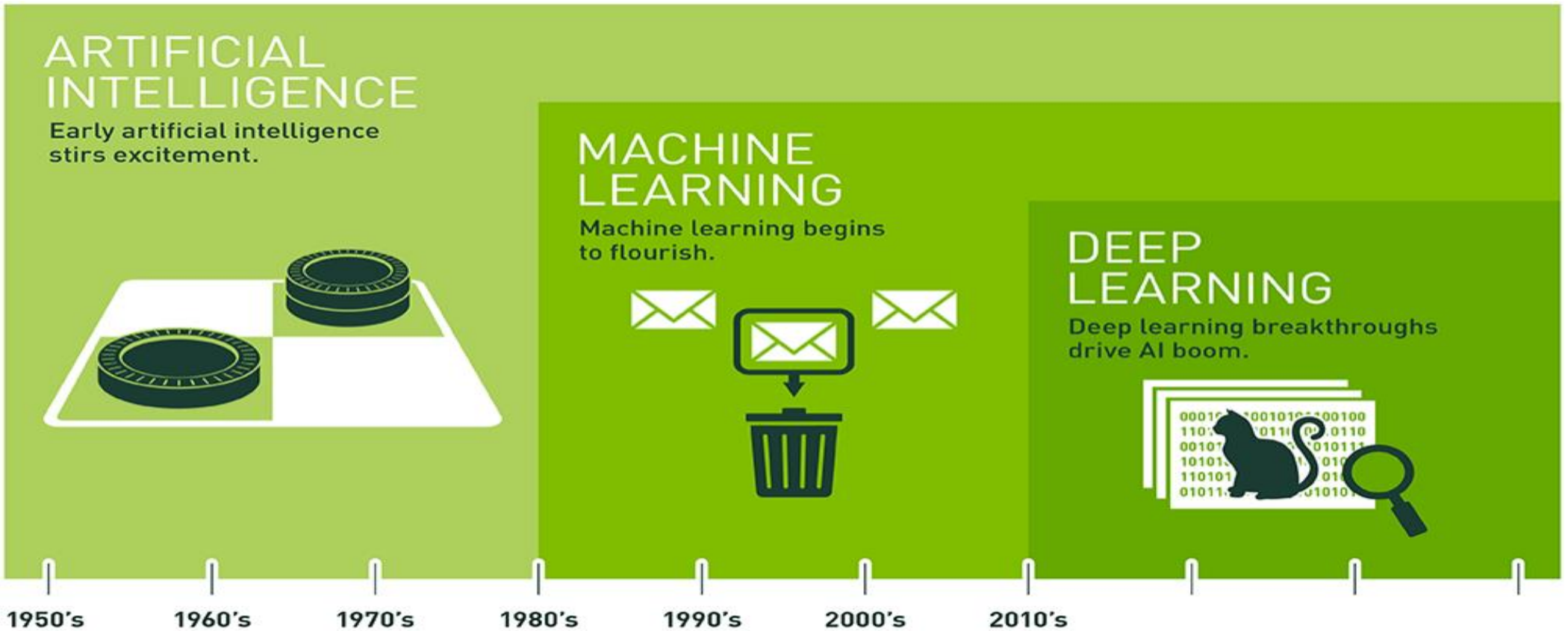
DEEP LEARNING DEMYSTIFIED

DEFINITIONS



A NEW COMPUTING MODEL

Algorithms that Learn from Examples

Traditional Approach

- Requires domain experts
- Time consuming
- Error prone
- Not scalable to new problems

A NEW COMPUTING MODEL

Algorithms that Learn from Examples

Expert Written Computer Program

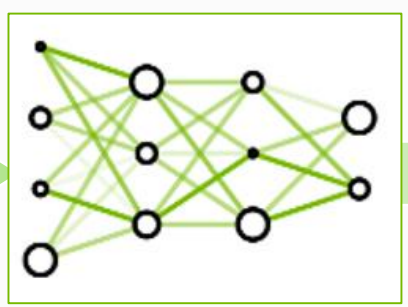
car

vehicle

coupe

Traditional Approach

- ➢ Requires domain experts
- ➢ Time consuming
- ➢ Error prone
- ➢ Not scalable to new problems



