



# AI Enigma Chapter One

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# Enigma

## Definitions of enigma

### Noun

- ① a person or thing that is mysterious, puzzling, or difficult to understand.  
 “Madeleine was still an enigma to him”

#### Synonyms:

poser   teaser   brain-teaser   stumper   mystery   puzzle   riddle  
 conundrum   paradox   problem   unsolved problem   question  
 question mark   quandary   a closed book

Is it True ?

AI is An

Σ ENIGMA

# ΛΙΣΝΙΓΜΑ

**Decode**

**Community**

**Insights**

**Expertise**

**Solutions**

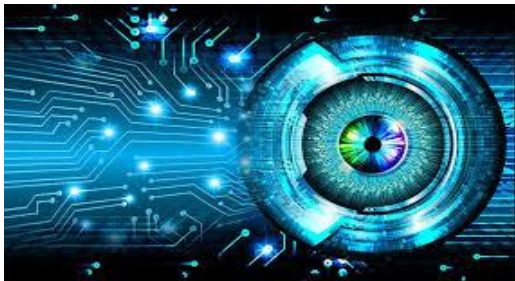
**Interact**

**Business**

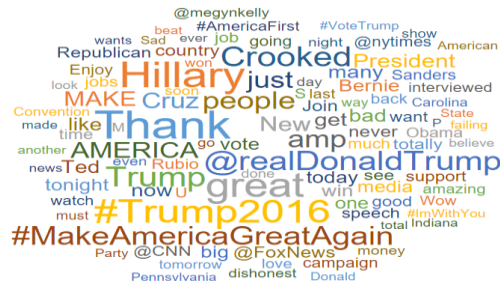
# Upcoming Next

- Definitions
- AI Fields
- AI Solutions
- Business opportunity
- What's next ?

