AI Unleashed

Exploring this tech world of AI, ML, Deep Learning, Data Science

About Me

A **pre-final year student** at Atria University and **a passionate developer** with 2 years of experience in Industry.

Actively engaged with startups / small businesses to scale using technology.

Community Speaker with more than 7 talks in past one year across diverse topics like Computer Vision, Drones, AI, Tiny ML etc.

Ardent Nature Lover, likes to explore beauty of nature through treks, visits to waterfalls and immersing in serene environment.

1 Alpha Microsoft Learn Student Ambassador

2 Technical Project Manager @ Atria Foundation

3 Software Developer Manager & Data Analyst @ iCrested UK

4 Author ~ "From Data to World : 5 Real World Secrets with Data Science"

How many of you work in the domain of AI **and** ML?

AI & ML

is just like...

**Ice-Cream
and
Chocolate Ice-Cream**

Stop saying AI and ML.
You're saying ice cream and chocolate ice cream.

AI is an umbrella term and a vast field with various subfields and techniques.

1. Machine Learning:
- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning
- Semi-Supervised Learning
- Transfer Learning
- Ensemble Learning

2. Deep Learning:
- Artificial Neural Networks
- Convolutional Neural Networks (CNNs)
- Recurrent Neural Networks (RNNs)
- Generative Adversarial Networks (GANs)
- Transformer Networks

3. Natural Language Processing (NLP):
- Text Classification
- Named Entity Recognition (NER)
- Sentiment Analysis
- Language Translation
- Question-Answering Systems
- Text Generation

Artificial Intelligence!

Any technique that enables computers to mimic human behavior.
Example : Chatbots

Evolution of AI

1955-1956
John McCarthy coined term : "Artificial Intelligence".

