

Joël Dumoulin

Idiap, TTO

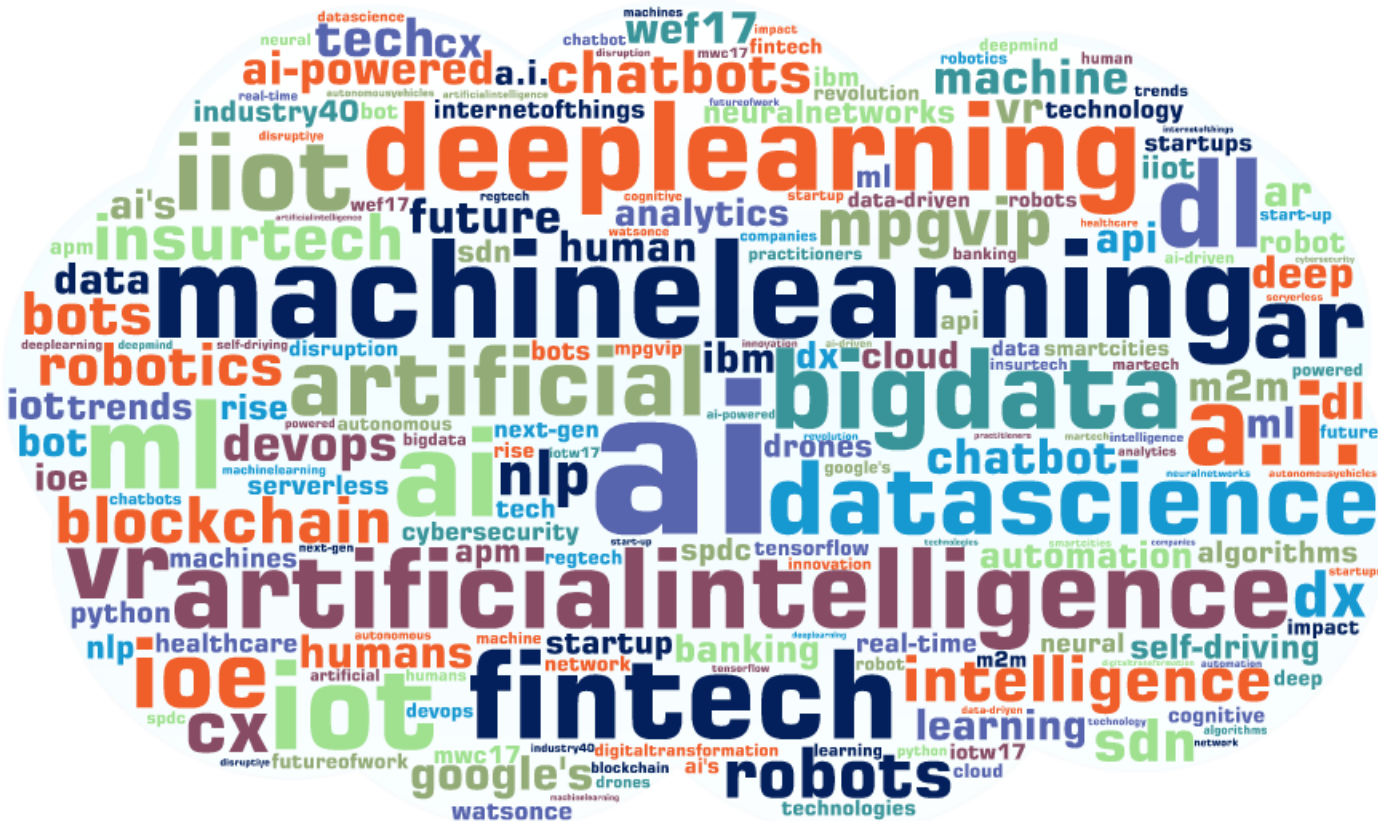
Master AI, Industrial relations



# ***L'Intelligence Artificielle au service de ma PME : comment et pourquoi ?***

26.03.2021