# AI Subfields



**Computer Vision**



**Natural Language Processing**



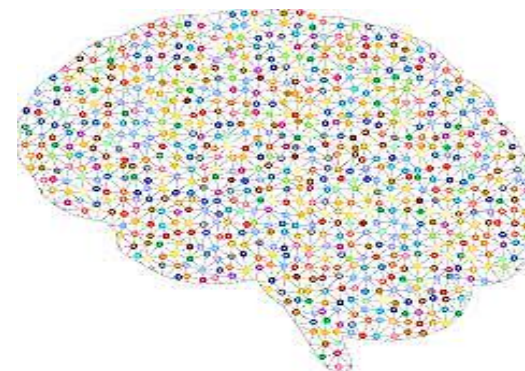
**Speech Recognition**



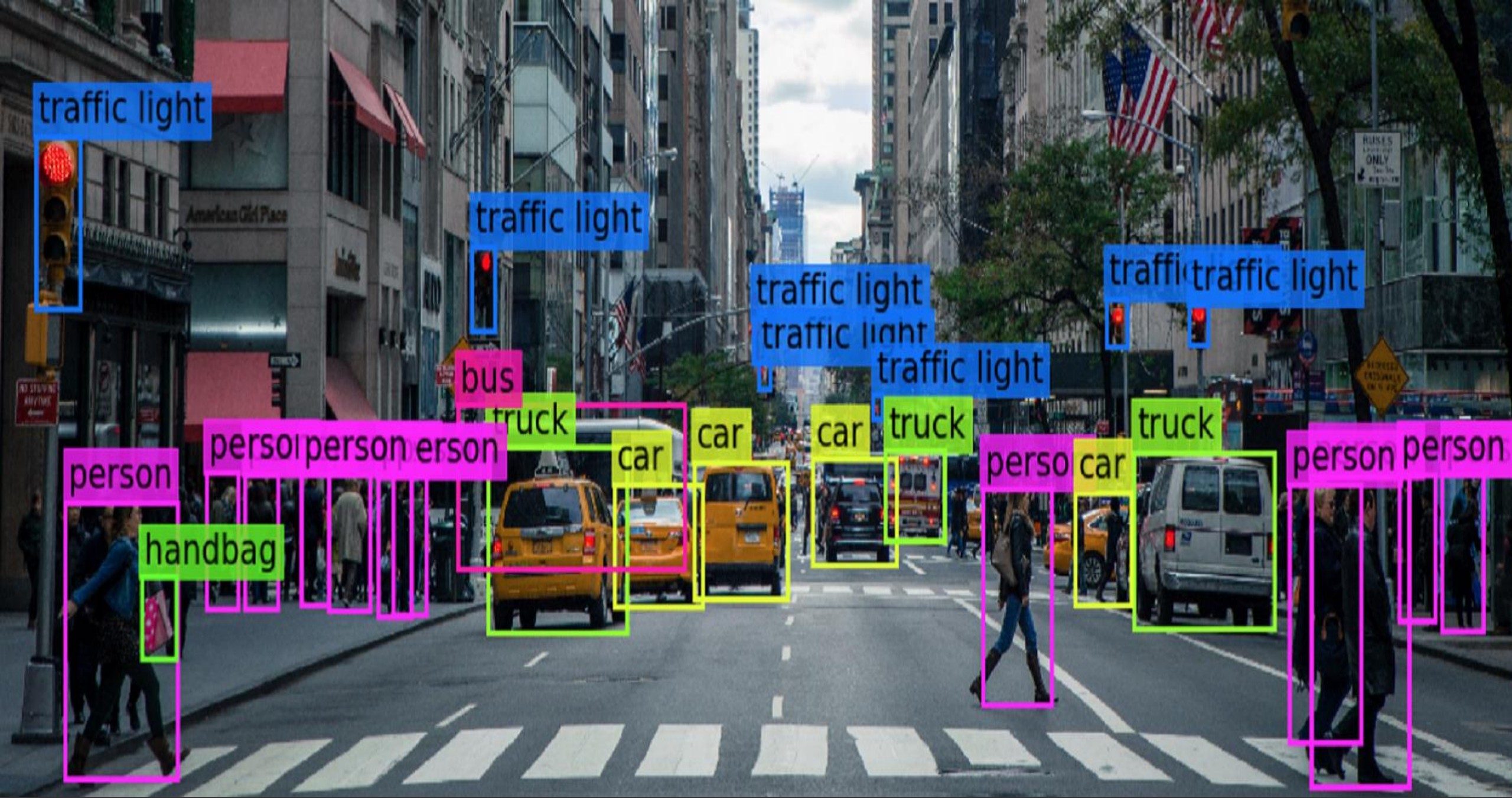
**Robotics**



**Machine Learning**



**Deep Learning**



traffic light



traffic light



traffic light  
traffic light

traffic light  
traffic light



bus

truck

car

car

car

traffic light

truck

truck

person

person  
person  
person



handbag

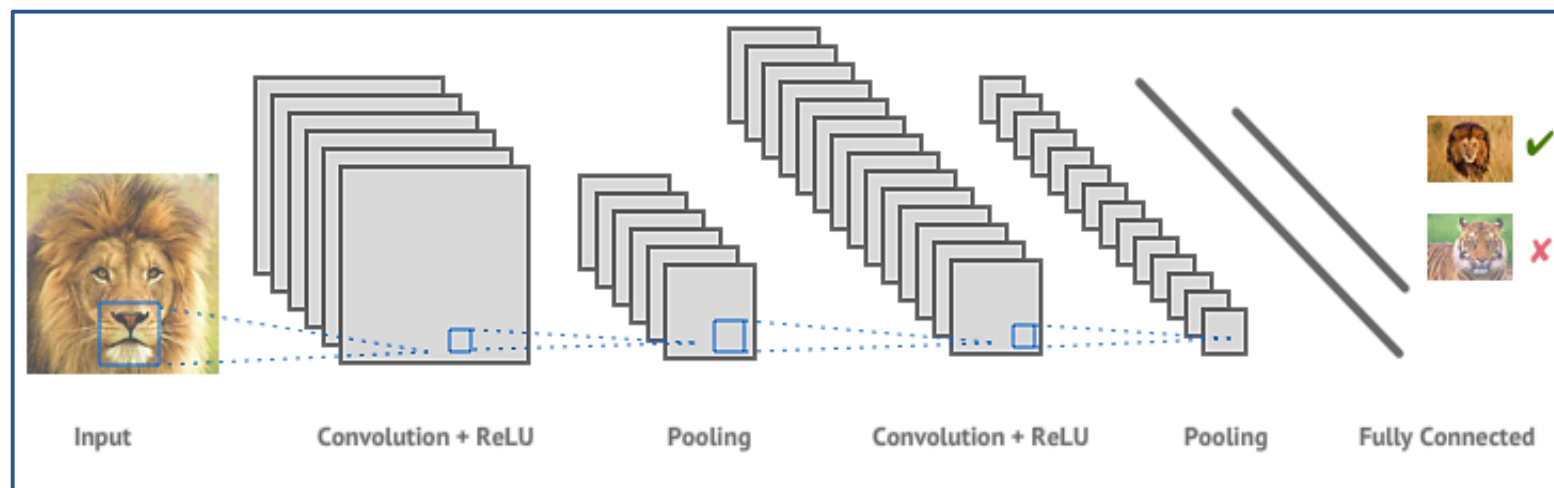
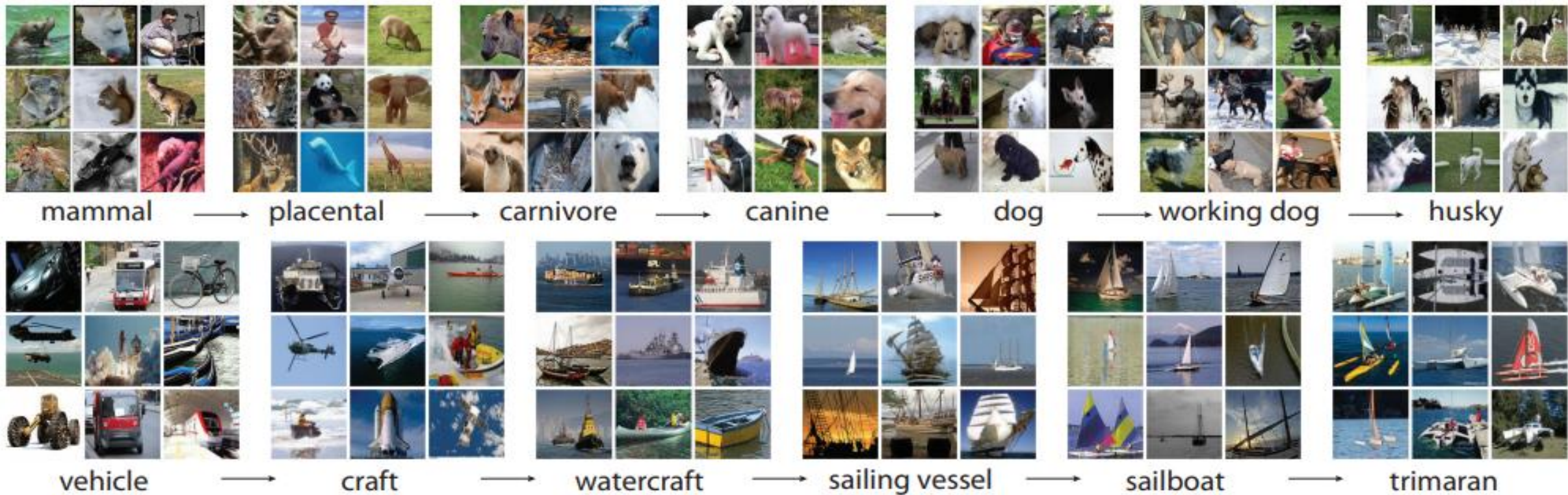
person

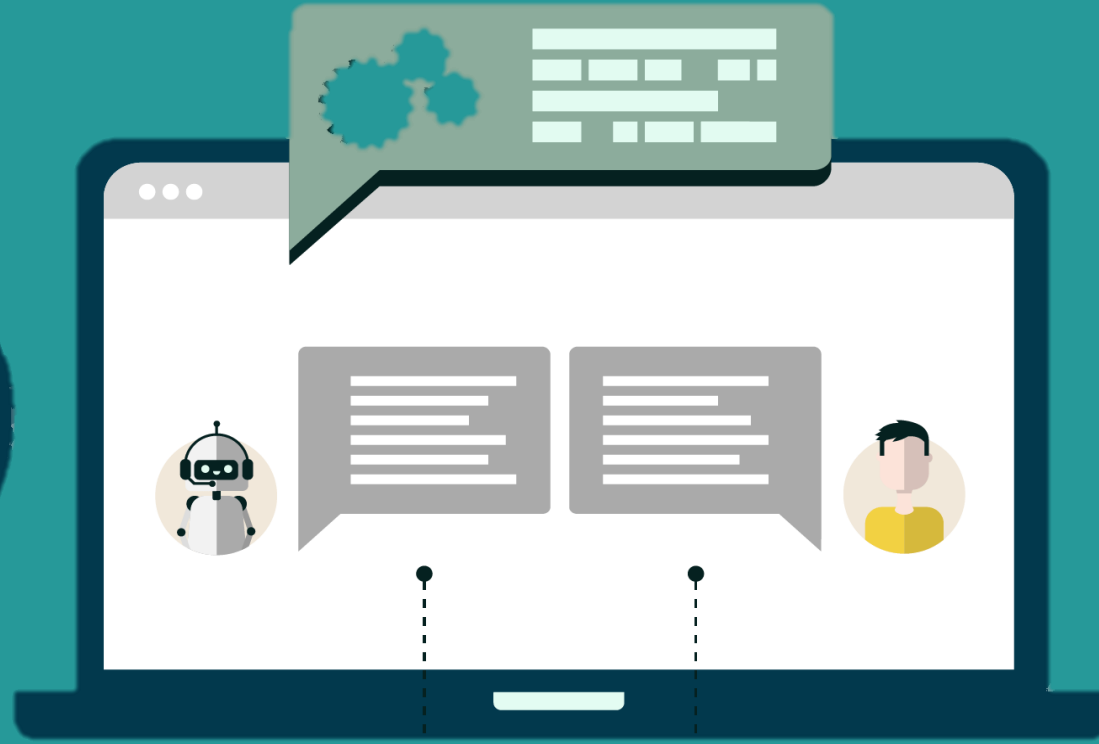
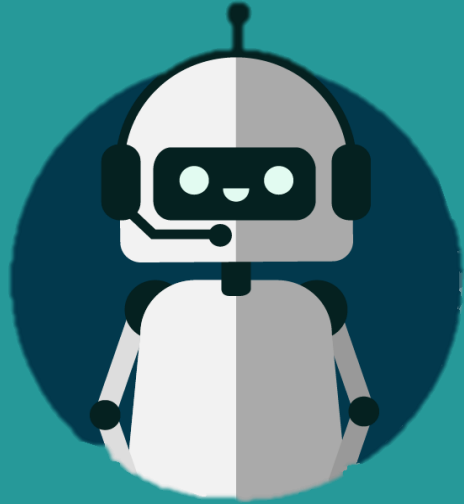
car