1961
Unimate : First Industrial Robot to automate assembly line.

1964
Eliza : First NLP engaged in a conversation with humans.

1966
Shankey : First mobile robot project was launched.

2014
Home assistant alexa by Amazon

2011
Siri & Watson

1998
Kismet: First expressive humanoid robot

1997
Deep Blue: IBM's chess playing Deep Learning Model

2016
A humanoid robot Sophia by Hanson Robotics.
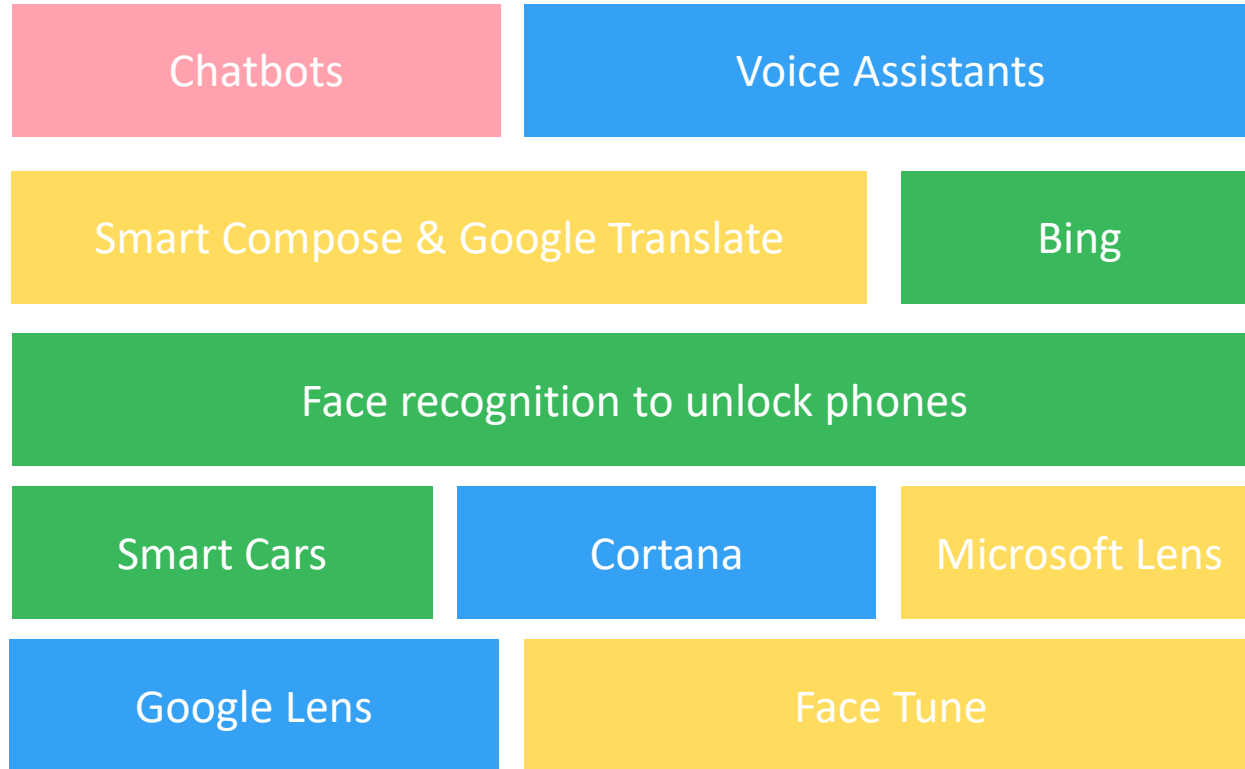
2017
Dialog agents by Facebook

2018
BERT by Google (Transformers)

2020 - Present
GPT Models

Examples of AI

Chatbots

Voice Assistants

Smart Compose & Google Translate

Bing

Face recognition to unlock phones

Smart Cars

Cortana

Microsoft Lens

Google Lens

Face Tune

1. Computer Vision

2. Natural Language Processing

3. Robotics

4. Intelligent Systems

Careers in AI

Computer Vision Specialist

Natural Language
Processing Engineer

Robotics Engineer

Technical Roles

Algorithm Designer

Software Developer

Product Manager

AI usage Analyst