Deep Neural Network

car

vehicle

coupe

Deep Learning Approach

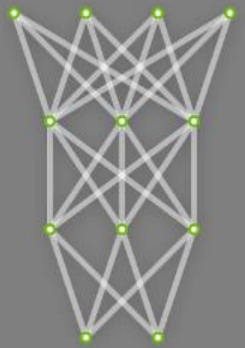
- ✓ Learn from data
- ✓ Easily to extend
- ✓ Speedup with GPUs

DEEP LEARNING

TRAINING

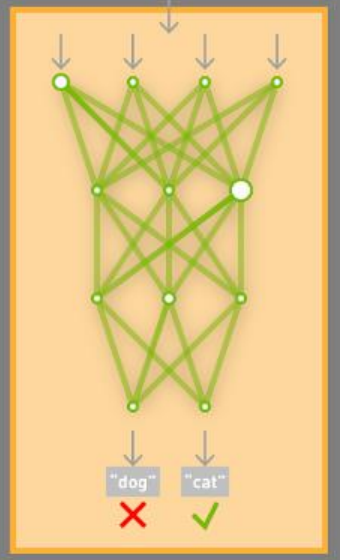
Learning a new capability
from existing data

Untrained
Neural Network
Model

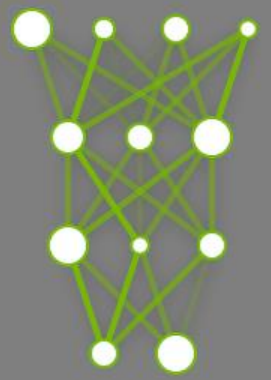


Deep Learning
Framework

TRAINING
DATASET



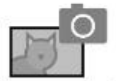
Trained Model
New Capability



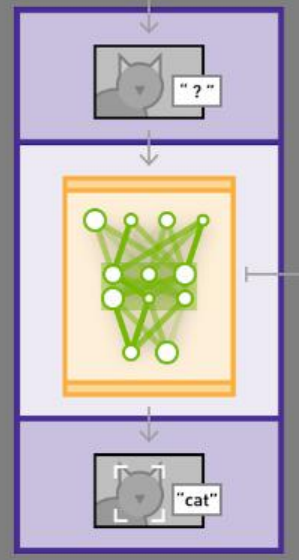
INFERENCE

Applying this capability
to new data

NEW
DATA



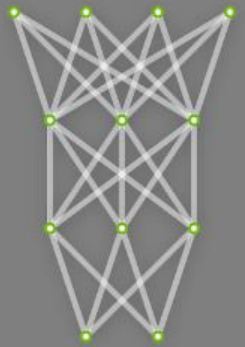
App or Service
Featuring Capability



Trained Model
Optimized for
Performance

DEEP LEARNING

Untrained
Neural Network
Model

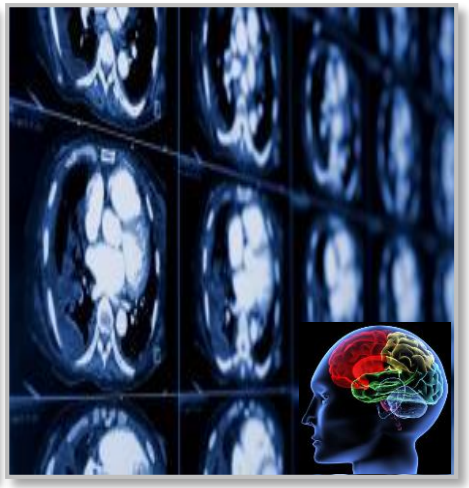
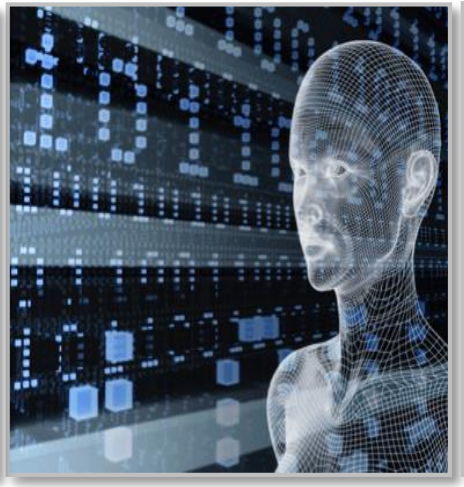


