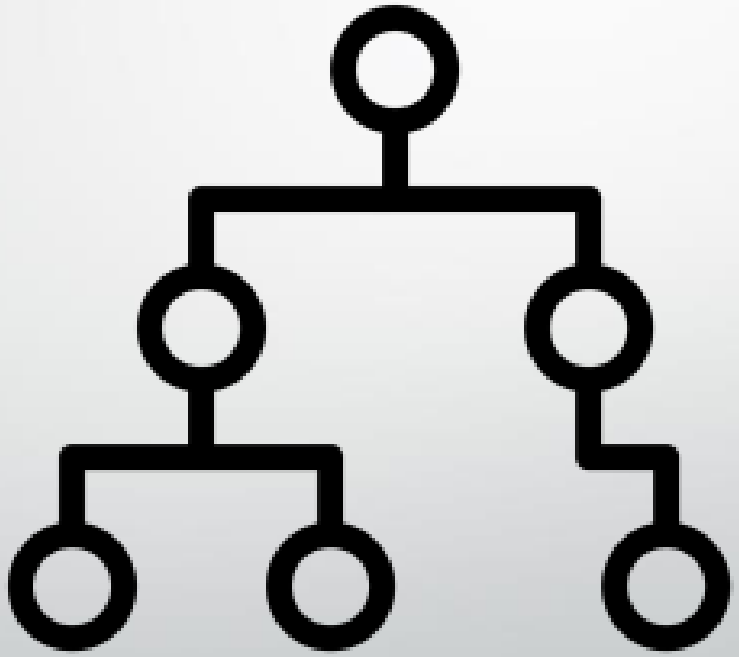
Artificial Intelligence is very useful,
but not as cool.

Artificial Intelligence

provides us a new way for us to talk to the computers

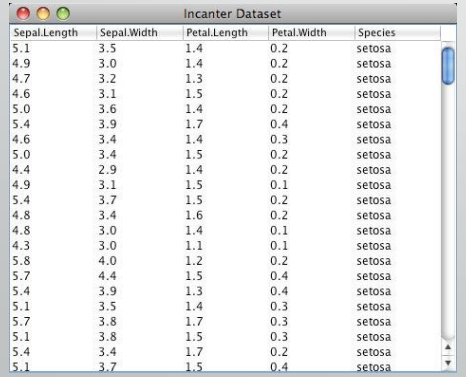
CLASSICAL PROGRAMMING vs MACHINE LEARNING

