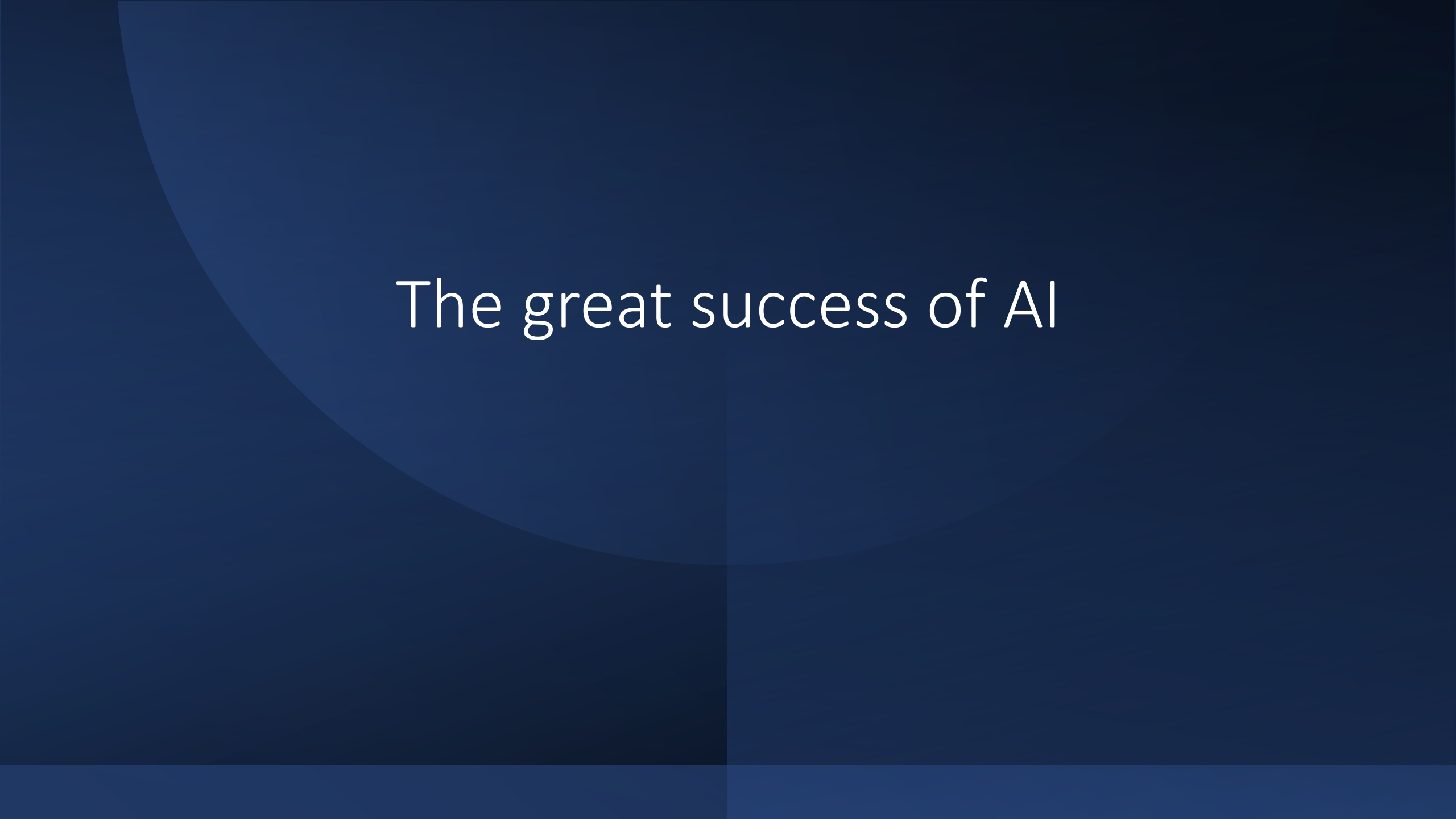

Machine Learning

Examples of Applications of Machine Learning

Aude G. Billard , aude.billard@epfl.ch

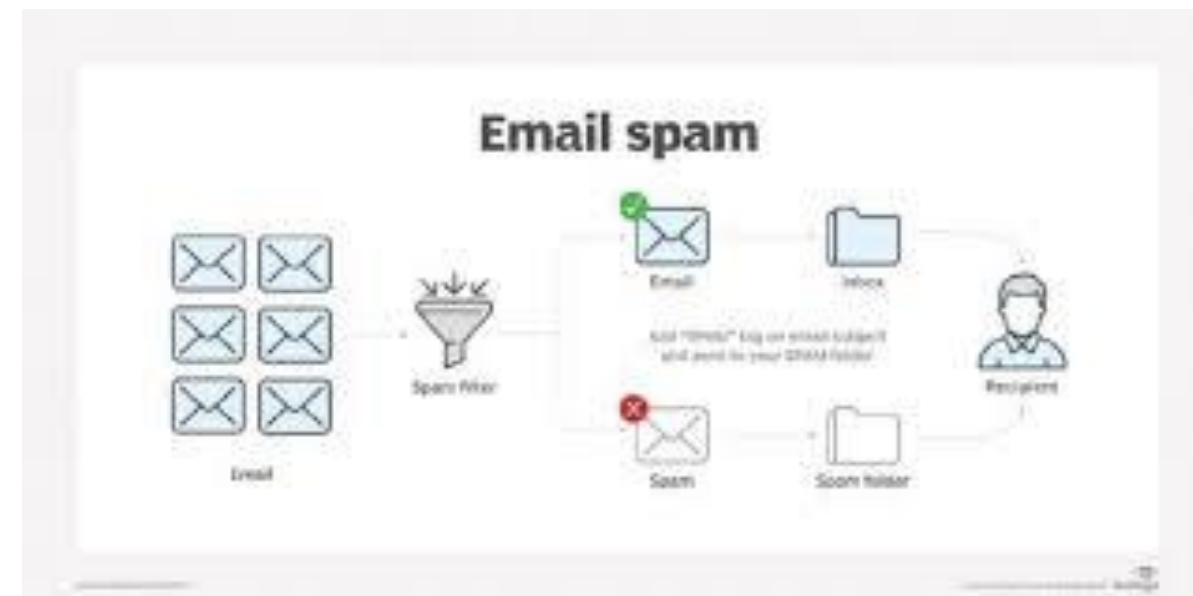
*Learning Algorithms and Systems Laboratory
School of Engineering, EPFL*