WHAT PROBLEM ARE YOU SOLVING?

Defining the AI/DL Tasks

INPUTS	QUESTION	AI/DL TASK	EXAMPLE OUTPUTS
 Text Data  Images  Video  Audio	**Is "it" present or not?**	Detection	Cancer Detection
	What type of thing is "it"?	Classification	Tumor Identification
	To what extent is "it" present?	Segmentation	Tumor Size/Shape Analysis
	What is the likely outcome?	Prediction	Survivability Prediction
	What will likely satisfy the objective?	Recommendation	Therapy Recommendation

DEEP LEARNING IS SWEEPING ACROSS INDUSTRIES

Internet Services	Medicine	Media & Entertainment	Security & Defense	Autonomous Machines
				
➢ Image/Video classification ➢ Speech recognition ➢ Natural language processing	➢ Cancer cell detection ➢ Diabetic grading ➢ Drug discovery	➢ Video captioning ➢ Content based search ➢ Real time translation	➢ Face recognition ➢ Video surveillance ➢ Cyber security	➢ Pedestrian detection ➢ Lane tracking ➢ Recognize traffic signs

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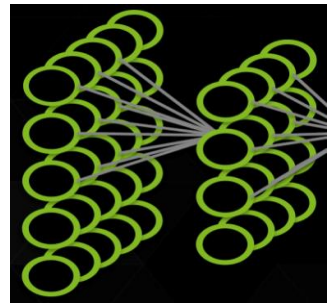
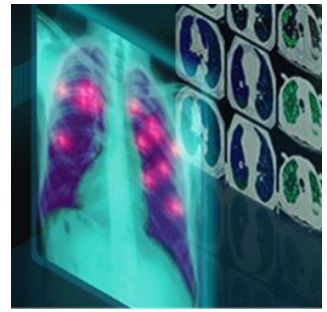
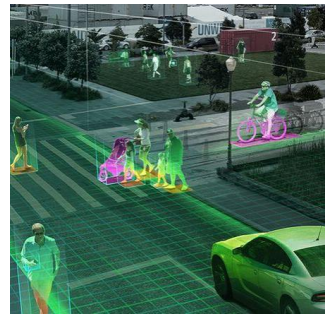


Fundamentals

Autonomous Vehicles



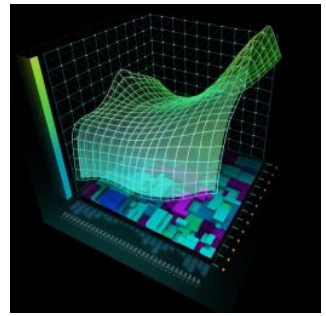
Healthcare



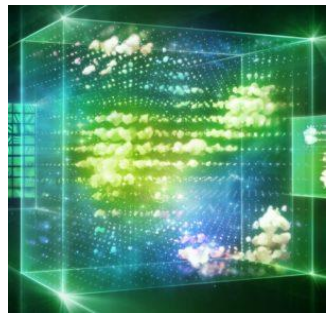
Intelligent Video Analytics

Robotics

Game Development & Digital Content



Finance



Accelerated Computing

Virtual Reality

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