Policy & Ethics Specialist

Non-technical Roles

Application Designer

Project Analyst

Policy & Ethics of AI

Policy & Ethics of AI

1. Fairness & Transparency

2. Privacy & Security

3. Reliability & Safety

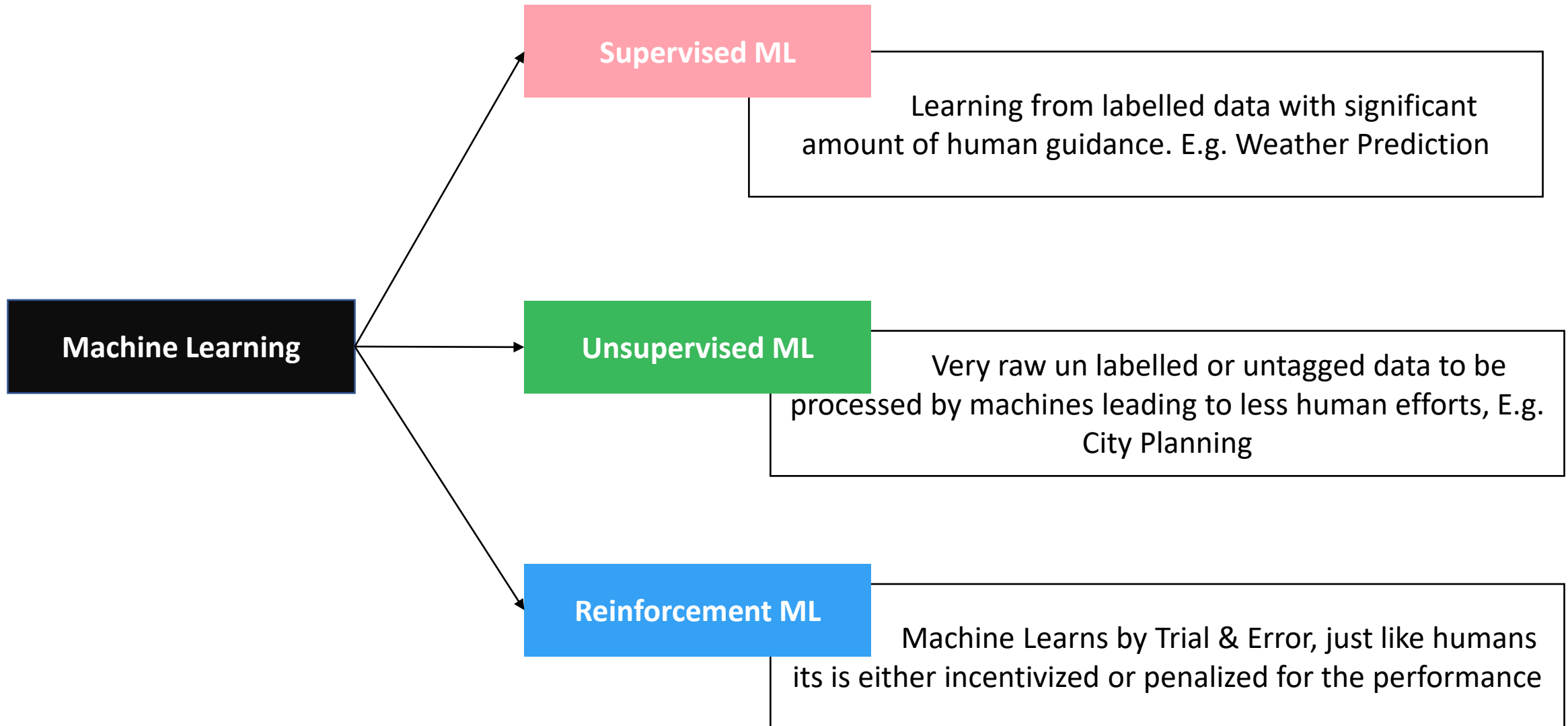4. Inclusiveness & Accountability

Machine Learning

Sub-field of AI where system learns from the existing data and improves its accuracy.
Example : Spam Email Detector

Traditional Programming VS Machine Learning

Types of Machine Learning

Machine Learning

Supervised ML

Learning from labelled data with significant amount of human guidance. E.g. Weather Prediction

Unsupervised ML

Very raw un labelled or untagged data to be processed by machines leading to less human efforts, E.g. City Planning

Reinforcement ML

Machine Learns by Trial & Error, just like humans its is either incentivized or penalized for the performance

Reinforcement Learning

Hen is being trained to identify pink color sheet and is rewarded, every time it chooses correct.