<http://lasa.epfl.ch>

The background is a dark blue gradient. A large, lighter blue curved shape starts from the top left and sweeps across the middle of the frame. A vertical line of a slightly different shade of blue runs down the center-right portion of the image.

The great success of AI

Big successes



Big successes



Fingerprint Recognition



Voice Recognition



Biometric data

Les grands succès de l'IA





<https://github.com/facebookresearch/Detectron>

Automatic detection of vehicles and pedestrians



Mercedes - Benz



Audi



Navya (France) / Car Postal (CH)



Nissan



Uber



Waymo (google)



Honda



Tesla

Autonomous Driving



Autonomous Driving

ChatGPT

Computer program

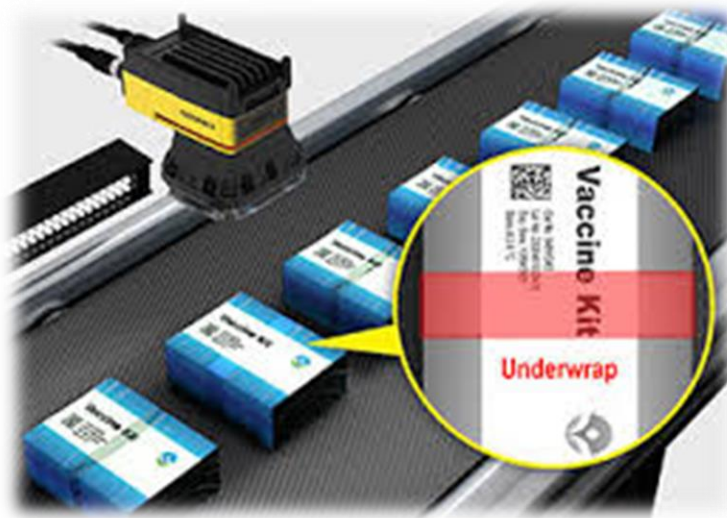




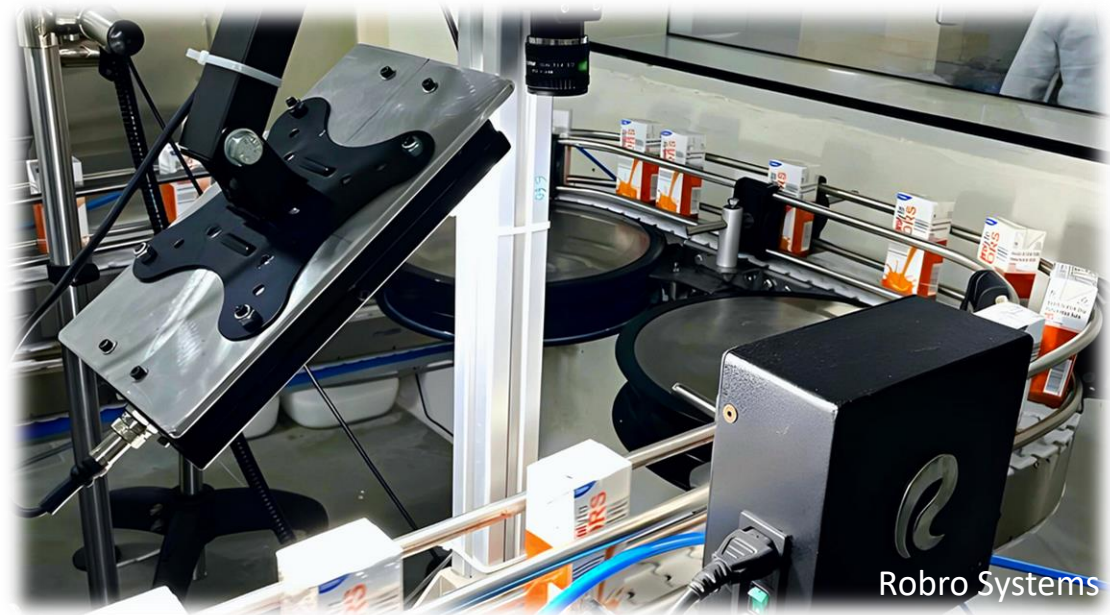
Fast robot control

Machine Learning in Factories

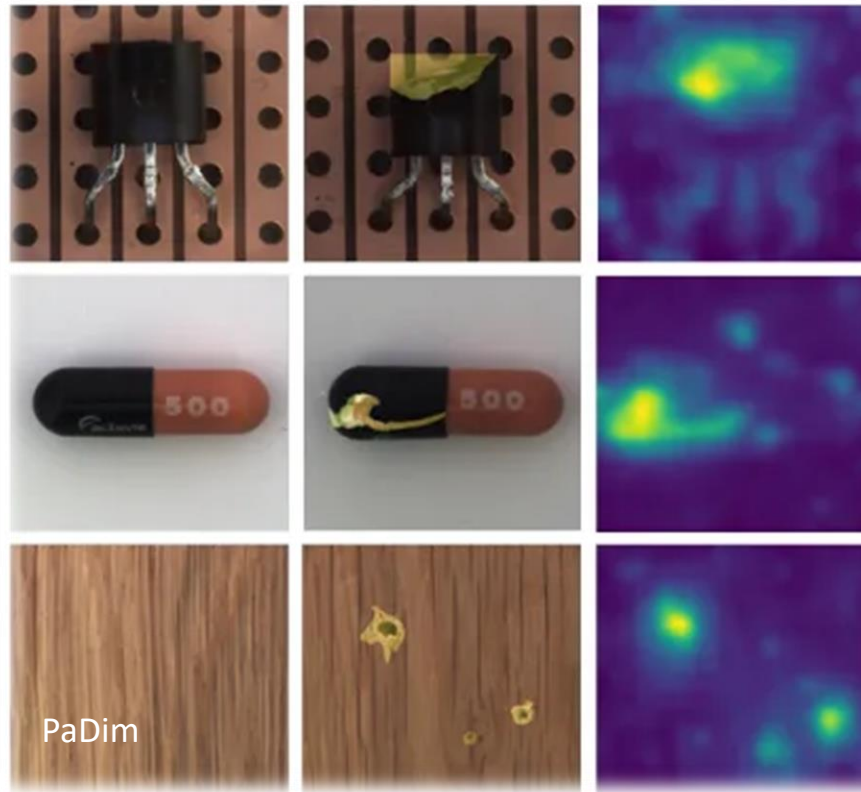
Quality Control



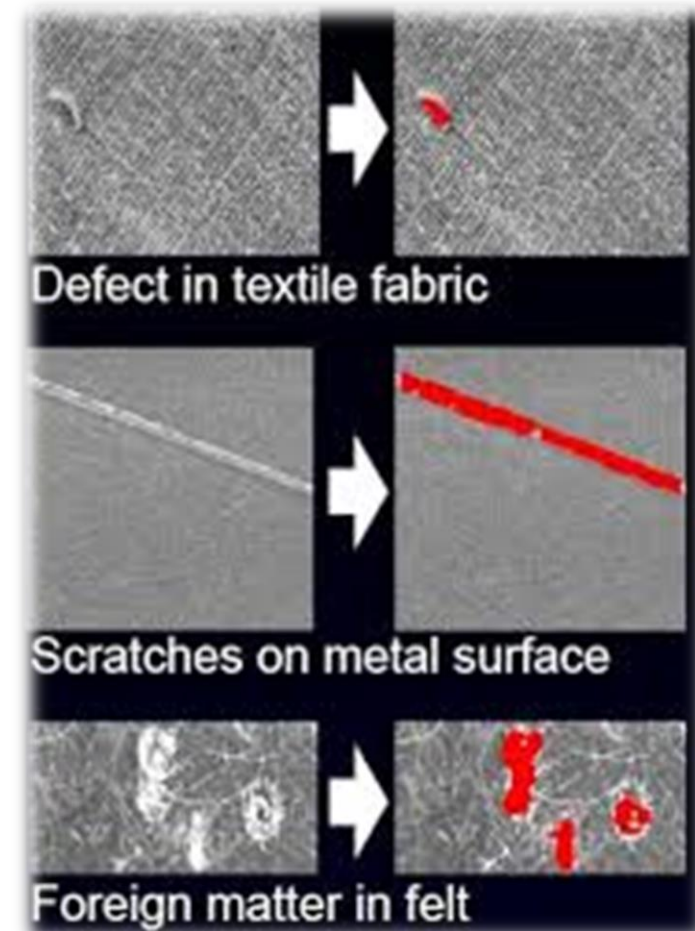
Automatic Inspection of Packaging



Quality Control



Automatic detection of defaults



Quality Control



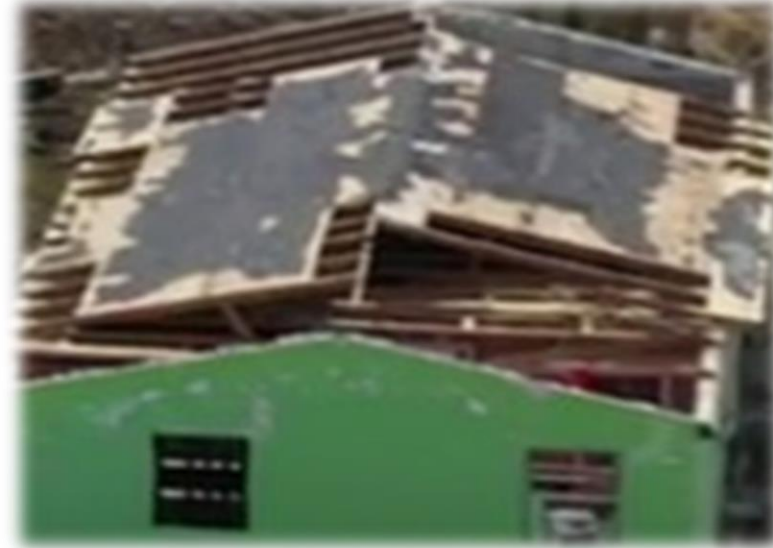
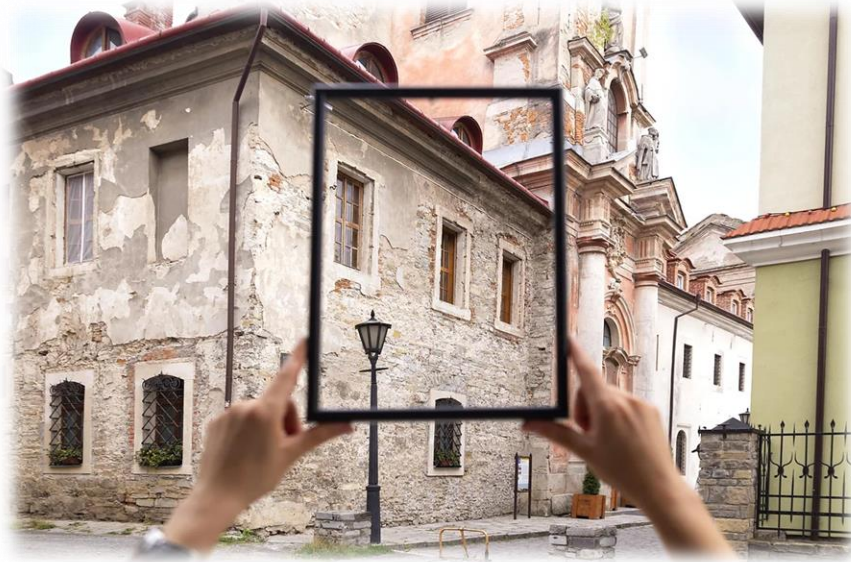
Automatic Selection