person  
person







сайн уу хиймэл  
оюун ухааны  
ертөнц

你好人工智能世界

Hello artificial intelligence world

مرحبًا بعالم الذكاء  
الاصطناعي

բարև արհեստական ինտելեկտի աշխարհ

привет мир искусственного  
интеллекта

ciao mondo dell'intelligenza artificiale

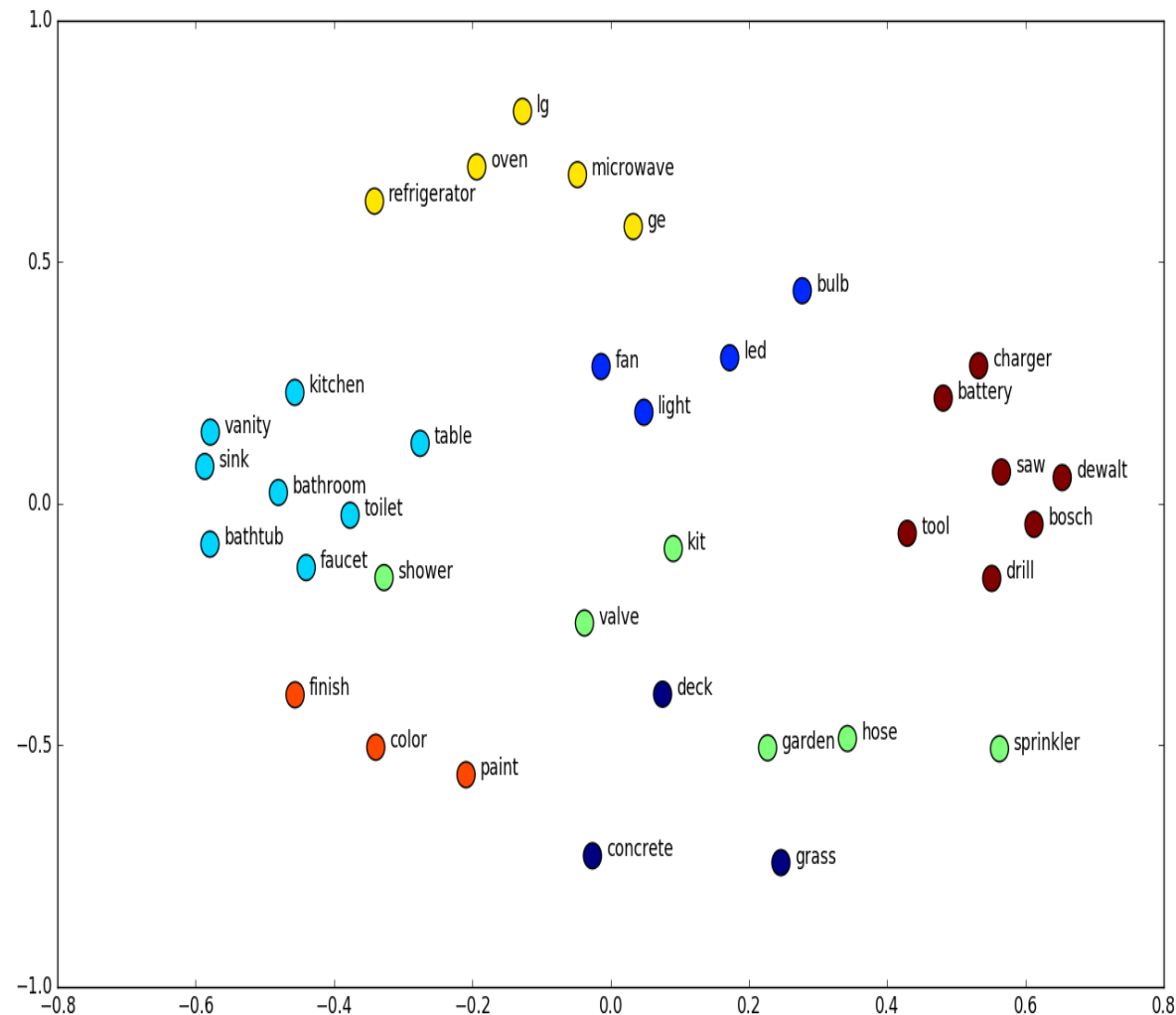
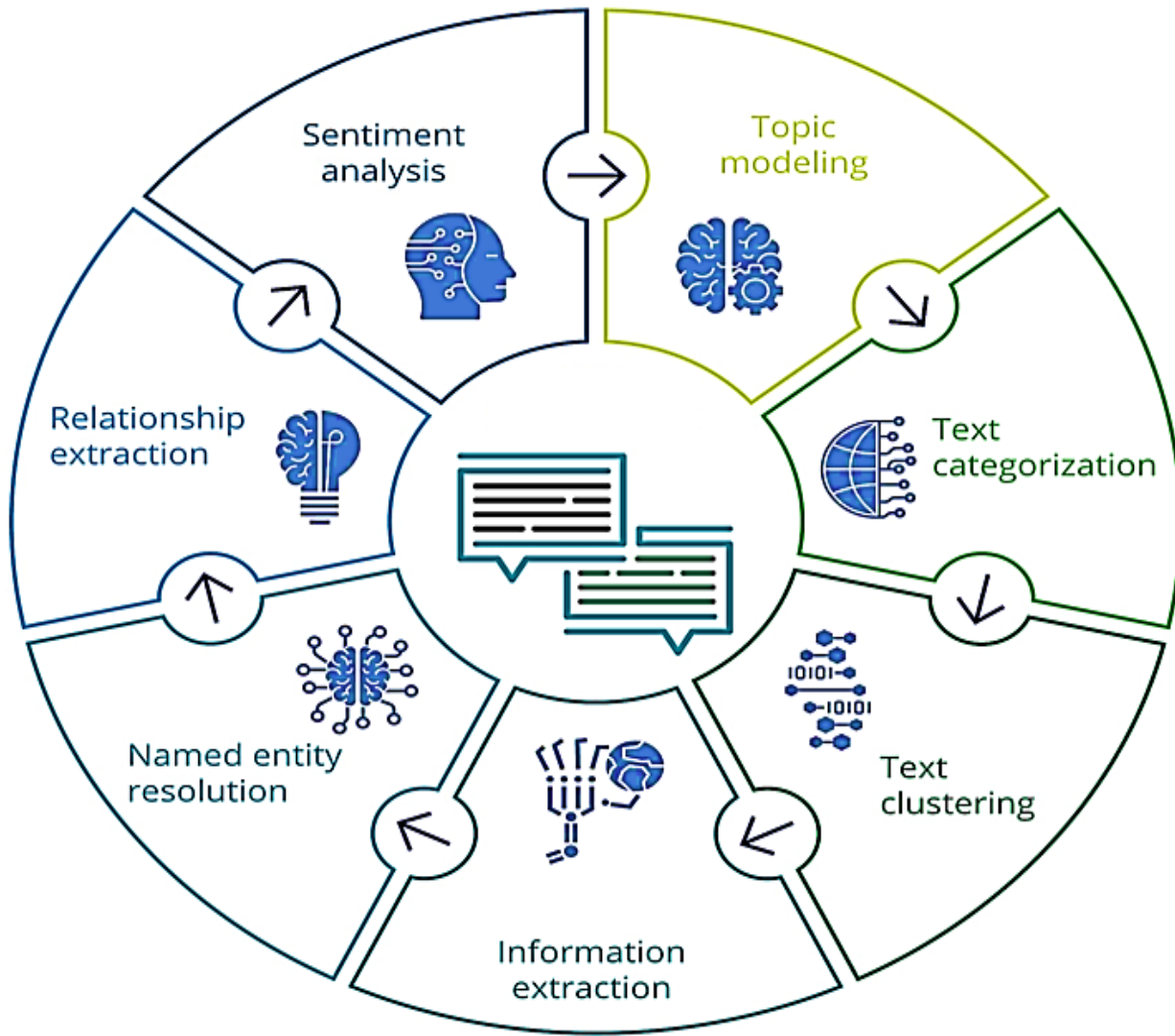
Salut lume  
inteligenta artificiala







Is Speech Recognition NLP ?!