Algorithms / Set of Rules



Classical Programming

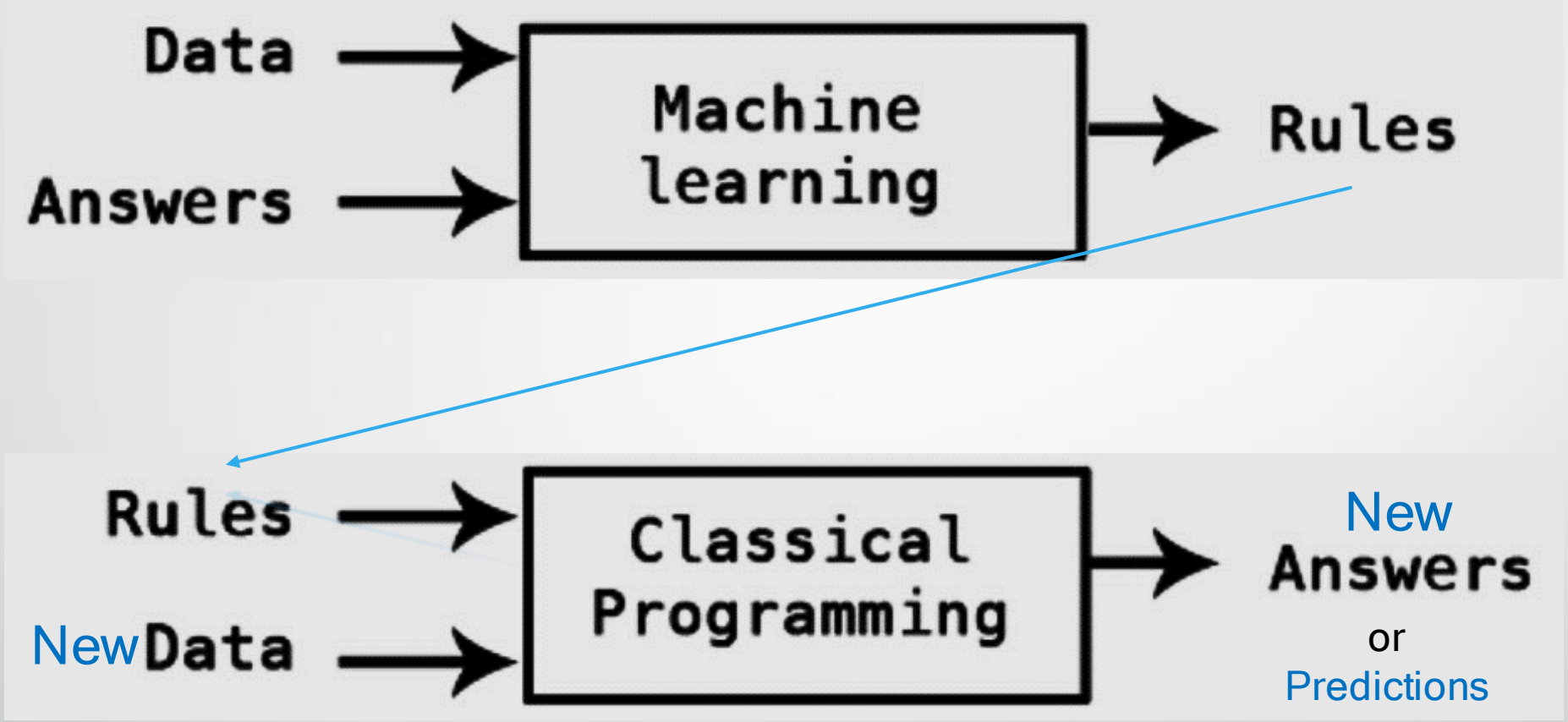
Machine Learning


Incanter Dataset

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa
5.4	3.4	1.7	0.2	setosa
5.1	3.7	1.5	0.4	setosa

Dataset

*This process is called training.


Data
Answers
Machine learning
Rules
Rules
NewData
Classical Programming
New Answers
or
Predictions