Automatic Scan



Repair and design

Reconstructing volumes from 2D images

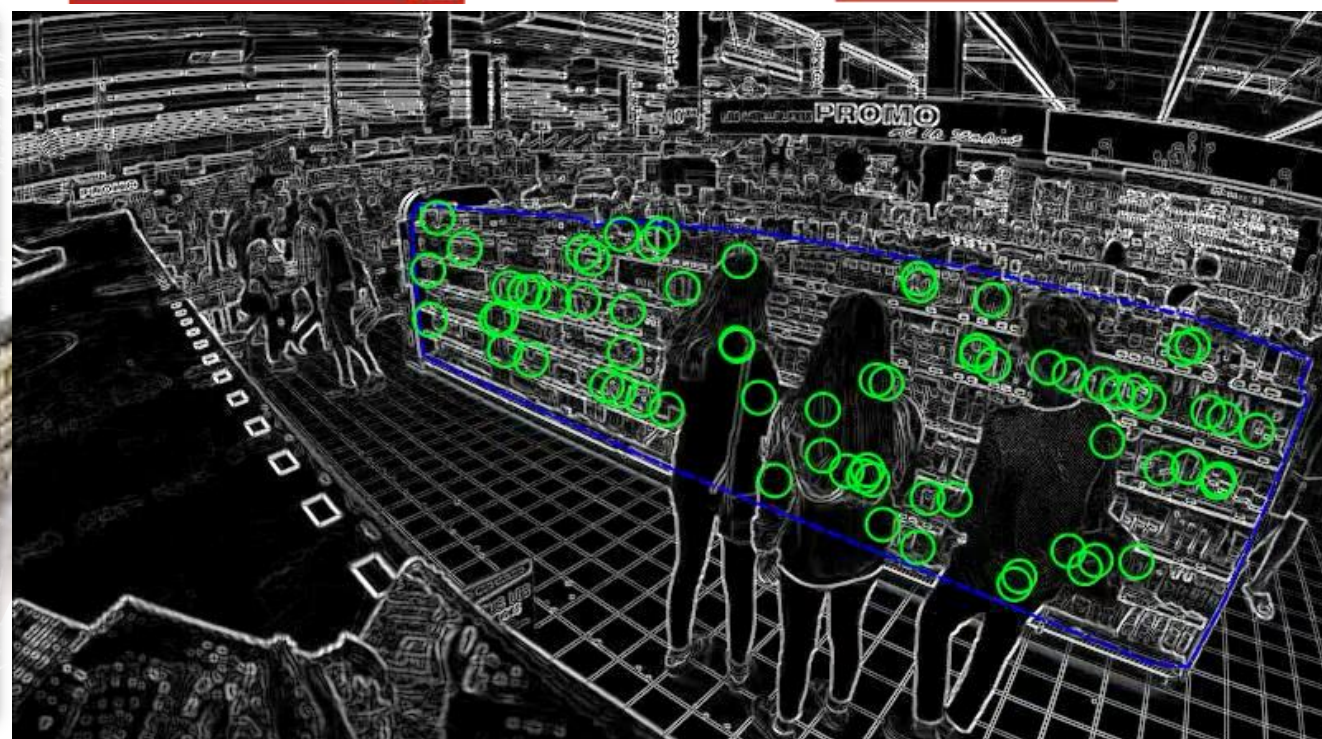


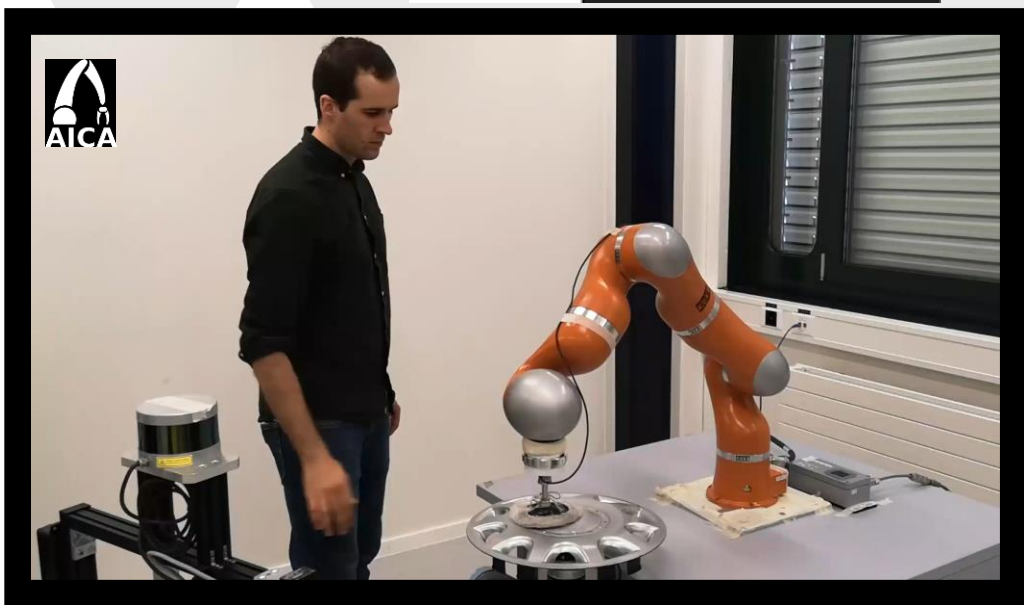
pomelo



General
Data Protection