# Robotics



Delivery



Consumer



Healthcare



Agriculture



Retail



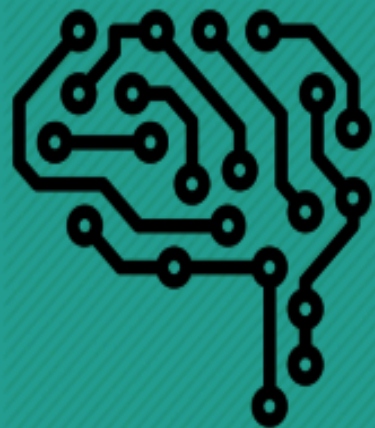
Logistics



Manufacturing

# ARTIFICIAL INTELLIGENCE

Any technique which enables computers to mimic human behavior



## MACHINE LEARNING

AI techniques that give computers the ability to learn without being explicitly programmed to do so



## DEEP LEARNING

A subset of ML which make the computation of multi-layer neural networks feasible



1950's

1960's

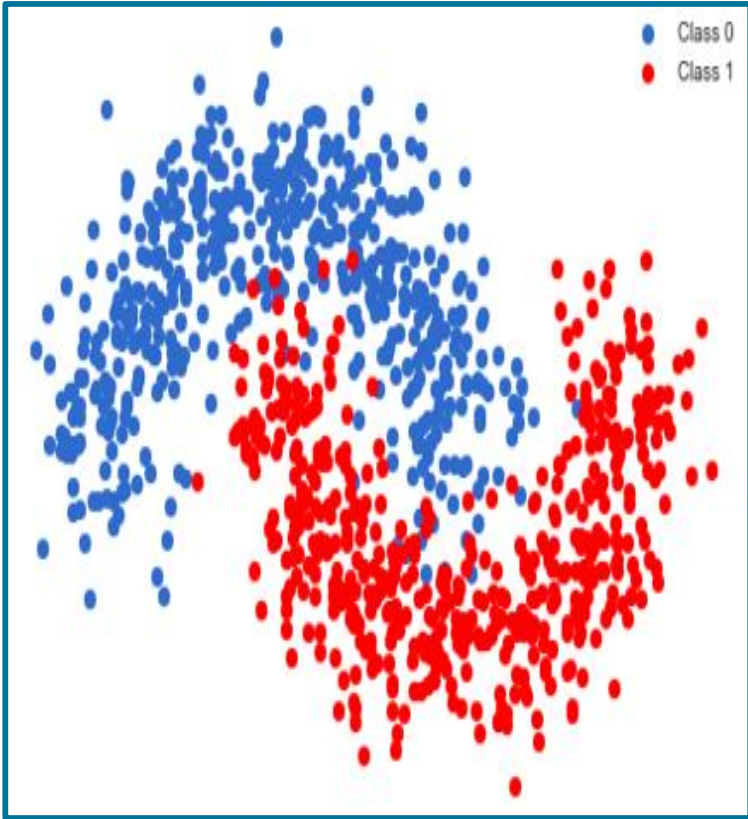
1970's

1980's

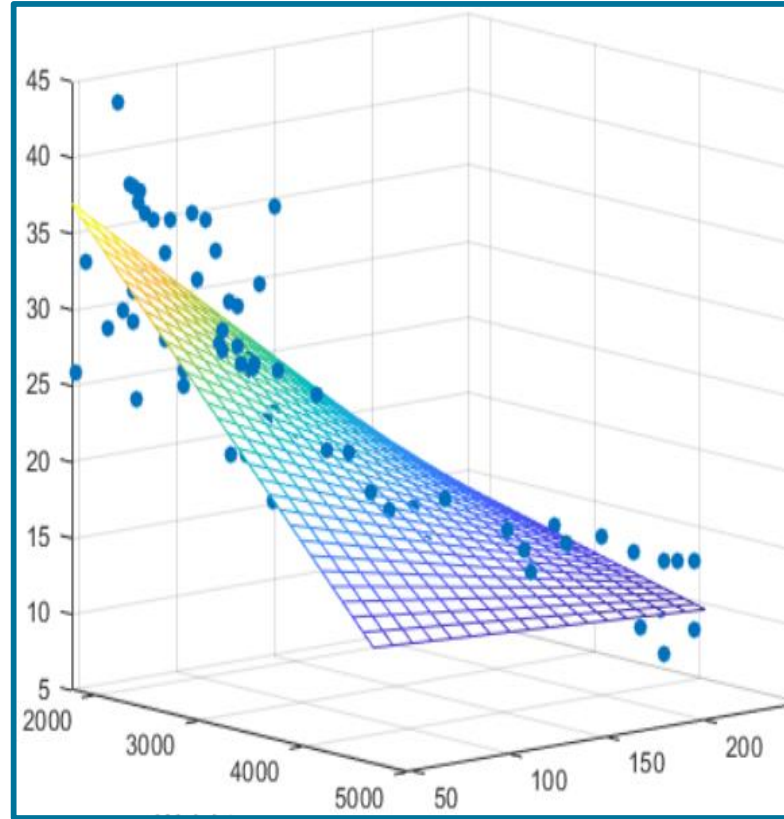
1990's

2000's

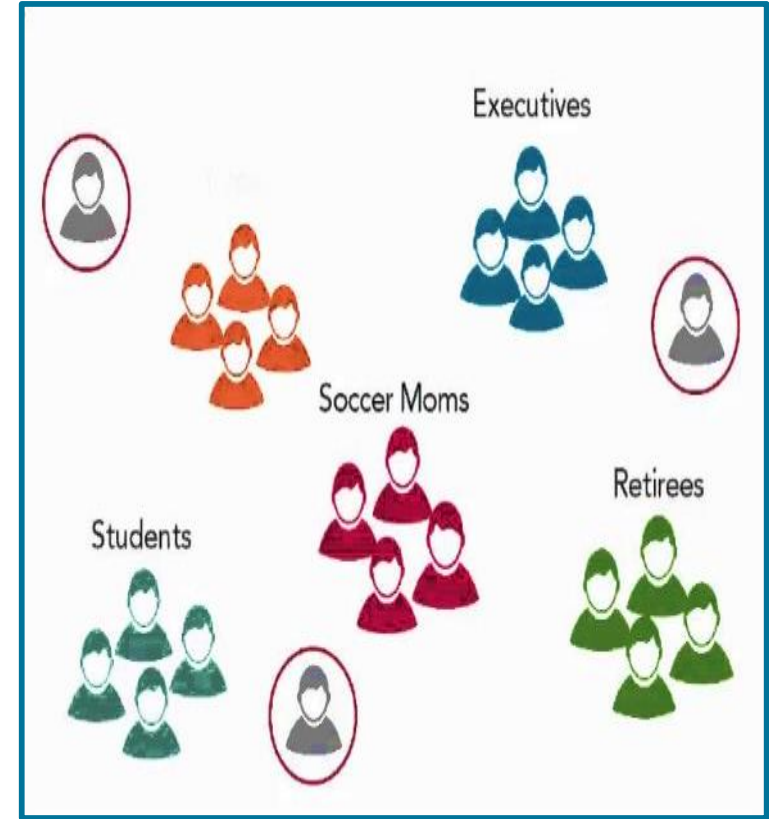
2010s



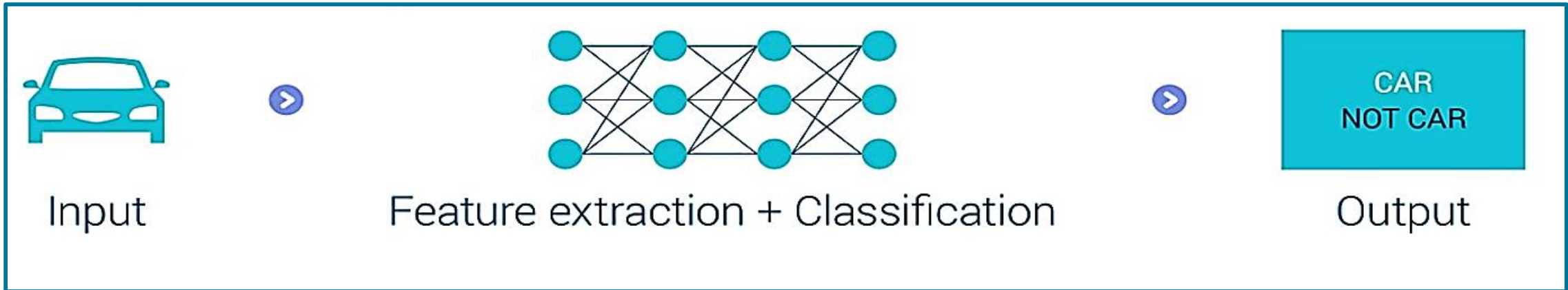
**Classification**



**Regression**

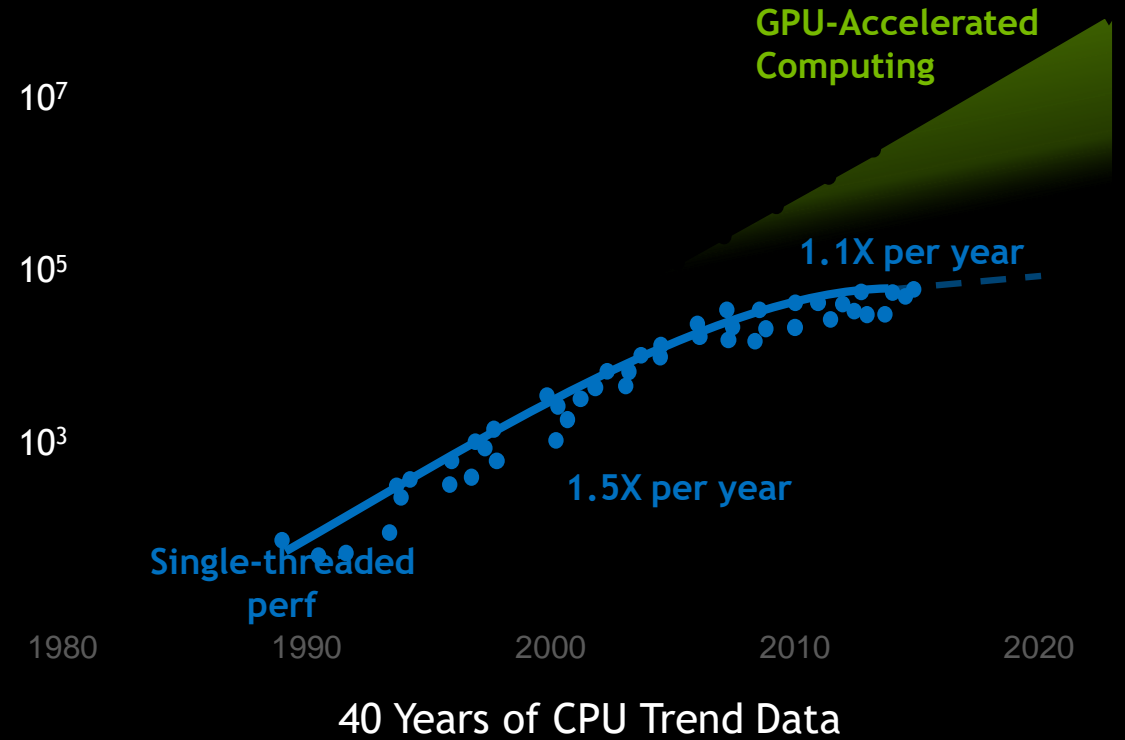
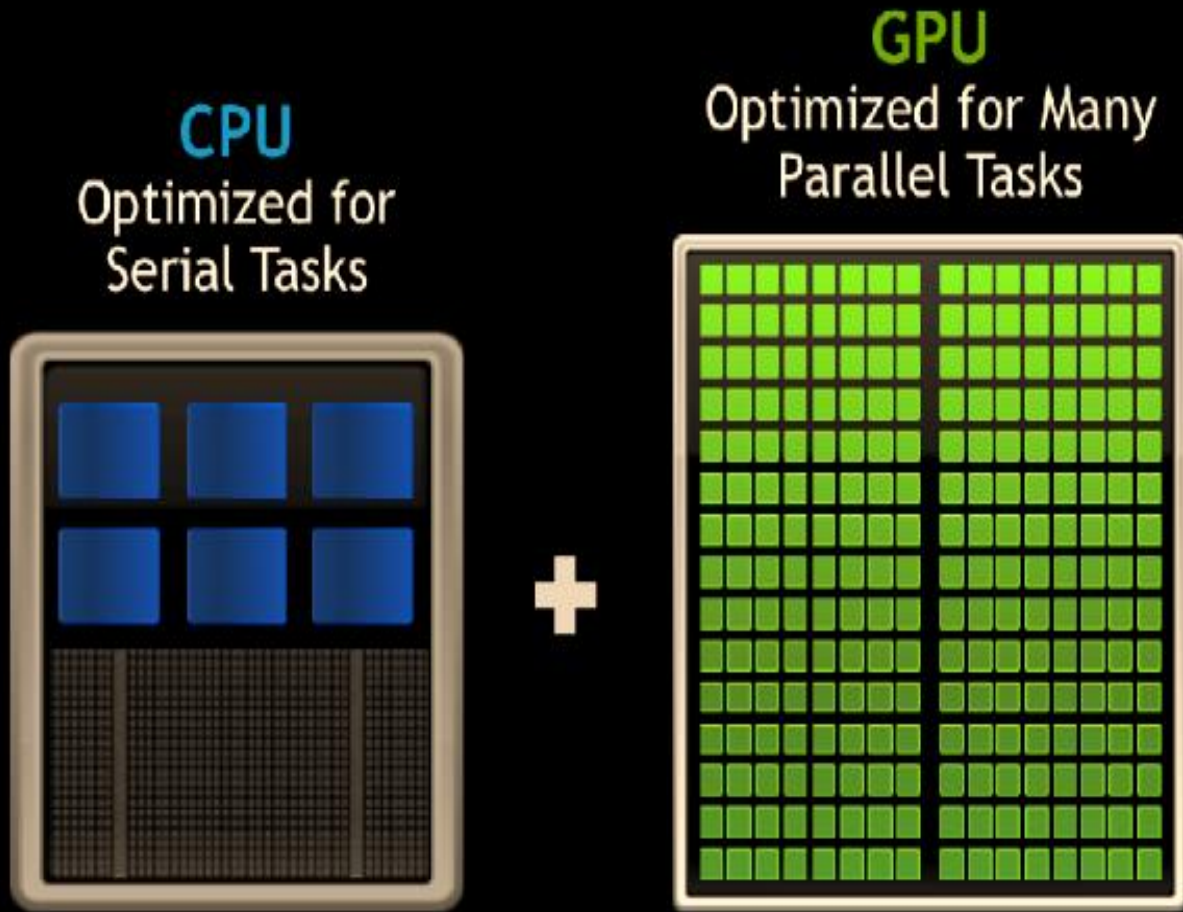