COMMON TERMINOLOGY in DATA SCIENCE

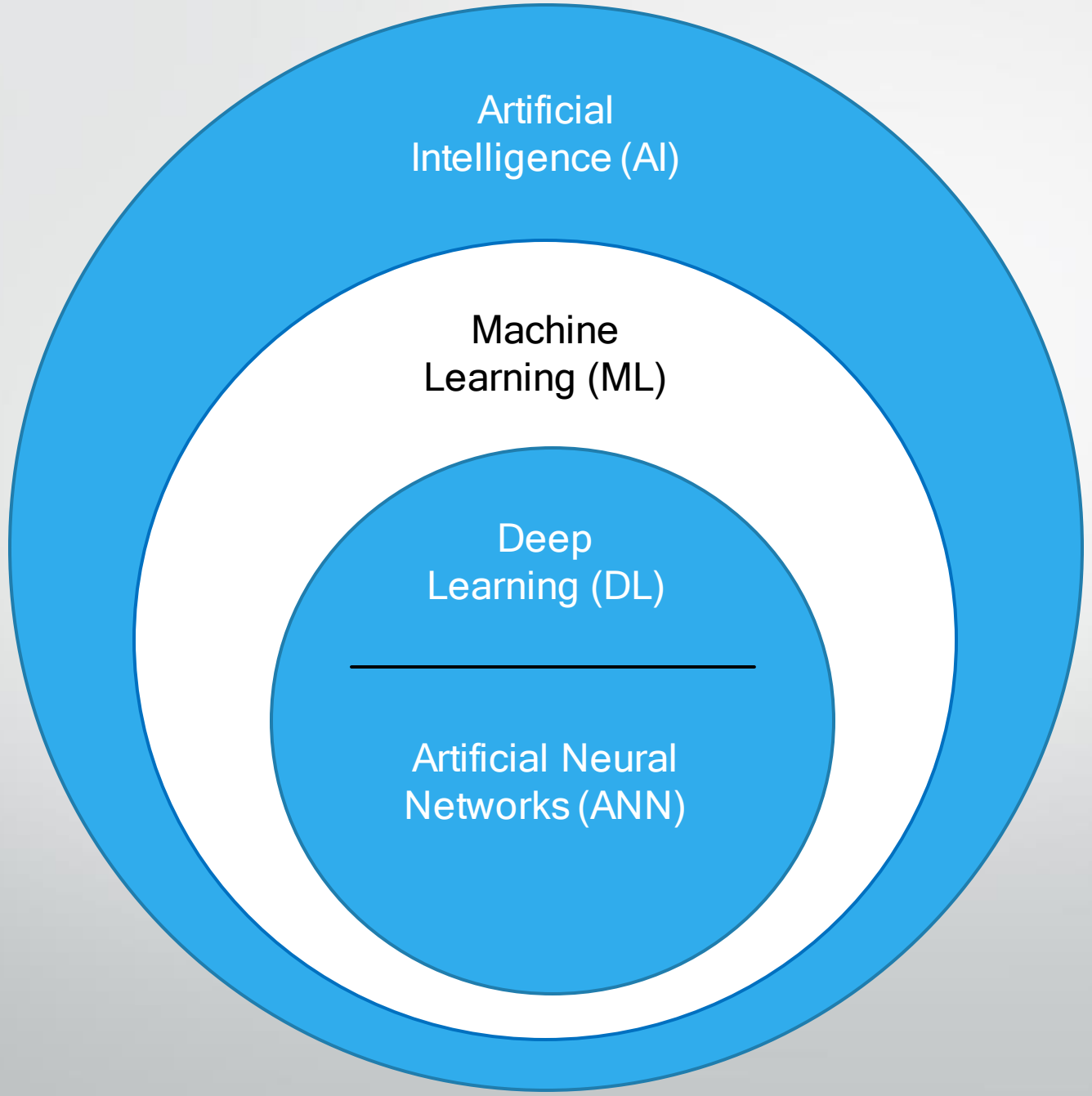

DETECTION
WWW
SOCIAL MEDIA
SERVICES
PROJECTS
BIG DATA
COMPUTING
INFORMATION
TECHNOLOGY
PROMOTION
CONTENT
PROCESSING
MODELS
E-MARKETING
COMMUNICATION
MULTIMEDIA
NETWORK
CONSUMER
ORGANIZATION
PLANNING
CODING
SOFTWARE
BRANDING
COMPUTER
CONSUMER
DEMAND
MARKETS
PREDICTIVE
WEB MARKETING
PROGRAM
ANALYTICS
EVENTS
PROGRAMMING
DATA MINING
DATA SCIENCE
INFORMATION
MACHINE LEARNING
VISION
ENGINEERING
RESEARCH
PROBABILITY
WEB SERVICES
SERVICE
WEB DEV
KDD
COMPUTING
MATHS
PATTERN
BIG
DATA
STRATEGY
WORLDWIDE
VISUALIZATION
BIG
DATA
ENGINEERING
SOLUTIONS
PLANNING
MEDIA
PROJECTS
MOBILE
PRO
PRICING
CODING
SEGMENTATION
SOCIAL
NETWORK
INFORMATION
STATISTICS
SOCIAL
NETWORKS
DIGITAL
TARGET

Common Terminology

- Artificial Intelligence
- Machine Learning
- Deep Learning
- Neural Networks
- Data Analytics
- Data Science
- Big Data

ARTIFICIAL INTELLIGENCE vs MACHINE LEARNING vs DEEP LEARNING

AI vs ML vs DL



AI: Any Machine trying to imitate any task that a human being can do.