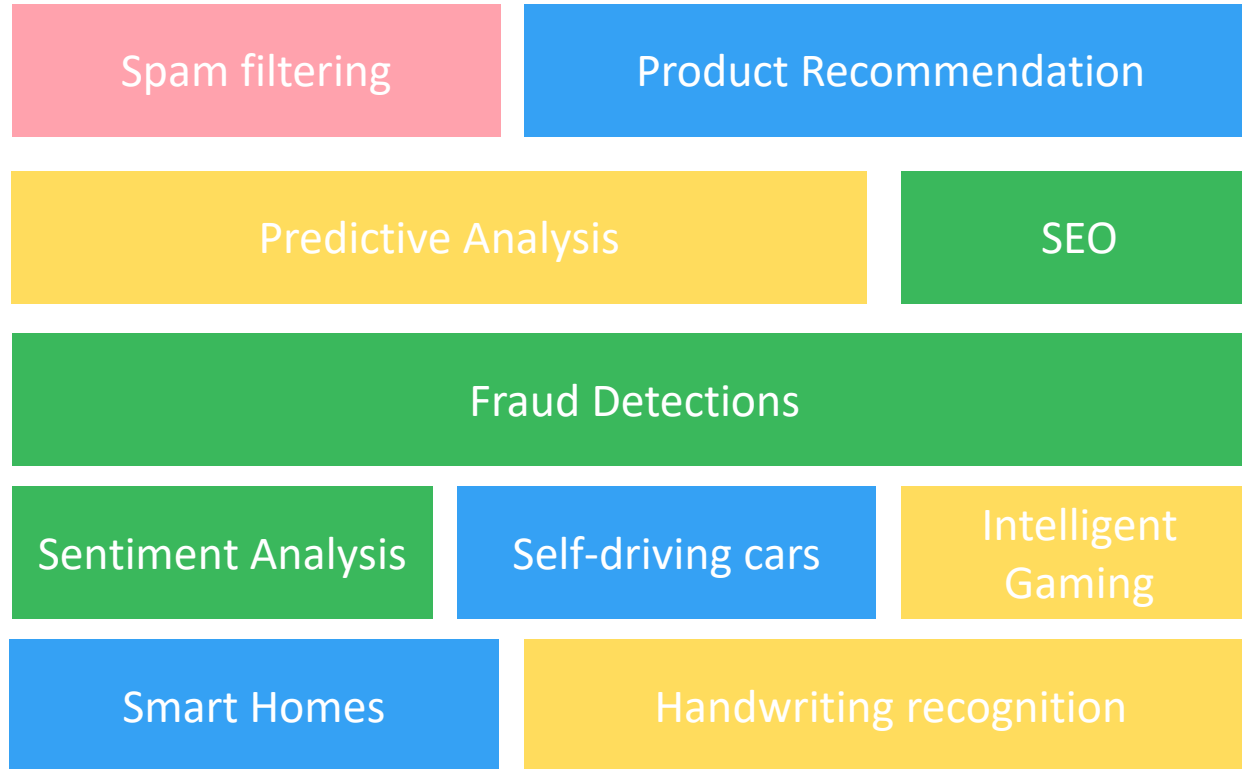Source : Youtube - @ai.with.nur

AI vs ML

Artificial Intelligence

- NLP
- Computer Vision
- Robotics
- Intelligent Systems

Machine Learning

- Regression
- Classification
- Clustering

Your daily experiences with ML?

Examples of ML

Spam filtering	Product Recommendation

Predictive Analysis	SEO

Fraud Detections

Sentiment Analysis	Self-driving cars	Intelligent Gaming

Smart Homes	Handwriting recognition

1. Supervised ML
2. Un-supervised ML
3. Robotics
4. Intelligent Systems

Careers in ML

Technical Roles

ML Engineer

Data Analyst

ML Consultant

ML Educator

Data Scientist

Non-technical Roles

Product Manager

ML Content Creator

ML evangelist

Application Designer

Project Analyst

AI

ML

Deep Learning

Deep learning is a subfield of machine learning that involves the use of artificial neural networks to model and solve complex problems. It is concerned with algorithms inspired by the structure and function of the brain called artificial neural networks.

Neural Network learns the Sine Function

epoch=0
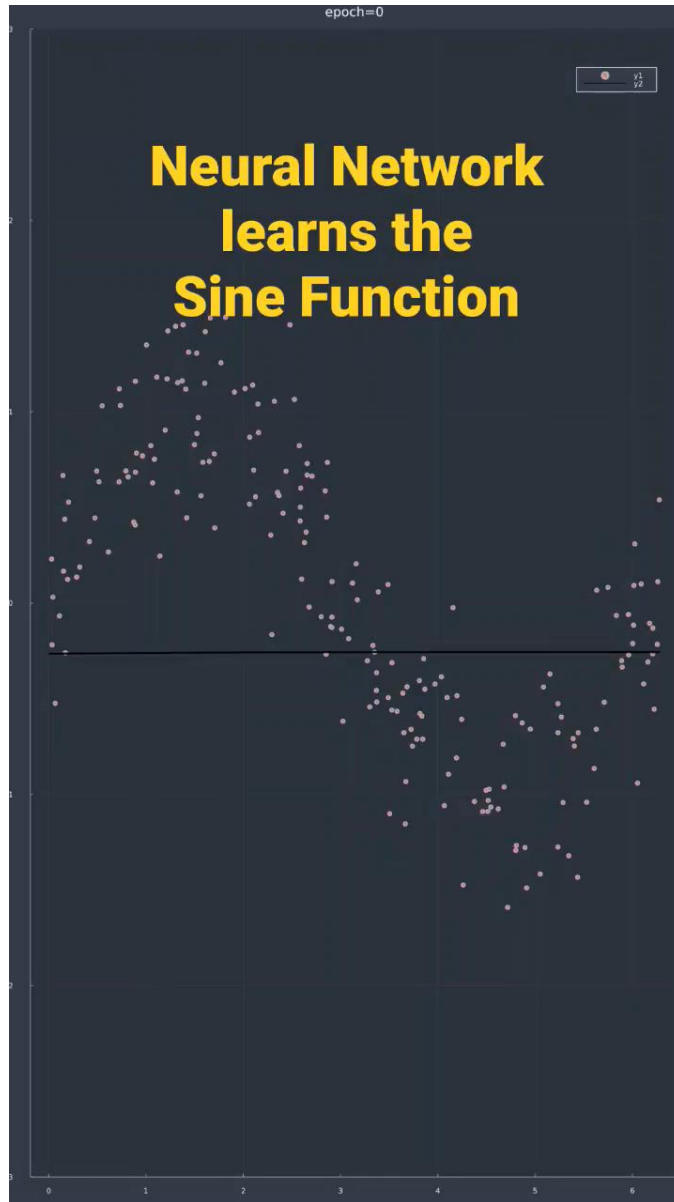
How it works?