**Clustering**



## Machine Learning vs Deep Learning

# RISE OF GPU COMPUTING

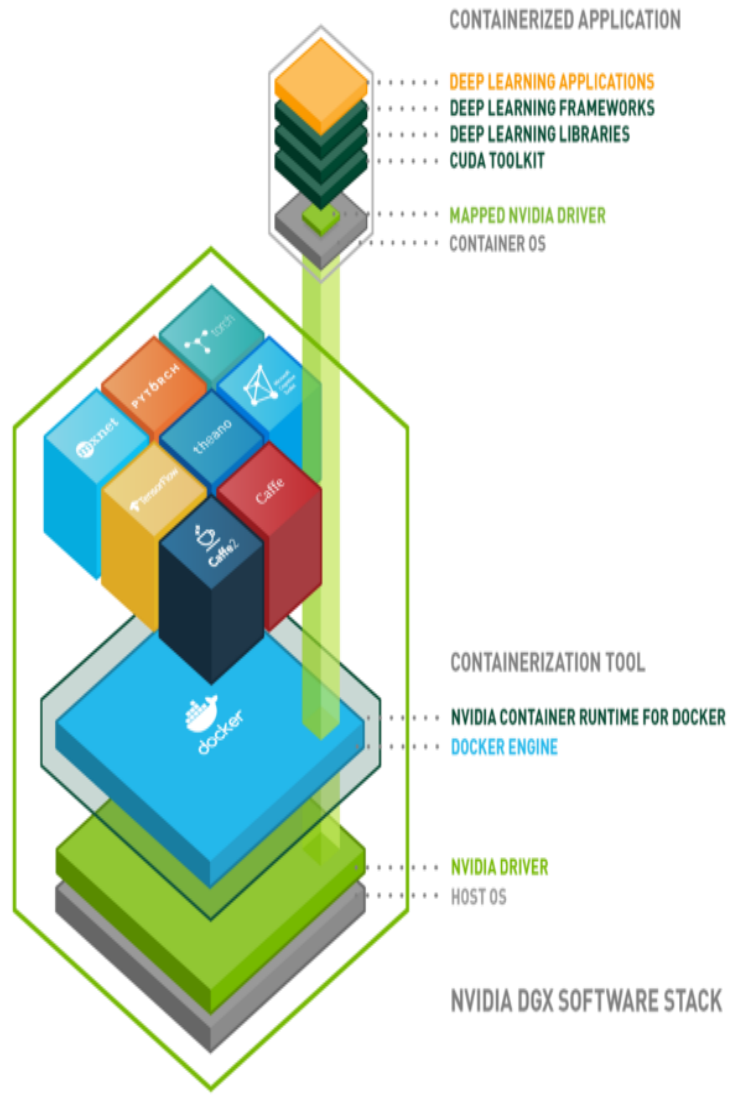
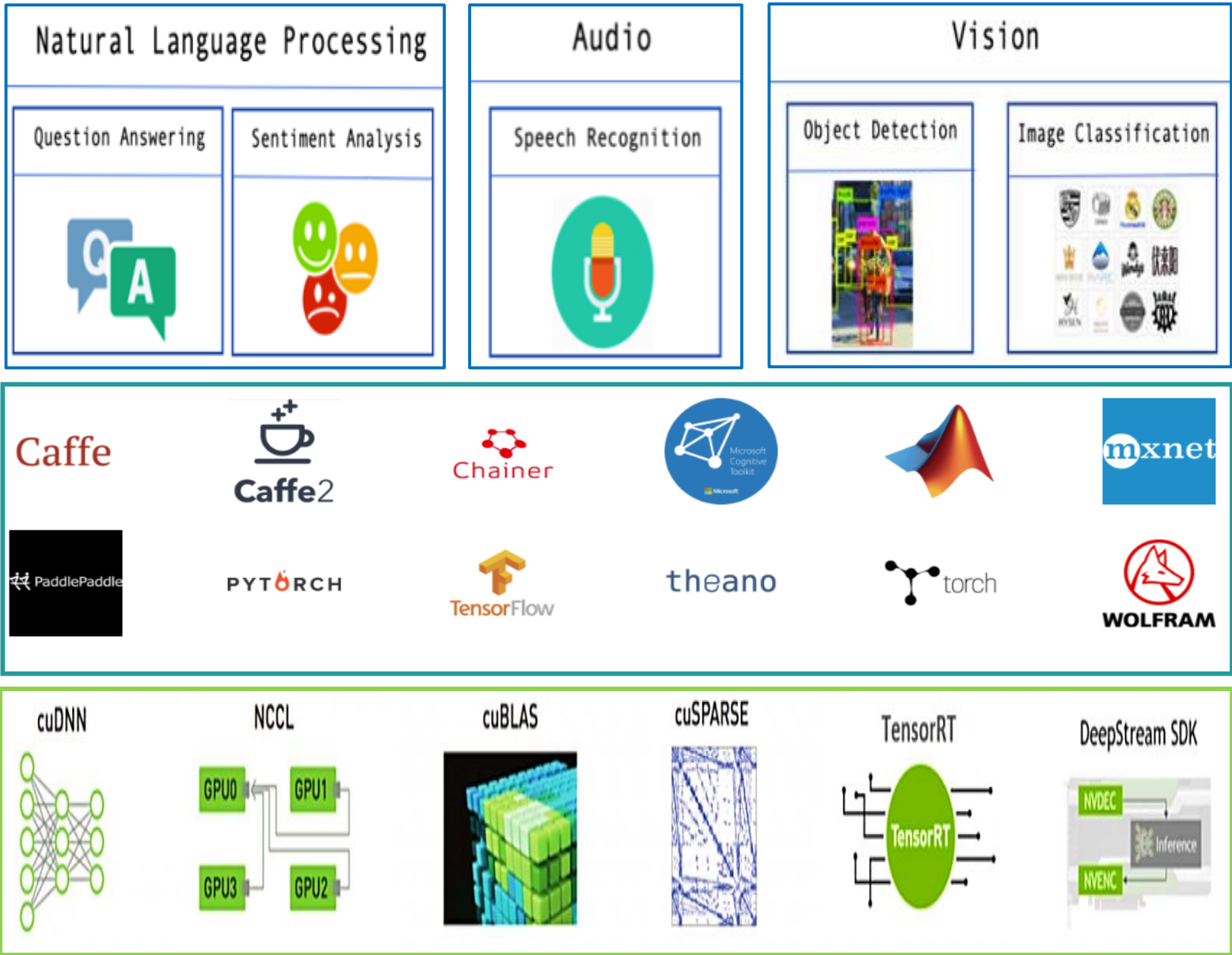


Original data up to the year 2010 collected and plotted by M. Horowitz, F. Labonte, O. Shacham, K. Olukotun, L. Hammond, and C. Batten New plot and data collected for 2010-2015 by K. Rupp





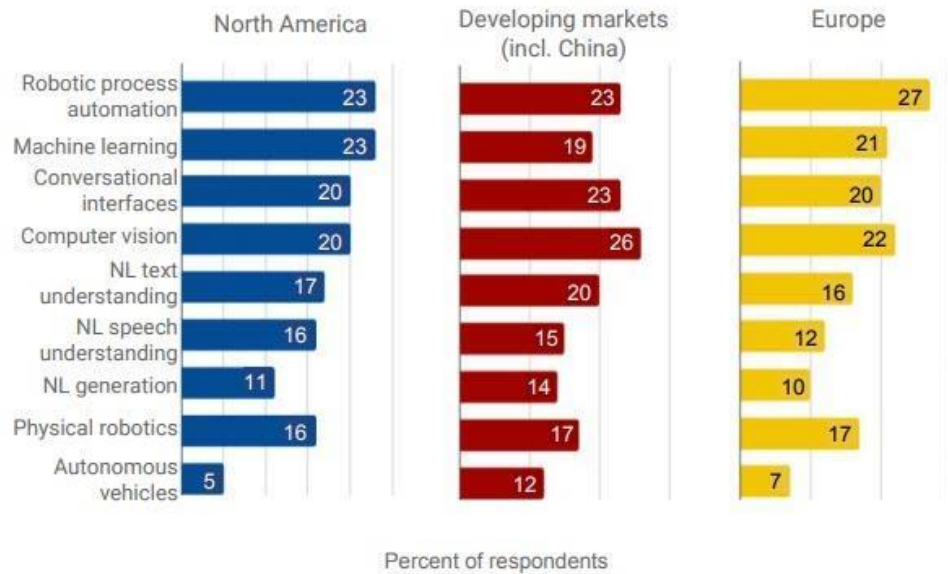
Images Per Sec: 4.7



# Market opportunity

**IDC predicts spending on cognitive and AI systems will reach \$77.6B in 2022, more than three times the \$24.0B forecast for 2018, 37.3% CAGR**

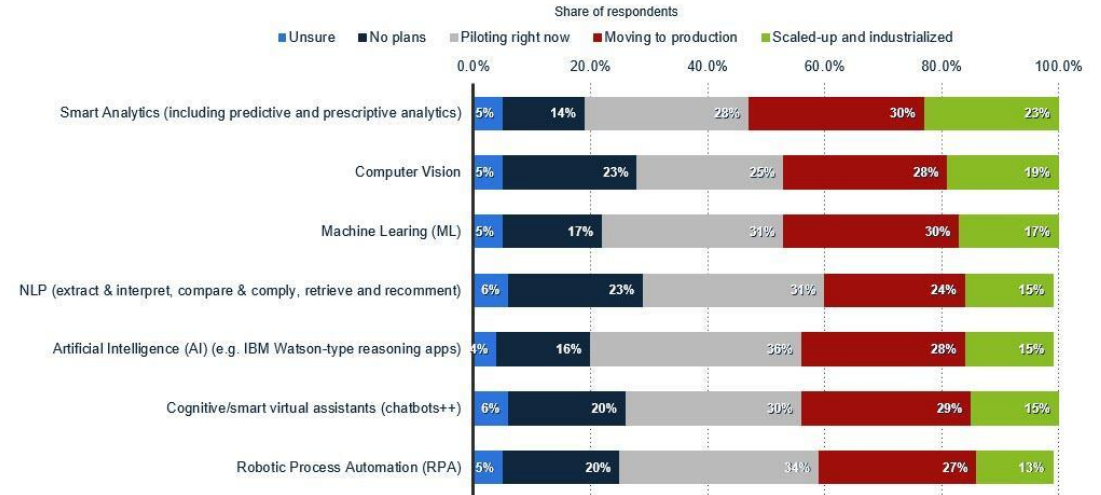
Capabilities embedded in at least one company function (2018)  
Source: McKinsey & Company