ML: The AI Machine imitates human by learning, instead of being explicitly programmed.

DL: The AI Machine learns the way that humans do, i.e. by using Neural Networks

DATA ANALYTICS vs DATA SCIENCE vs BIG DATA

Data Analytics

Small (Bytes, KBs)

Simple (numbers)

Statistics

Data Science

Large (MBs, GBs)

Complex

Statistics
Computers
Machine Learning

Big Data

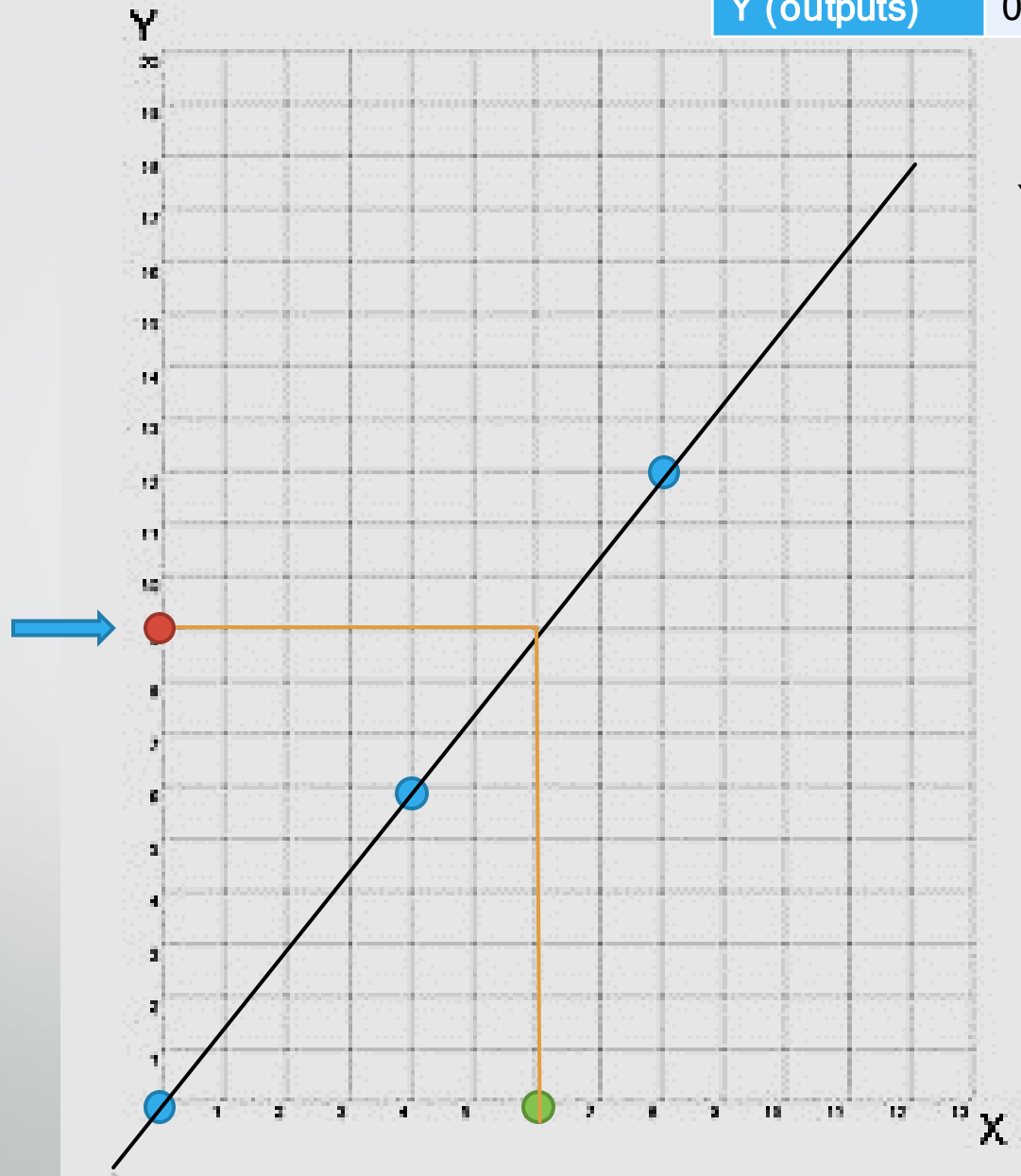
Huge (TBs, PBs)