System learns by tracking every point along with the error from rest of the points!

Source : Youtube – Machine Learning Simulation

Handwritten Digit Classification

AI vs ML vs Deep Learning

Artificial Intelligence

- NLP
- Computer Vision
- Robotics
- Intelligent Systems
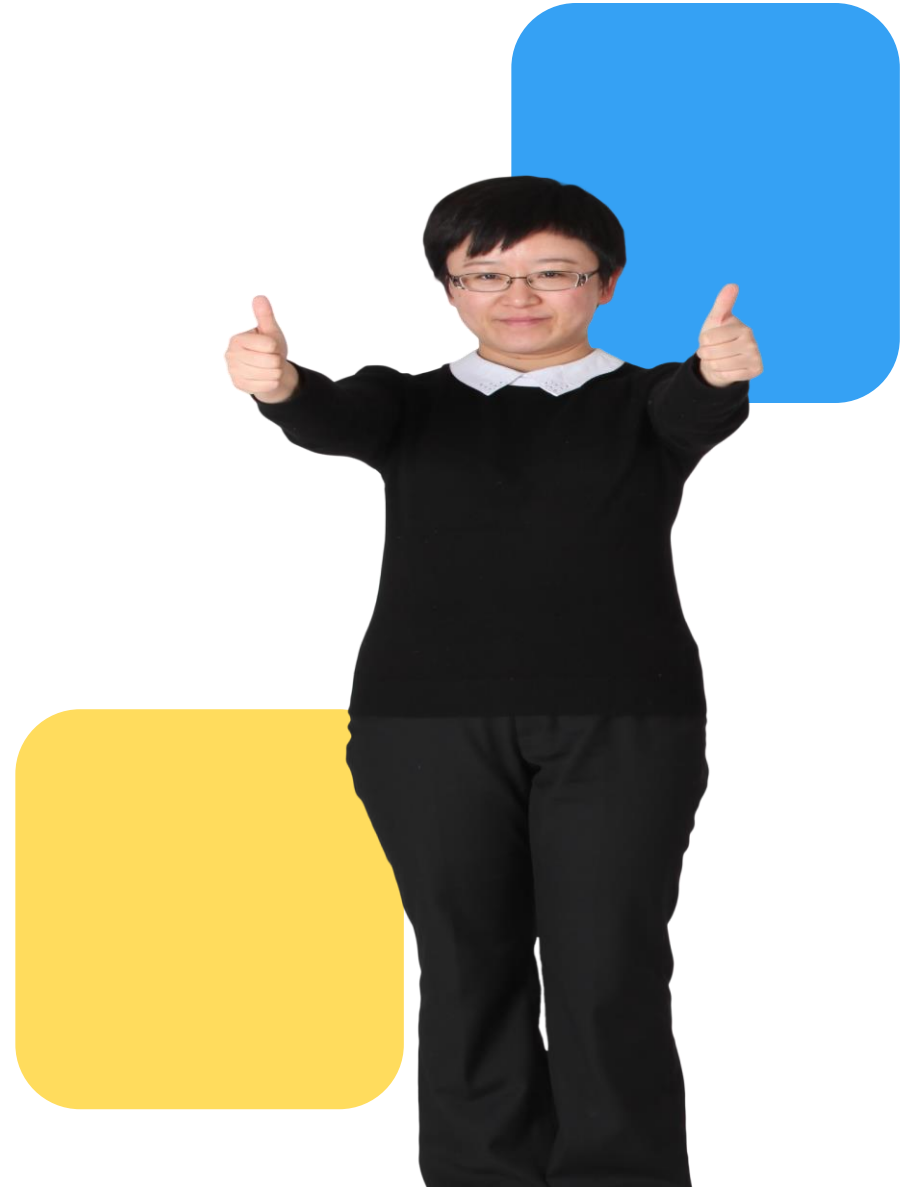
Machine Learning