# What is AI?

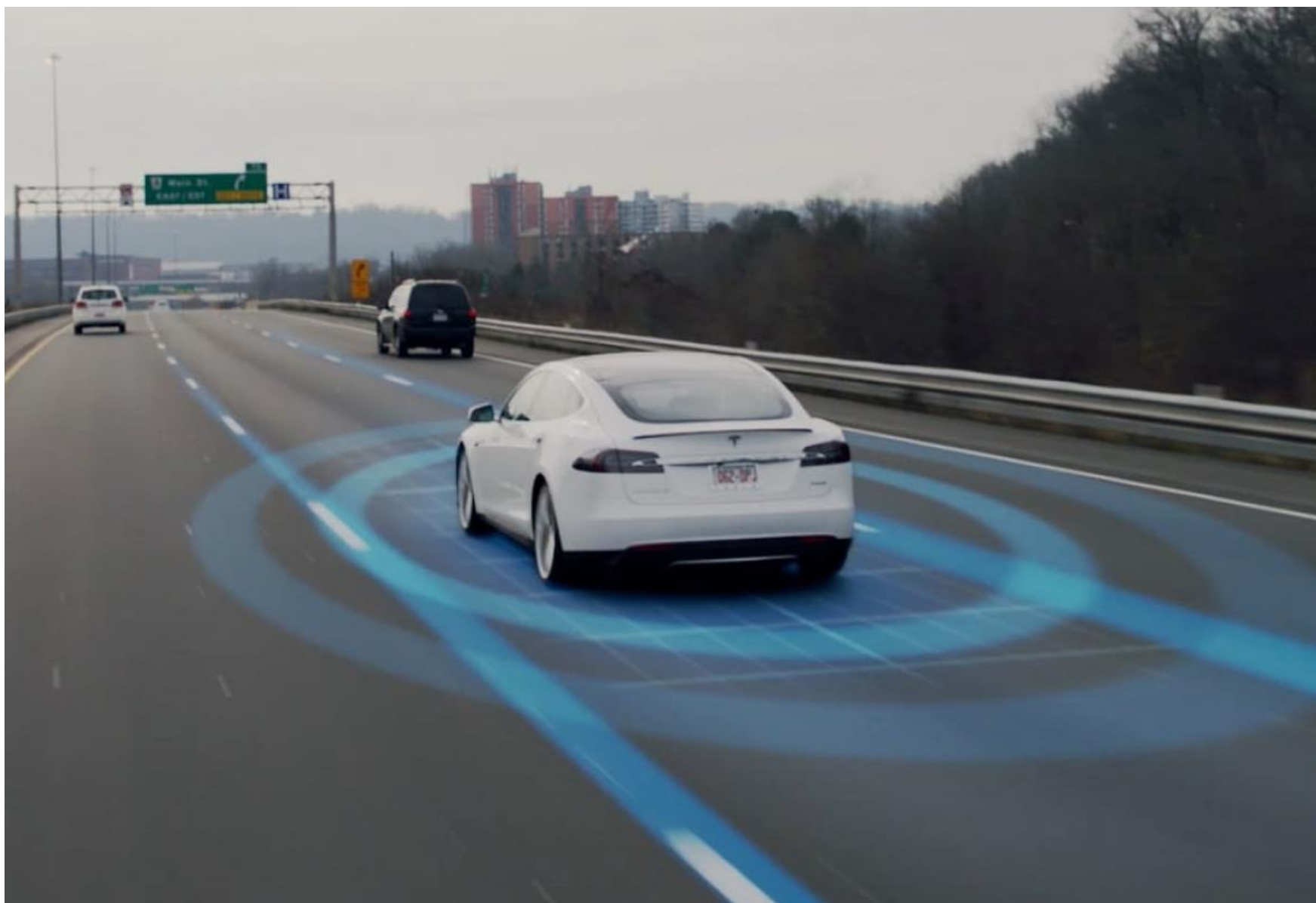


<https://towardsdatascience.com/lessons-learned-from-applying-deep-learning-for-nlp-without-big-data-d470db4f27bf>