Note: The size of each bar is relative to the capabilities within each region; North America: N = 479; Developing markets (incl. China): N = 189 (China N = 35); Europe: N = 803

## Adoption Plans For Intelligent Automation (IA) Technologies In Organizations Worldwide (2018)

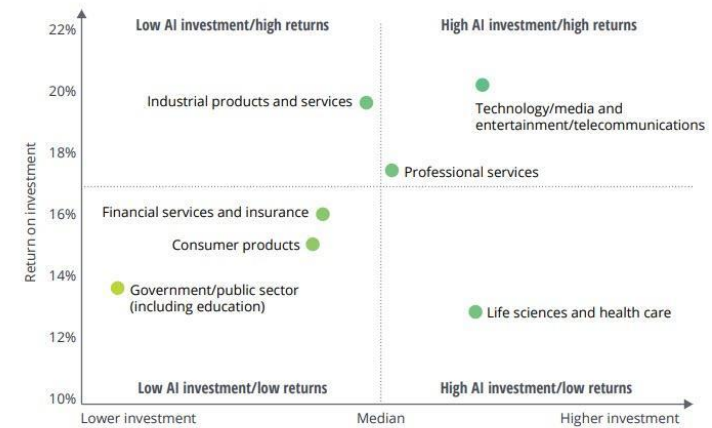
Intelligent Automation adoption plans in enterprise worldwide 2018



Note: Worldwide: 2018; 590 Respondents; Global 2000 enterprise leaders including 100 C-level executives  
Source(s): HFS Research ; KPMG

### Everyone's winning, but some industries are winning bigger

AI investment and ROI: Relative landscape of industries



Note: The dotted lines in the graph represent the median ROI and median AI investment for all respondents, cross-industry.  
Source: Deloitte State of AI in the Enterprise, 2nd Edition, 2018.