Complex

Statistics
Multiple Computers
Machine Learning

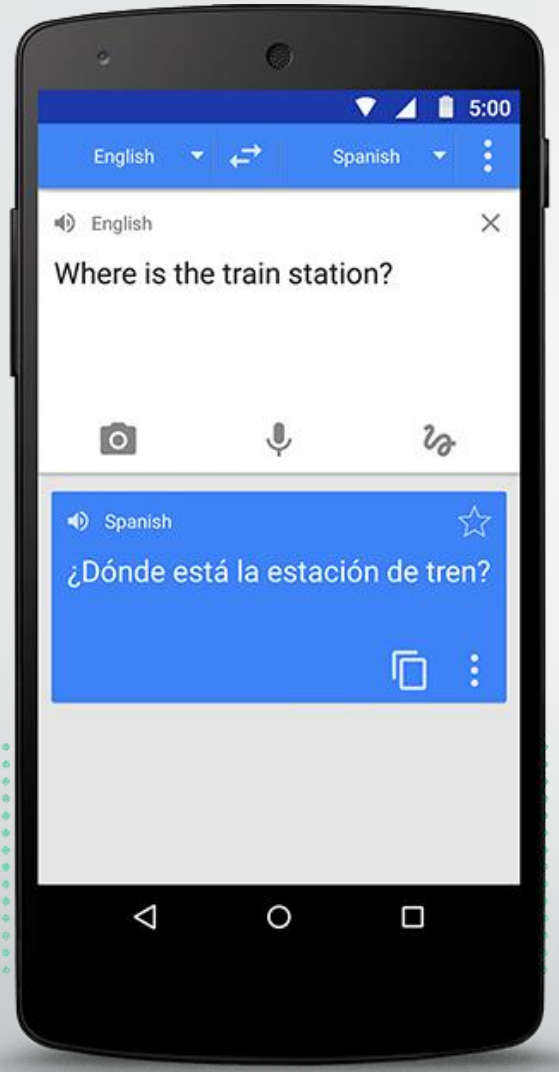
HOW A MACHINE LEARNS?

X (inputs)	0	4	8
Y (outputs)	0	6	12



$Y = mx + c$

APPLICATIONS OF MACHINE LEARNING and DATA SCIENCE


5:00
English
Spanish
English
Where is the train station?
Spanish
¿Dónde está la estación de tren?


現金のみ
Japanese
English
cash only


NETFLIX


amazon


Viper

The Nisqually River Foundation is a Washington-based nature conservation organization. They sought to implement a watershed stewardship plan, but first needed to measure and monitor the fish species present in the Nisqually River. To do this, they installed a video camera and infrared sensors in the water. The camera was triggered to record 30 seconds of video when any fish appeared. Later, the videos were reviewed and the fish were manually identified. This was a time-consuming, inefficient process, so when the organization decided to do this a second time for the salmon species, they turned to Gramener for an automated, tech-driven solution.

Gramener, a data visualization and predictive analytics company, implemented a web-based artificial intelligence (AI) program. It is projected to deliver the Nisqually River Foundation savings of up to 80 percent.

One of the start-up world's profitable unicorns, Airbnb was one of the few companies that included a data scientist within its initial team so it could evolve as quickly as possible.

The company experienced 43,000-percent growth in just five years, so the strategy clearly worked.

If you're a music lover, you've probably used Spotify at least once. If you're a regular user, you've likely taken note of their personalized playlists and been impressed at how well the songs catered to your music preferences. But have you ever thought about how Spotify categorizes their music? You can thank their data science teams for that.

They analyse the music of various artists, segment the styles, and categorize them by loudness, danceability, energy, and more.