# Where is AI?









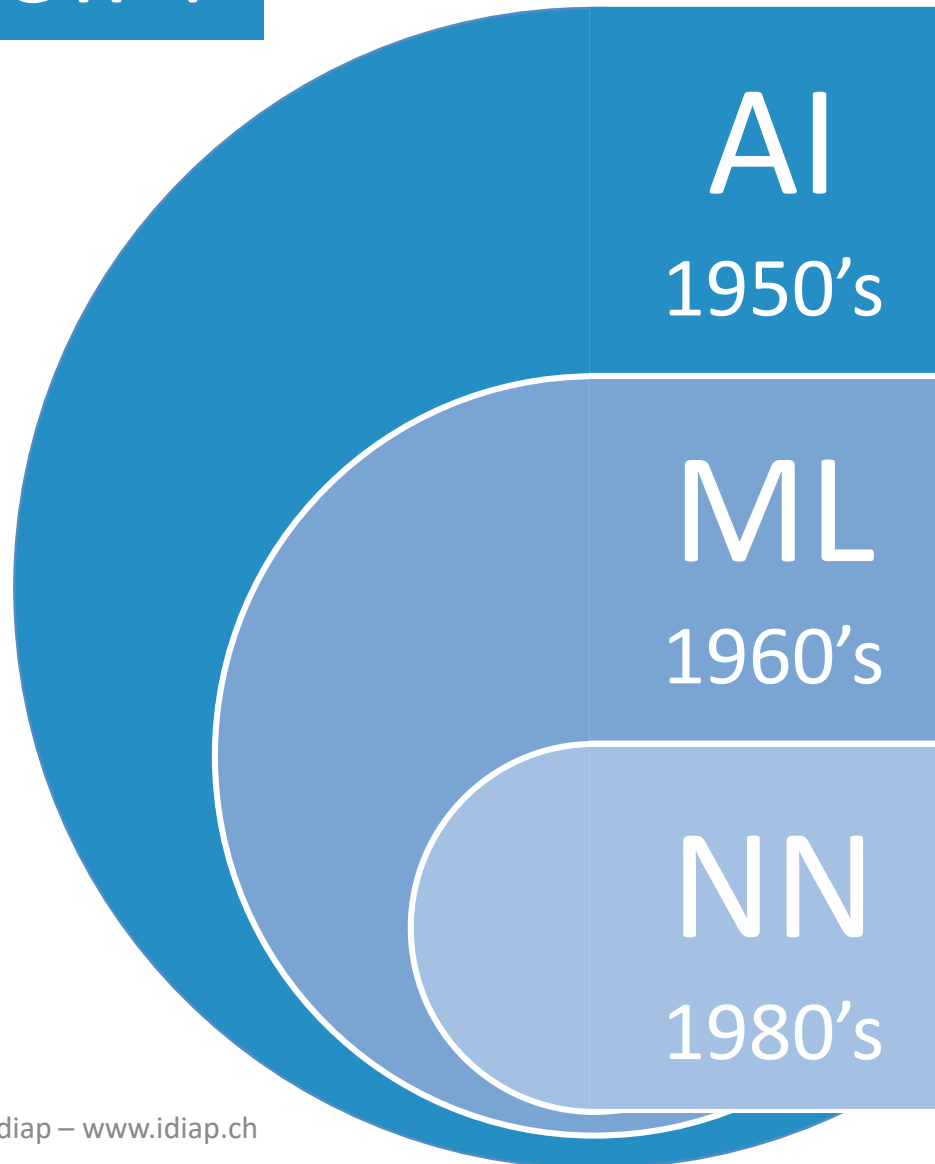
The image features the word "NETFLIX" in a bold, red, sans-serif font, centered horizontally and slightly above the vertical center. The text is superimposed on a dark, semi-transparent background that serves as a collage of various movie posters. These posters are tilted at different angles and overlap each other. Recognizable elements include a man in a military uniform, a woman with a red headpiece, a man with a beard, a woman with long dark hair, a man in a suit, a woman with short dark hair, a man with a beard, a woman with dark hair, and a man in a military uniform. The overall aesthetic is cinematic and diverse, representing a wide range of genres available on the platform.

# NETFLIX

# Where is AI?

- Automatic Speech Recognition and NLP/NLU
  - Personal assistants (Amazon Alexa, Google Assistant, Microsoft Cortana, etc.)
  - Chatbots
- Computer vision and object recognition
  - *Autonomous vehicles*
- Recommender systems
  - *Netflix, Social networks*
- ... and many other applications!
  - *Google maps*
  - *Spam filters, smart email categorization*
  - *Facial authentication*
  - *Health*
  - *Cobot*