Regulation

Gold

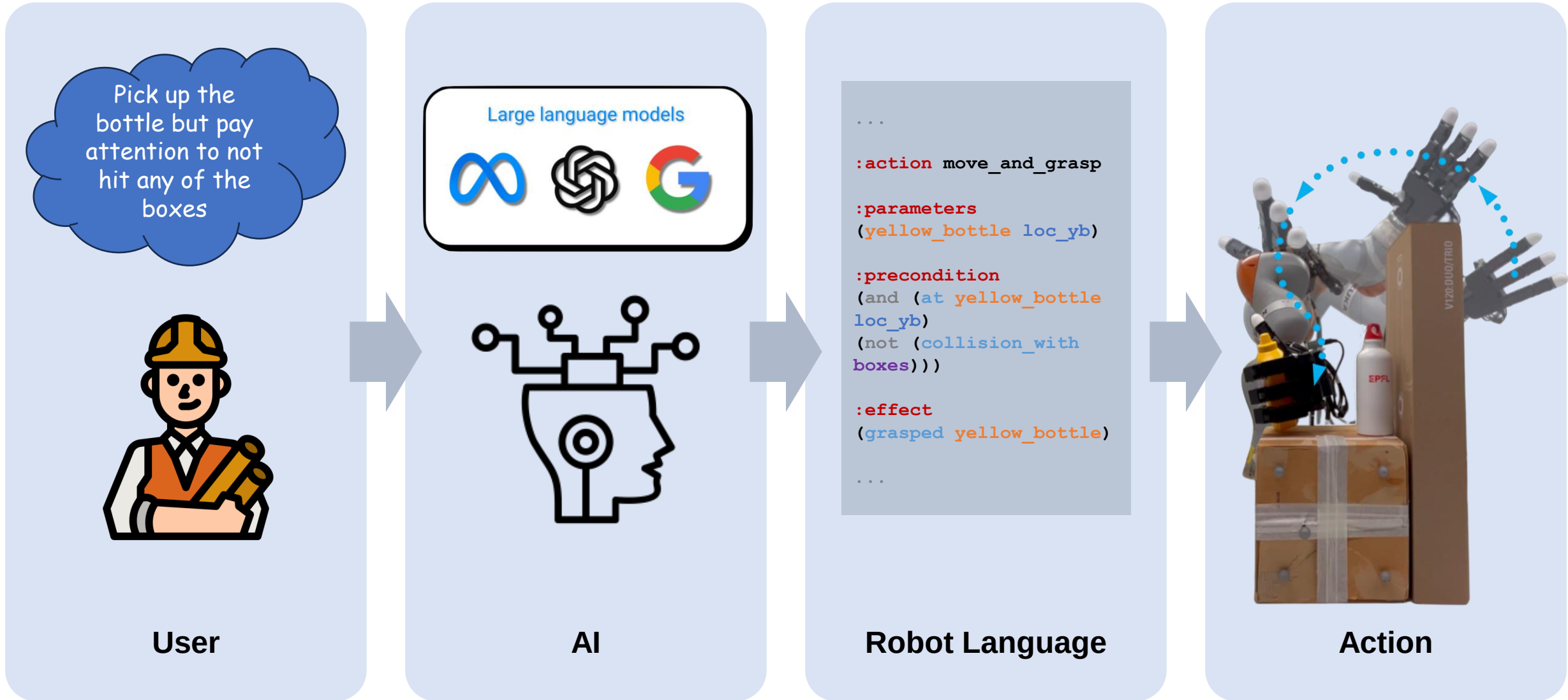




The Future



Connect multiple information sources



Control Robot through Natural Language

bar flying towards the robots, thro