Robotics



Quality & Inspection

CONSTRUCTION



Military Applications



Research

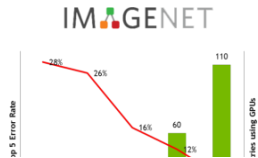
GOVERNMENT



Intrusion Detection



CYBERSECURITY



Cancer Research



Pharma R&D

HEALTHCARE



Financial Forecasting



Fraud Detection

FINANCE



Autonomous Cars



AUTOMOTIVE



Online Advertising



Recommendation Engines

MARKETING



Call Center



Sentiment Analysis

CUSTOMER SERVICE



Shopping Assistance



Inventory Analytics

RETAIL



Crop Management



Disease Identification

AGRICULTURE



Security



Energy Efficiency

SMART CITIES



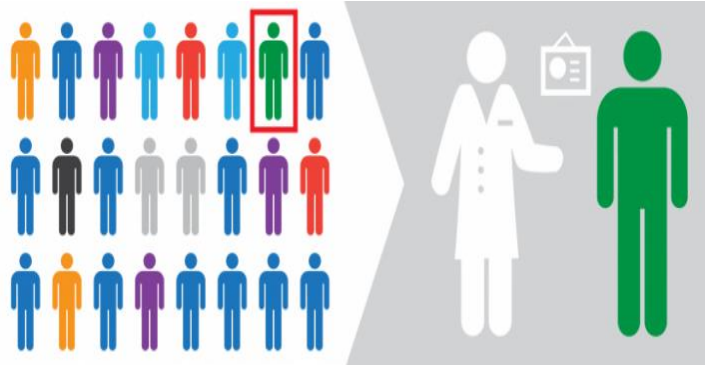
Cognitive Tutoring



Grading

EDUCATION

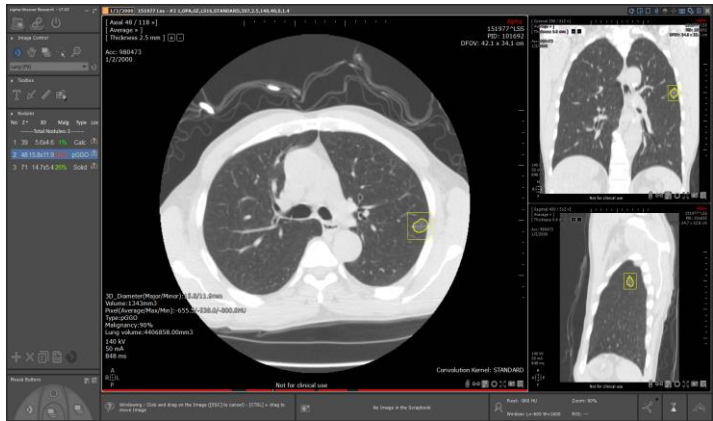
# HealthCare



Clinical trial matching



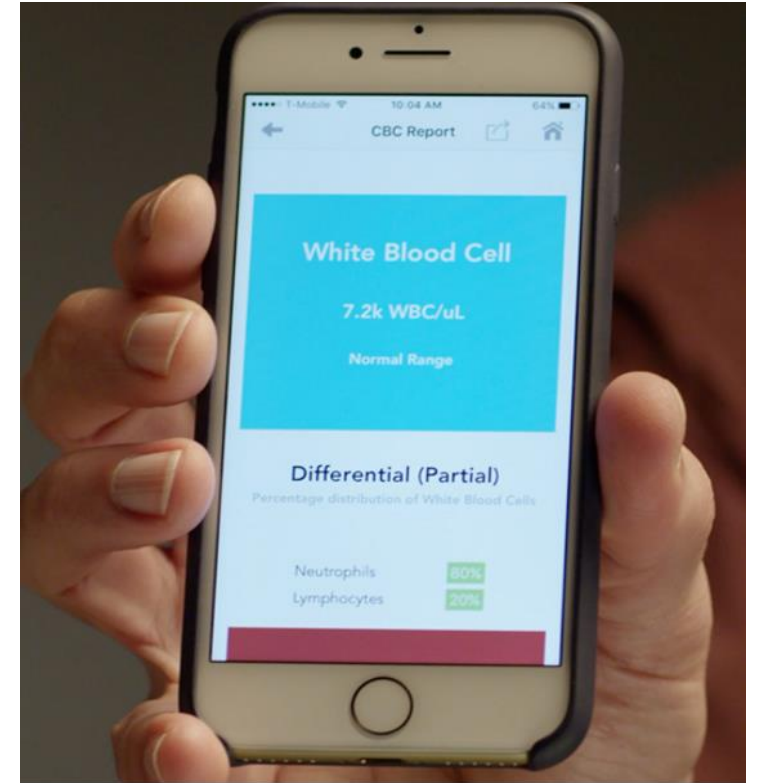
Drug Discovery



Lung Cancer Early Detection

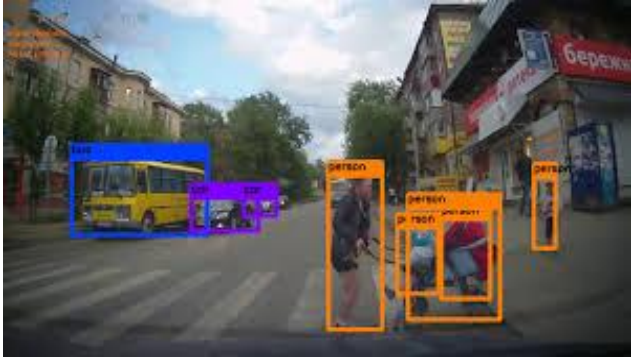


Skin Cancer Detection



Immune System Analysis

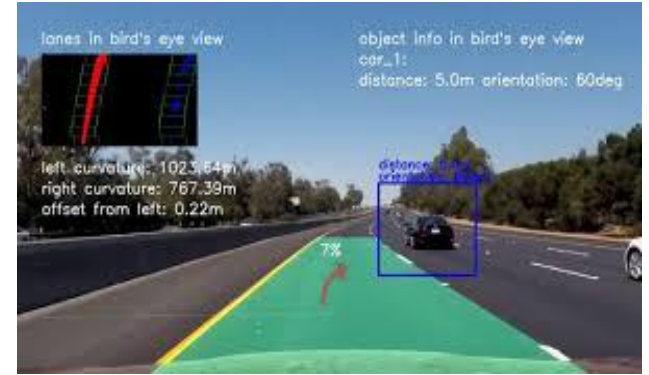
# Automotive



Object Recognition



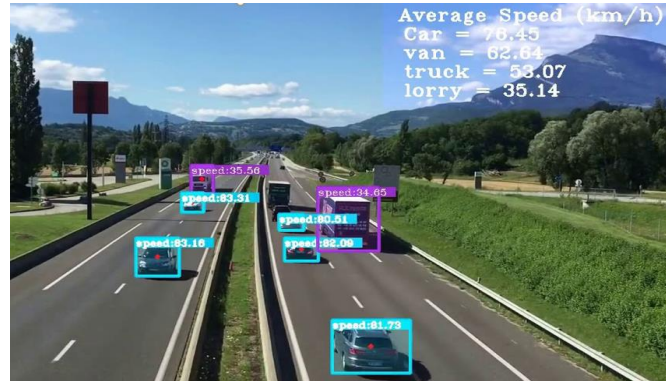
Semantic Segmentation



Lane Detection



License Plate Recognition



Speed Detection



Object Localization

# Security & Surveillance



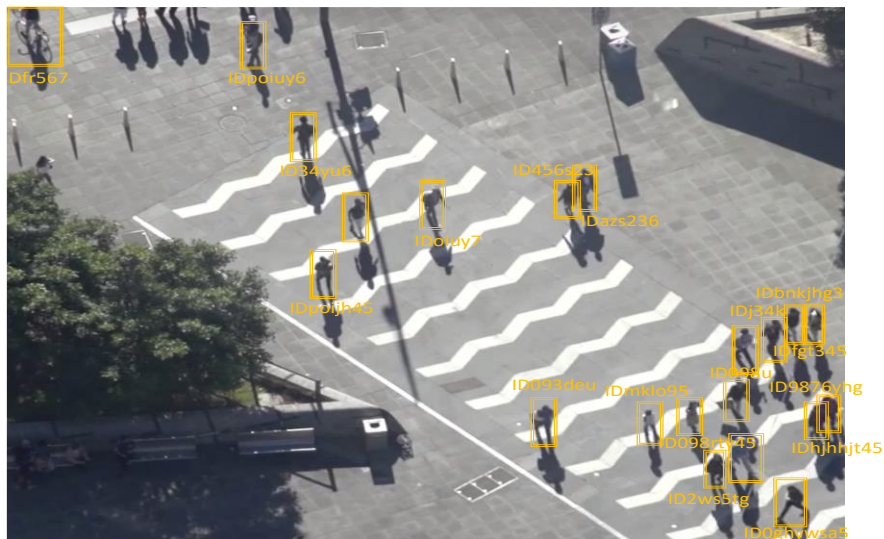
**Intrusion Detection**



**Threat Detection**



**Abnormal Behavior Detection**



**People Tracking & Re-identification**



**Object Tracking & Re-identification**

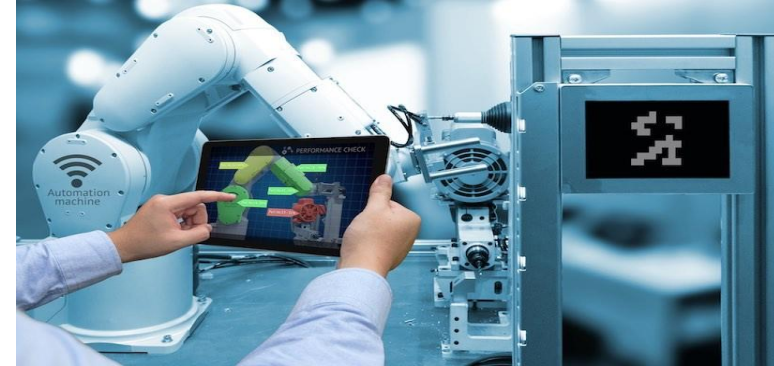




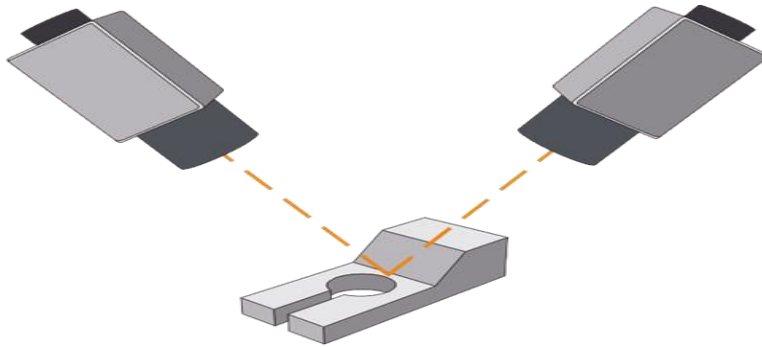
# Manufacturing



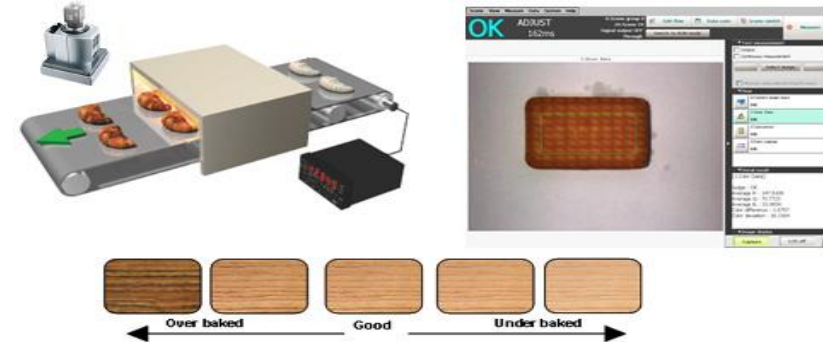
**Automation**



**Machinery predictive maintenance**



**3D Vision Inspection**

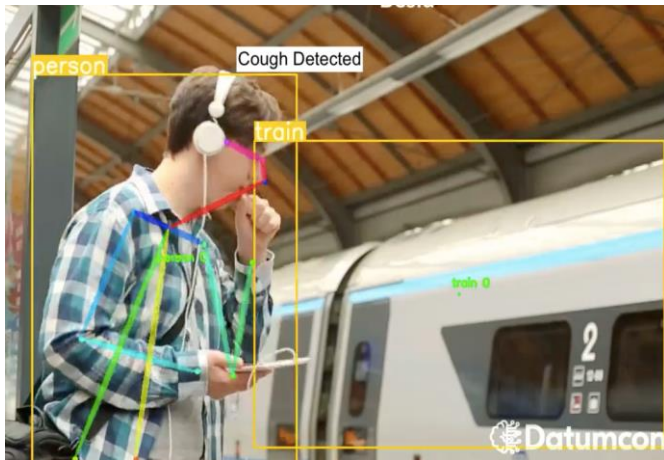


**Defects Reduction**

# AI for Covid-19 Detection



- Automatic detection of fever in crowded environments.
- Detect subjects coughing and sneezing.
- Track possible symptomatic subjects.
- Automated Detection and Tracking of Subjects w/o masks.
- Social distancing with visual alerts feedback.
- People counting



WHAT'S NEXT?





# AI Enigma Episode 2

## 5<sup>th</sup> Aug 2020

# Thank You



**INGRAM** MICRO<sup>®</sup>

Realize the Promise of Technology