# Is it new ?



Making intelligent machines that have the ability to achieve goals like humans

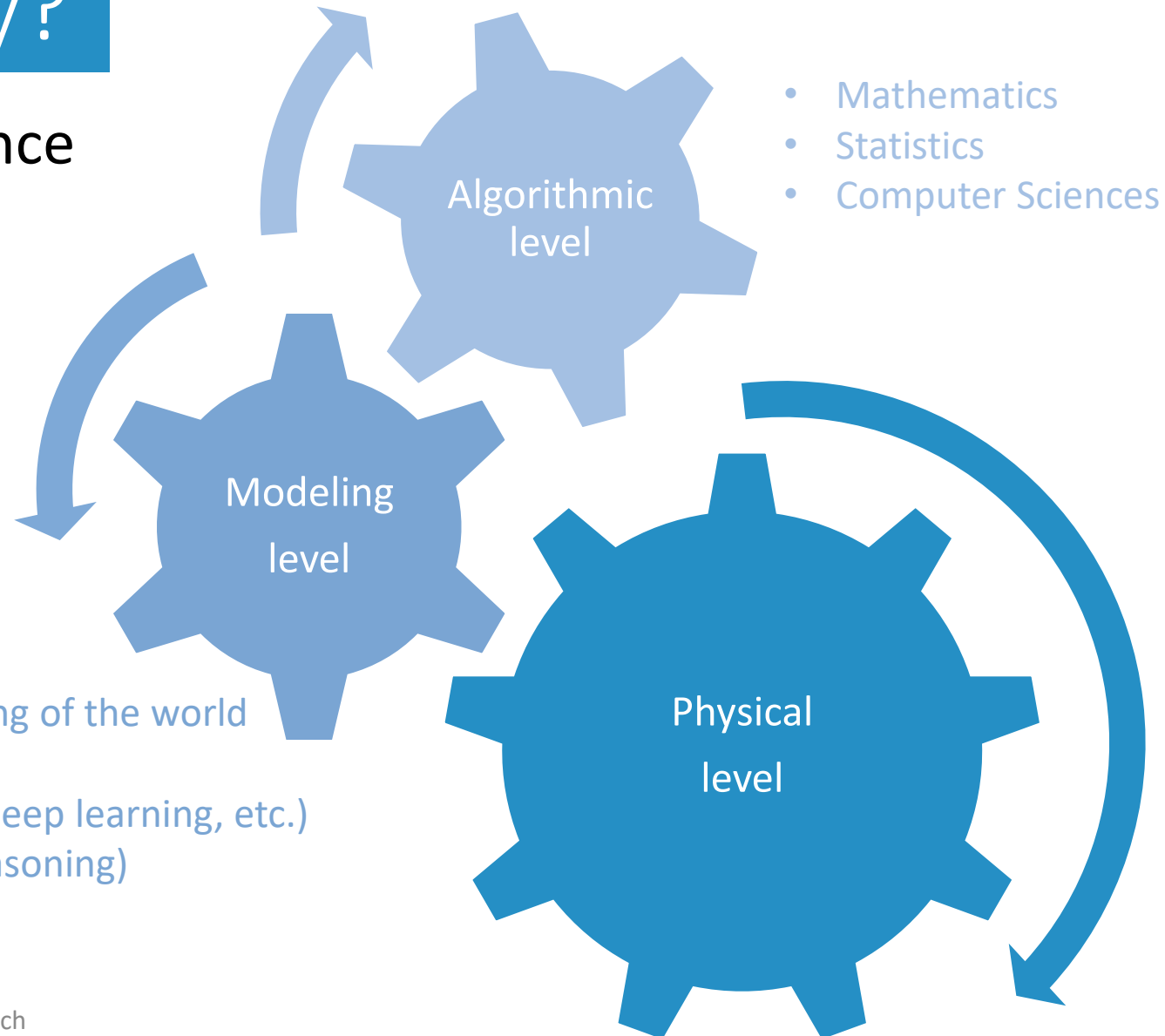
Computer's ability to learn without being explicitly programmed