- Regression
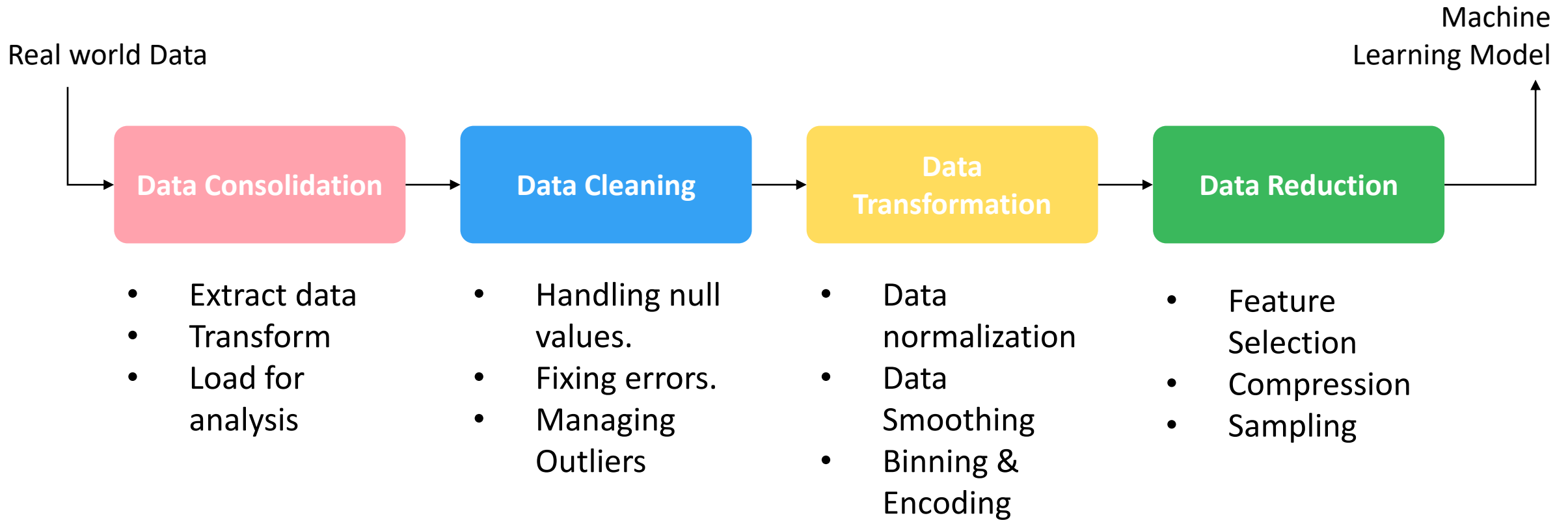- Classification
- Clustering

Deep Learning

Use of multilayer layer functions for learning

Data Science

Data science is a deep study of the massive amount of data, which involves extracting meaningful insights from raw, structured, and unstructured data that is processed using the scientific method, different technologies, and algorithms.