Machine Learning

Control Methods

Michael Koptev

[1] LASA, EPFL, Switzerland
University of Pennsylvania, USA

MICRO-462

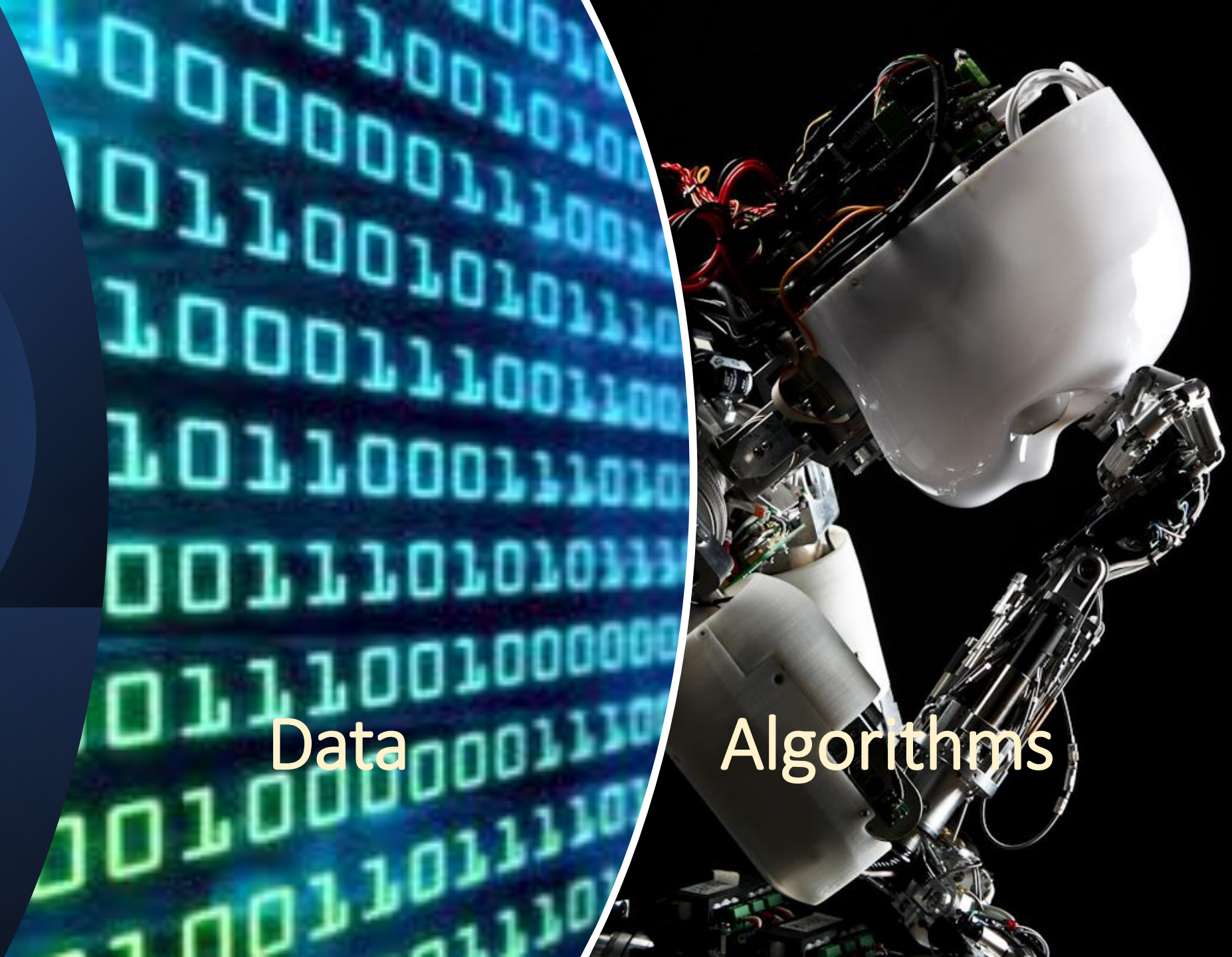
Learning and adaptive control for robots