Brain inspired computation



# Why today?

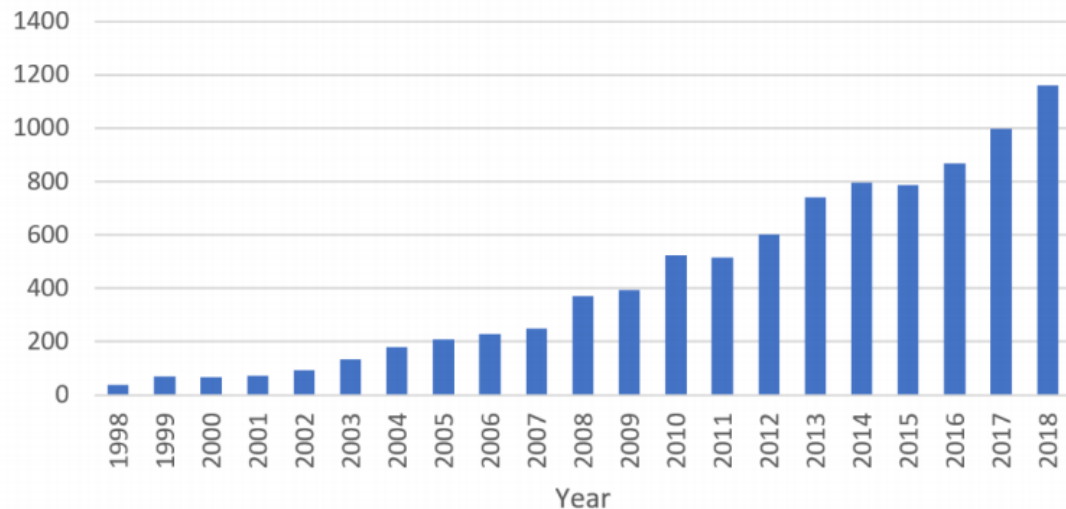
- Unique convergence of several trends



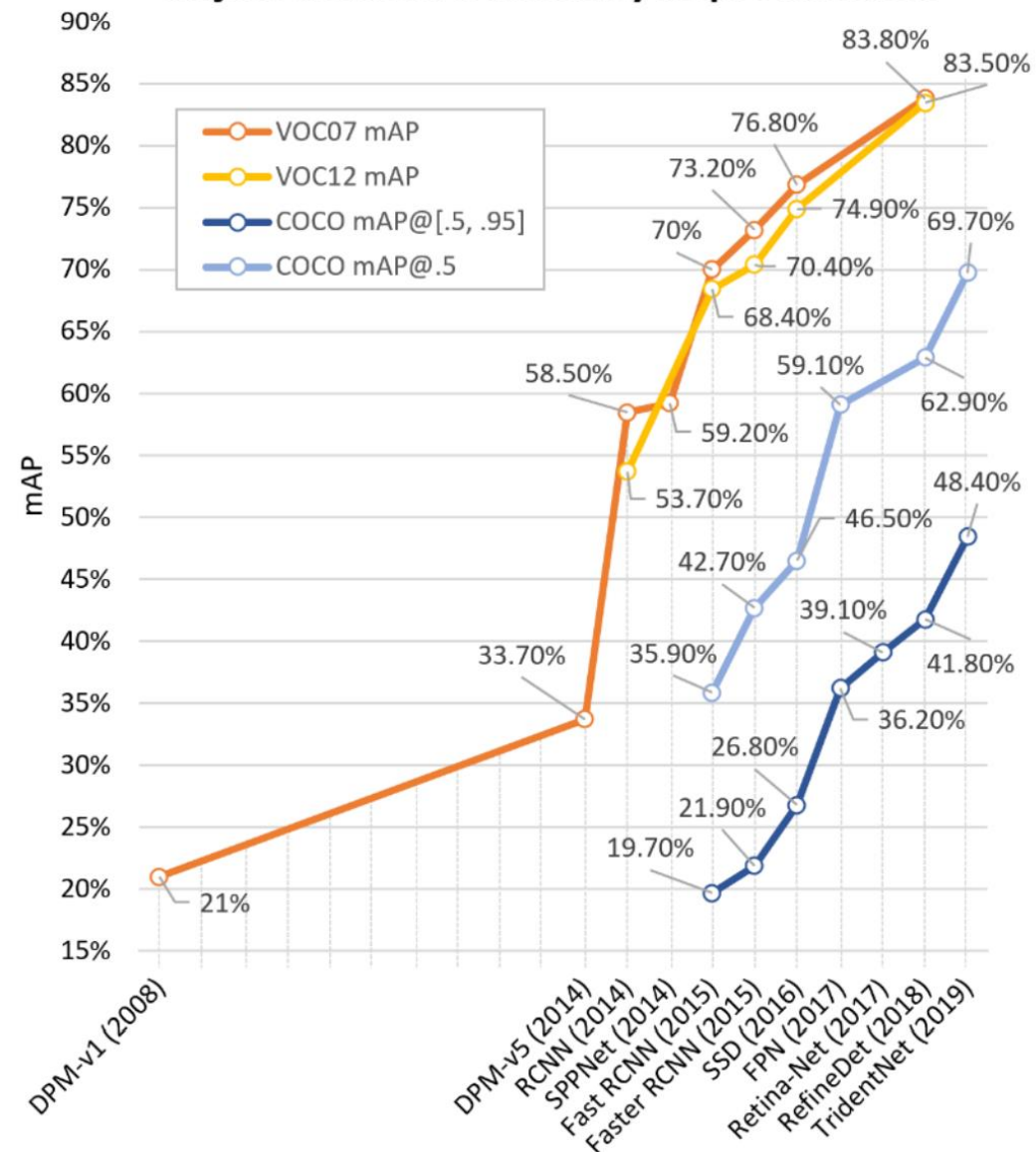
# Object Detection in 20 Years: A Survey