Data to Insights

Real world Data

Machine Learning Model

Data Consolidation

Data Cleaning

Data Transformation

Data Reduction

- Extract data
- Transform
- Load for analysis

- Handling null values.
- Fixing errors.
- Managing Outliers

- Data normalization
- Data Smoothing
- Binning & Encoding

- Feature Selection
- Compression
- Sampling

AI vs ML vs Deep Learning vs Data Science

Data Science

Artificial Intelligence

- NLP
- Computer Vision
- Robotics
- Intelligent Systems

Machine Learning

- Regression
- Classification
- Clustering

Deep Learning

Use of multilayer layer functions for learning

Handling massive amount of data.
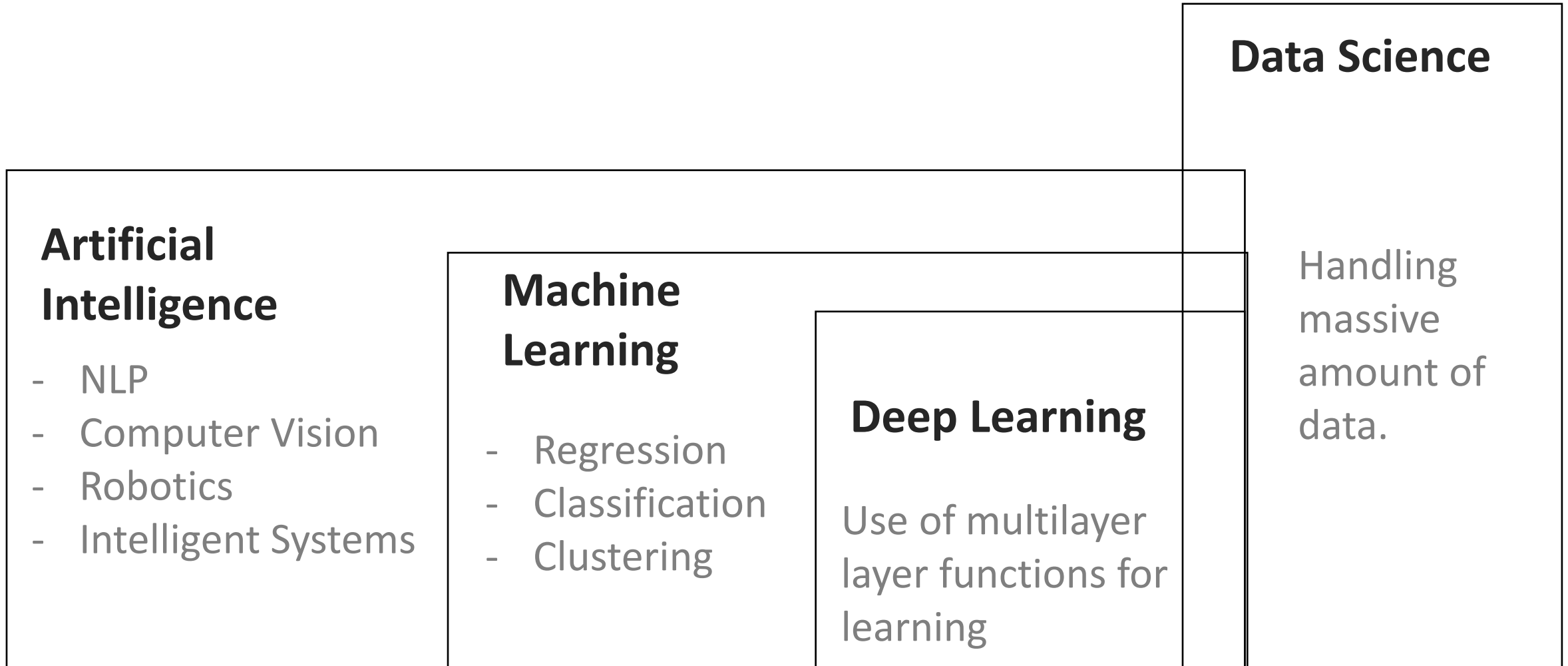
Careers in Data Science