MT - Master

Principle of AI

Data

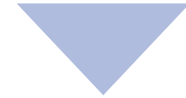
Algorithms



A few caveats

Data Quality

Biases Dataset



Amplification
of biases

Biased Dataset

Amplification
of Biases

High-paying occupations

ARCHITECT



LAWYER



POLITICIAN



DOCTOR



CEO



JUDGE



ENGINEER



Low-paying occupations

JANITOR



DISHWASHER



FAST-FOOD WORKER



CASHIER



TEACHER



SOCIAL WORKER

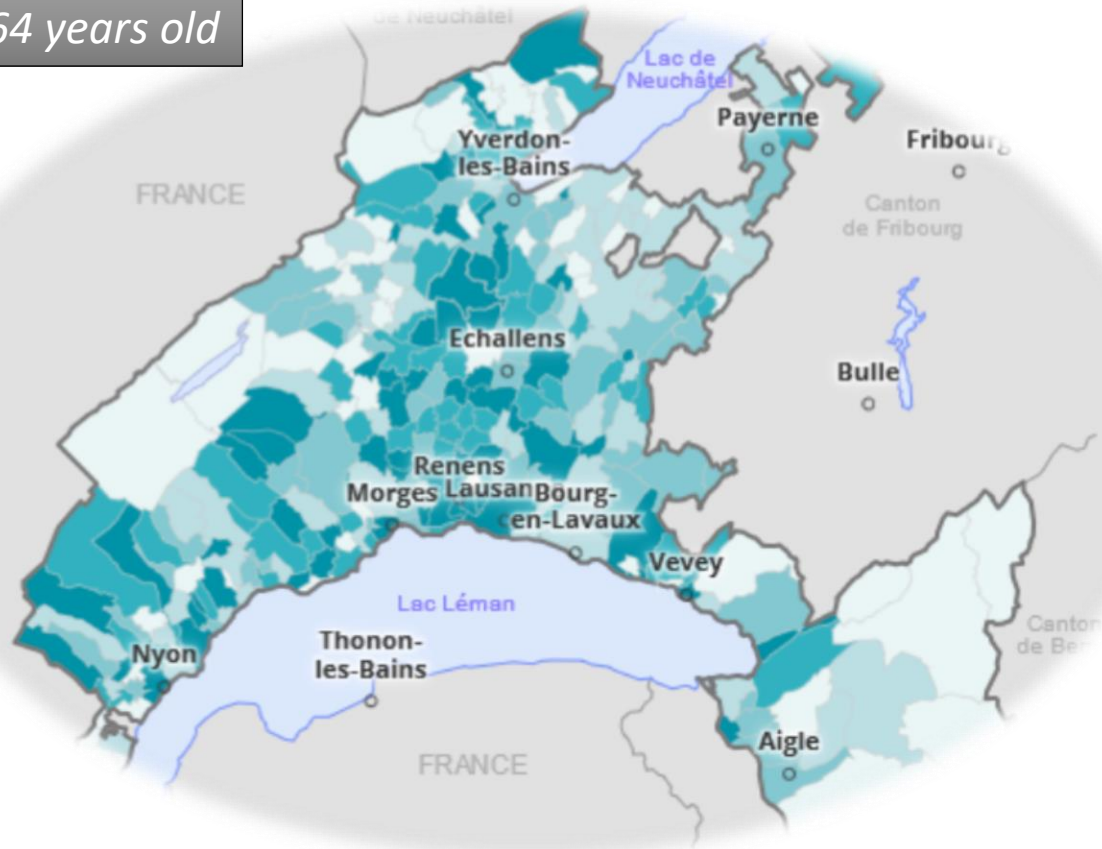


HOUSEKEEPER

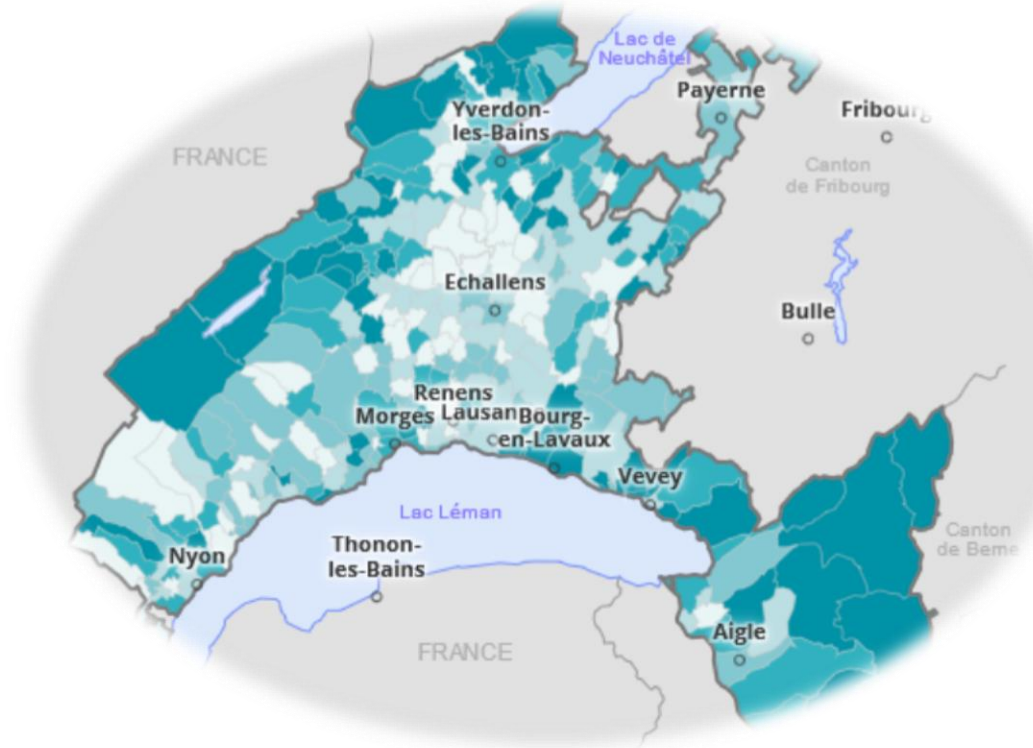


Statistical distribution of population

20-64 years old



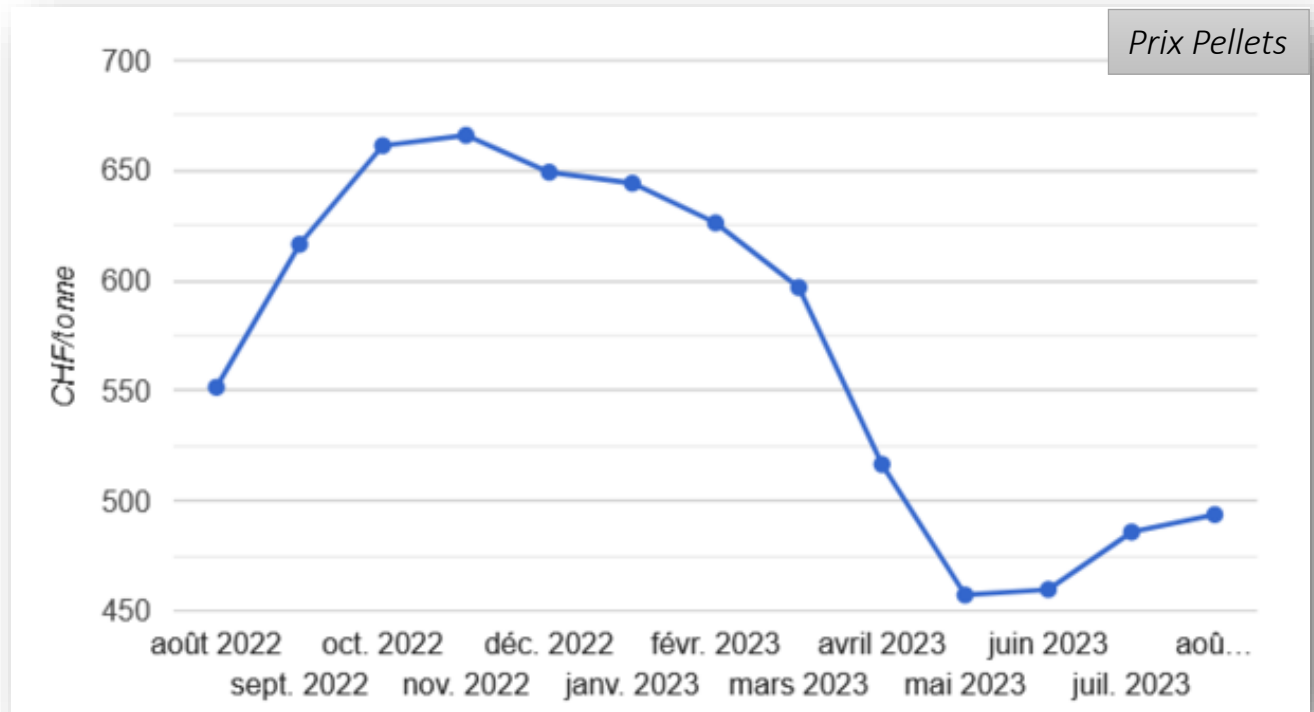
>64 years old



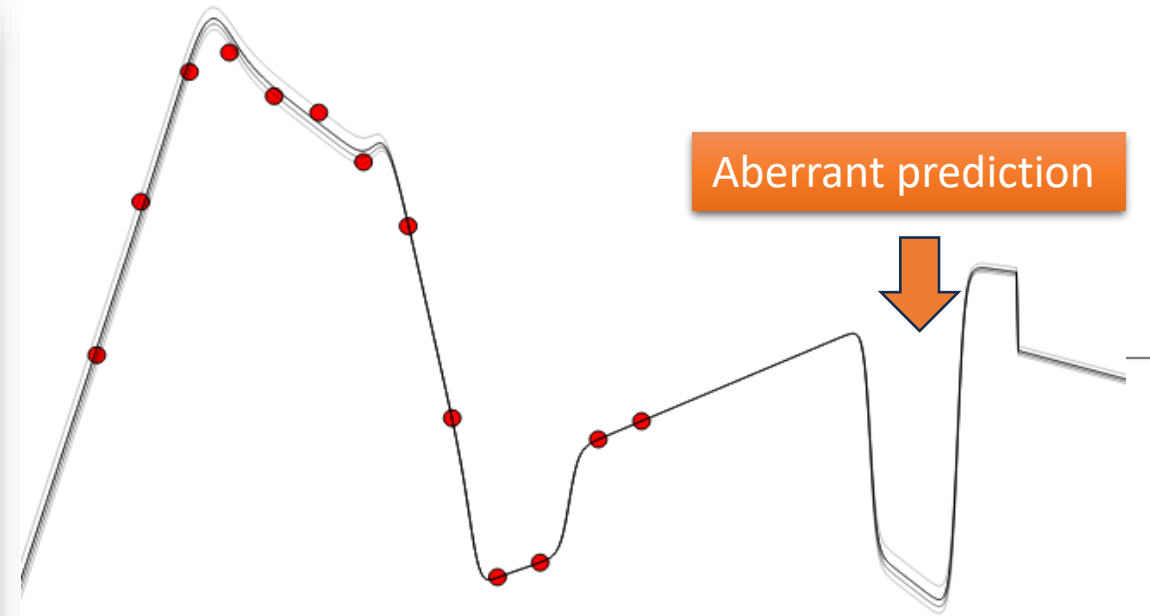
Distribution Age of the Population

Atlas Statistique Vaud

Prediction far from data



Source: Pellets.ch



Large uncertainty
on prediction

Deepfake