Zhengxia Zou and Zhenwei Shi and Yuhong Guo and Jieping Ye  
2019

Number of Publications in Object Detection



## Object detection accuracy improvements



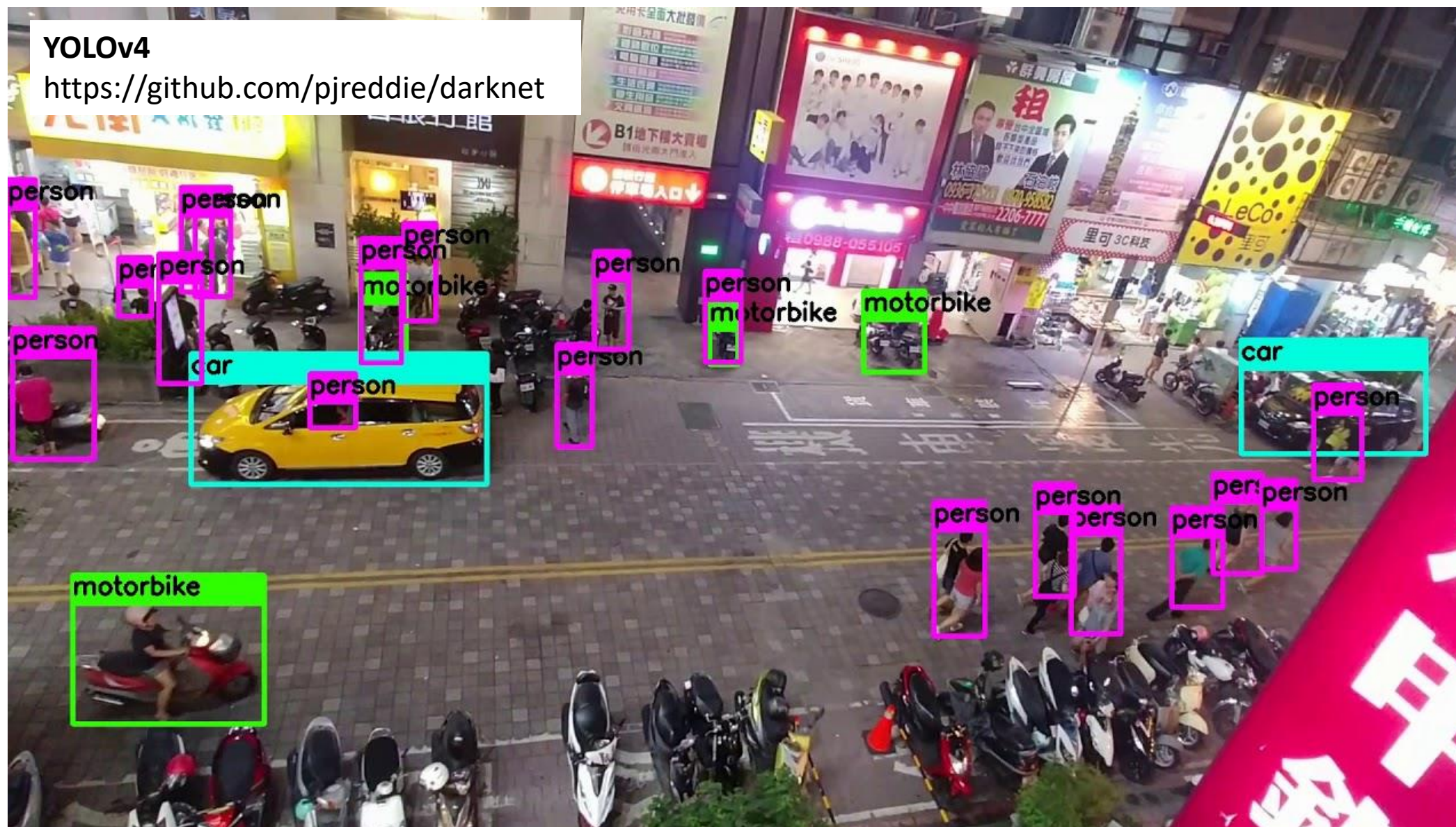
## MS-COCO-17

164k images and 897k annotated objects from 80 categories



YOLOv4

<https://github.com/pjreddie/darknet>

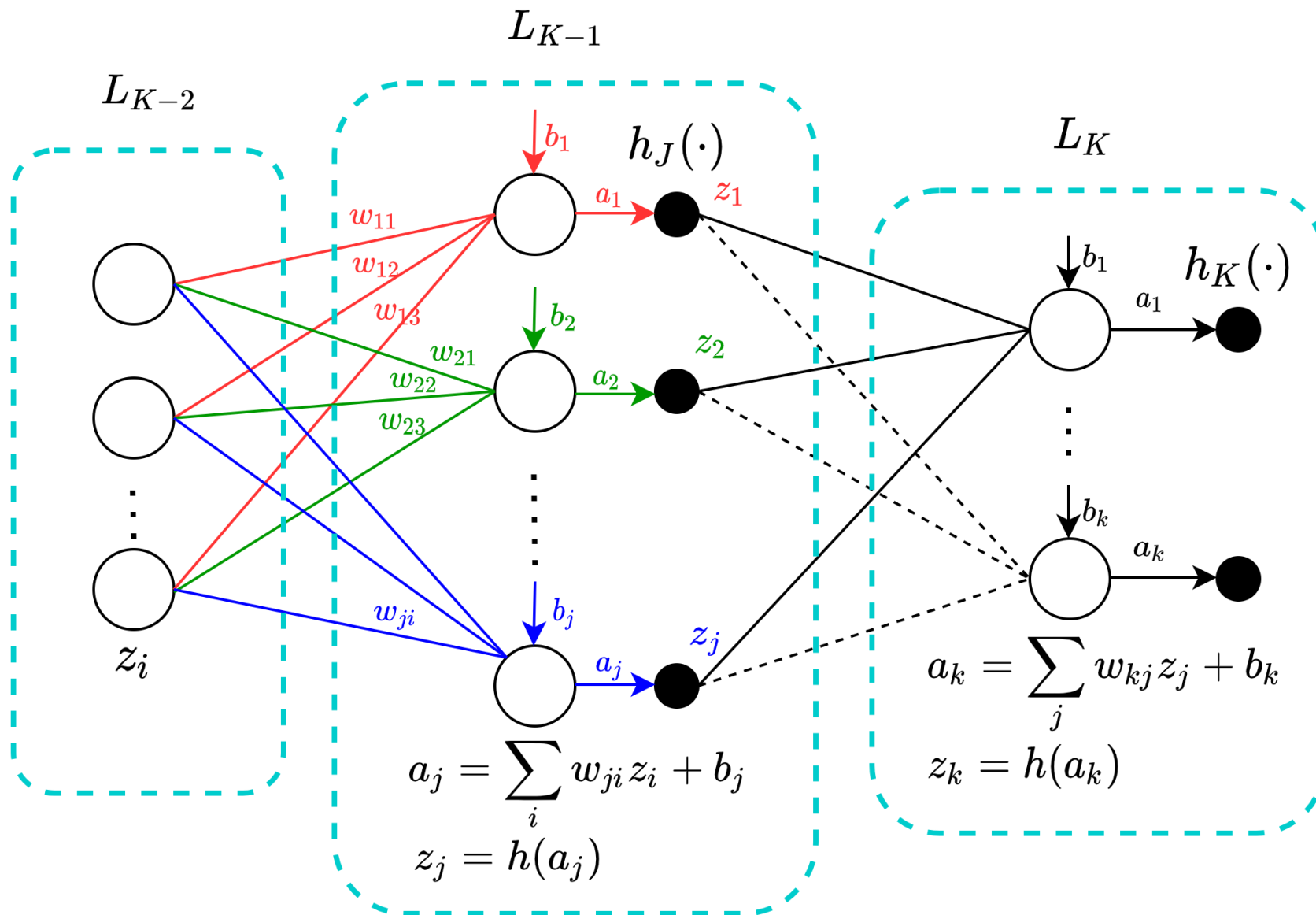


# Opportunities for industries

- Optimize your processes
  - *Automate time consuming tasks*
  - *Reduce energy consumption*
- Improve the quality of your products
  - *Use computer vision to improve quality control*
- Reduce maintenance costs
  - *Anticipate failures → control the shutdown of production lines*
- Exploit the information available in your data
  - *Better understand your customers to offer them tailor-made services*
- *And so much more!*



# Where to begin?



$$\mathbf{y} = L_K \circ L_{K-1} \circ L_{K-2} \cdots L_1(\mathbf{x})$$

Or simply contact us!

+41 27 721 77 22

[tto@idiap.ch](mailto:tto@idiap.ch)

<https://www.idiap.ch/en/tech-transfer>

# Where to begin?

- Focus first on the problems you want to solve
  - You know your business better than anyone
- Then talk with specialists
  - They will need you as much as you will need them
- Do not underestimate the time for achieving results
  - AI.EXE does not exist!
  - Go step by step





# You want to develop your activities in artificial intelligence...

## ... but you don't know where to begin ?

### YOU LACK OR NEED

**EXPERT GUIDANCE**



**KNOW-HOW**



**SKILLED EMPLOYEES**



# We have the solution for you

## Applied Master in AI

### Unique program created by

- Idiap, a world leading AI Research Institute for 30 years
- Swiss Distance University Institute (+1800 students trained / year)