Technical Roles

ML Engineer

Data Analyst

Database Administrator

Data Architect

Data Scientist

Non-technical Roles

Data Analytics Translator

Data Science Product Manager

Data Science consultant

Business Analyst

Technical Report Writer

Careers in Data Science
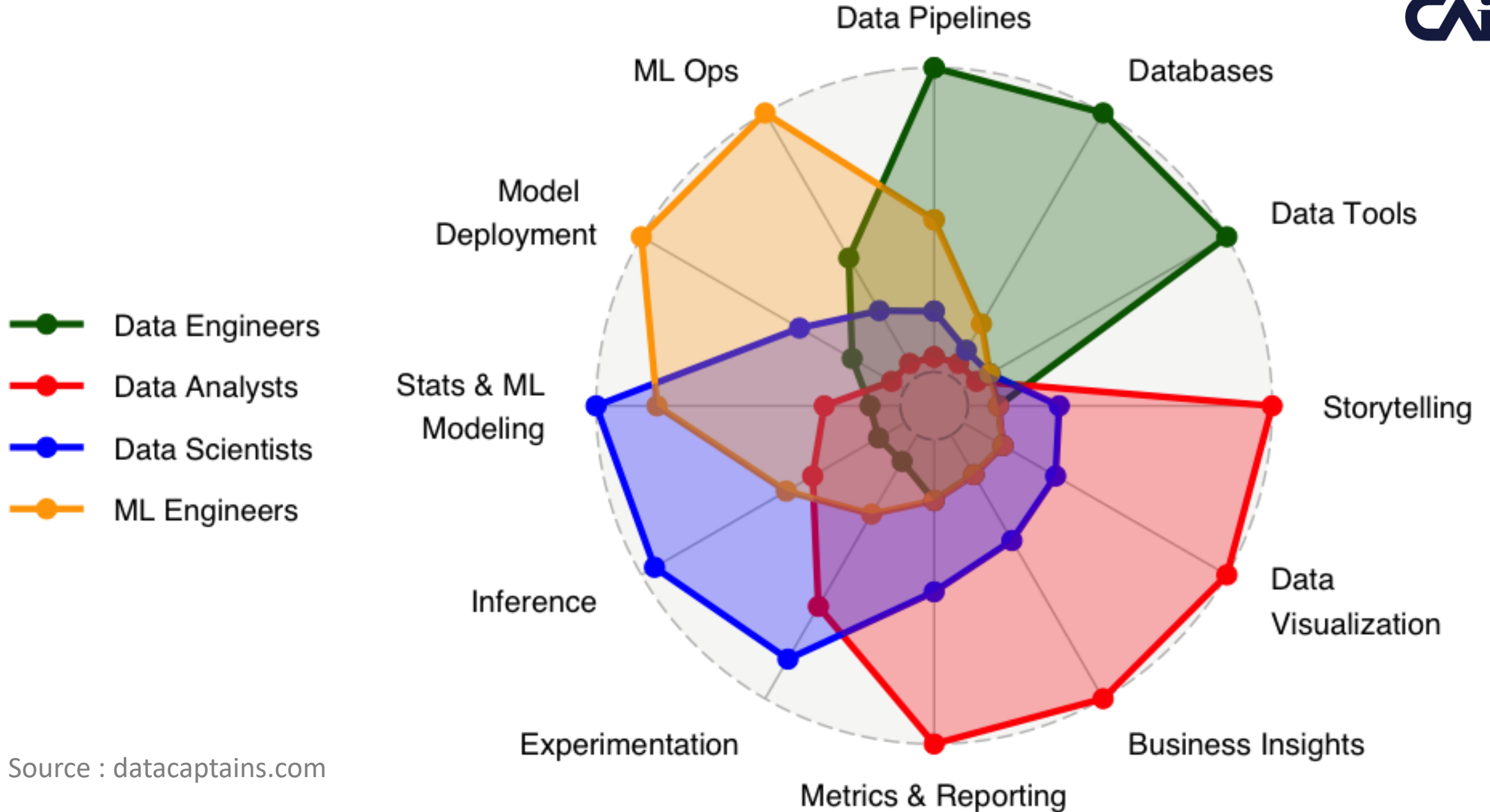

Data Science Position Growth (2010-2020)

Legend:
- Research Scientist
- Product Analyst
- Marketing Analyst
- Data Engineer
- Machine Learning Engineer
- Data Analyst
- Business Analyst
- Data Scientist

Data Pipelines · Databases · Data Tools · Storytelling · Data Visualization · Business Insights · Metrics & Reporting · Experimentation · Inference · Stats & ML Modeling · Model Deployment · ML Ops

Legend:
- Data Engineers
- Data Analysts
- Data Scientists
- ML Engineers

Source : datacaptains.com

If AI is **taking over some jobs**, its also **creating many new jobs!**

If AI is **taking over some jobs**, its also **creating many new jobs!**

Jobs taken by AI

Jobs created by AI

Jobs at Risk due to AI

	High Human Augmentation	Low Human Augmentation
High Task	Jobs in this quadrant are at risk of automation, but AI and automation can also be used to augment and enhance human workers in these roles. Examples include certain data entry tasks, basic customer service roles, and routine administrative tasks.	Jobs in this quadrant are at the highest risk of automation. They involve tasks that are highly repetitive and can be easily automated with little need for human intervention. Examples include simple manufacturing tasks and some customer service roles.
Low Task	Jobs in this quadrant are less likely to be automated because they involve complex tasks that require human judgment, creativity, and problem-solving. However, AI and automation can still be used to enhance the capabilities of workers in these roles. Examples include healthcare professionals using AI for diagnosis assistance and engineers using AI for design optimization.	Jobs in this quadrant are the least likely to be affected by AI and automation. They involve tasks that are highly specialized, non-routine, and rely heavily on human expertise. Examples include high-level strategic decision-making roles and certain artistic and creative professions.

Quiz time!

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after scanning this
QR code