### We provide you



State-of-the-art  
training for your  
employee



Support for defining  
and implementing  
your AI strategy

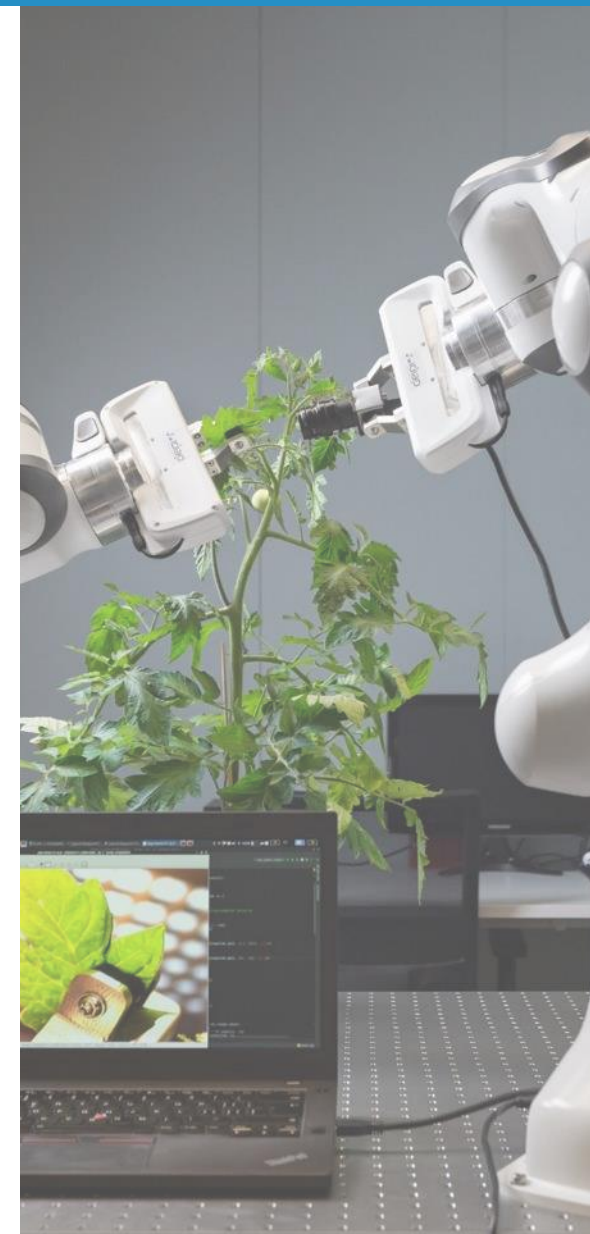


*Idiap, a one-stop shop for artificial intelligence*

**Prof. Hervé Bourlard**

Idiap Research Institute Director / EPFL Professor

- Independent not-for-profit Research Foundation, created in 1991 by A. Dalle Molle
- +140 employees, +50 research projects & +120 publications per year
- 14 research groups covering a broad range of AI research areas
  - Machine Learning, Speech processing, Biometrics, Robotics, etc.
  - A dedicated R&D engineers team bridging the gap between academia and industry
- 3 technology transfer highlights
  - Torch → Facebook PyTorch
  - KeyLemon + Recapp → Swisscom TV speech recognition
  - Swiss Biometrics Center → FIDO certification (only 7 labs in the world)





# How does it work ?

- ① Your employee enrolls into the program or we put you in contact with our talented candidates
- ② Together with our team of world leading experts in AI and technology transfer, you define your AI strategy, objectives and projects
- ③ Your employee spends ½ his time working on this process, and the other ½ studying  
Your employee develops your project with the help of our experts

# What do you get ?

1

A TAILOR-MADE AI  
STRATEGY

2

A COMPLETE PROJECT  
FITTING YOUR  
BUSINESS

3

INCREDIBLE  
EXPERIENCE, TALENT  
AND KNOW-HOW

4

A FULLY TRAINED  
EMPLOYEE WHO WILL  
BE YOUR EXPERT IN AI

# Information

<b>Duration</b>	3 semesters (18 months)
<b>Language</b>	Lectures in English, practical work in the preferred language of the company
<b>Workload</b>	About 45 hours per week (job + lessons) → full time!
<b>2019-2021</b>	16 companies, 26 candidates
<b>Next start</b>	February 1, 2022

# Use case

MACHINERY  
SERVICES  
PACKAGING  
COATING  
INSPECTION



*“Artificial intelligence helps our production plant to be even more competitive”*

Jacques Thomasset, R&D director

- Who

- Swiss SME, world leading supplier of equipment offering innovative laminate and seamless plastic tube packaging production solutions

- Problem

- Aesthetic control of welding on laminated products

- Results

- Solution easy and quick to integrate
- Detecting all kinds of manufacturing defects
- Learning on few samples



Discover what they say and more on <https://www.master-ai.ch/>



This initiative is exactly what the economy needs, not only given the shortage of skilled labor, but also the pace of technological change.

Dr. Sara Carnazzi Weber

Head of Swiss Sector and Regional Analysis, [Credit Suisse](#)



Artificial intelligence helps our production plant to be even more competitive. Thanks to this program, we are implementing a visual recognition project to inspect our products quality.

Jacques Thomasset

R&D director, [AISA Automation Industrielle SA](#)



I put the masters courses into practice as part of a project using machine learning to detect side effects during treatment for latent tuberculosis.

Colombine Verzat

Student, Master in AI

# Contact

## For companies



**Joël Dumoulin**

Head of industrial relations, Idiap

+41 (0)27 721 77 22  
info@master-ai.ch

## For students



**Milène Fauquex**

Faculty Manager, UniDistance

+41 (0)27 451 26 22  
masterai@unidistance.ch