Course Introduction

https://liaoux.github.io/uir-cv-2026/

Introduction to Computer Vision

Spring 2026, Lecture 1

Hi!

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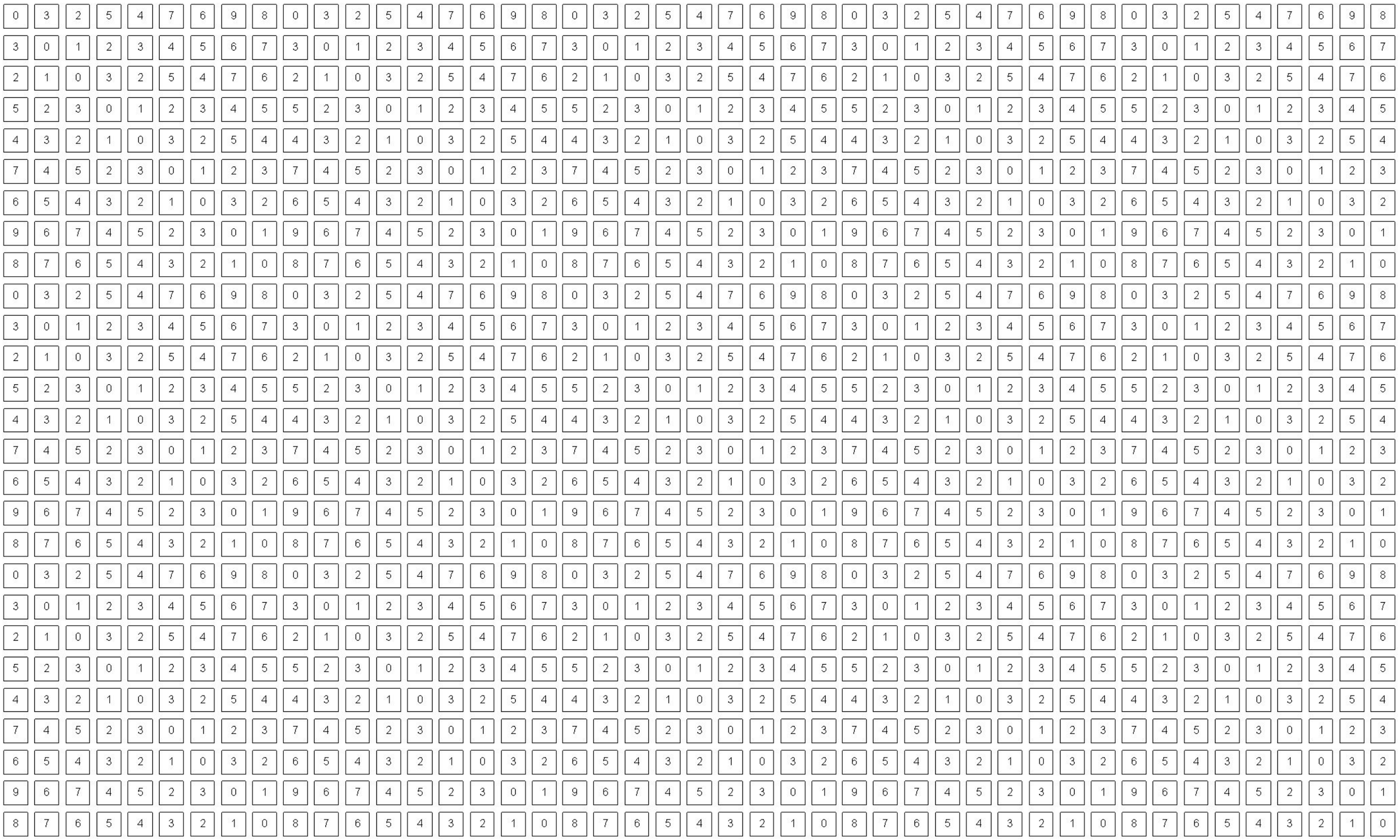
- Assistant Professor at UIR
- Computer science researcher and educator specializing in machine learning applications for healthcare.
- https://www.liaou.xyz/

Course Introduction

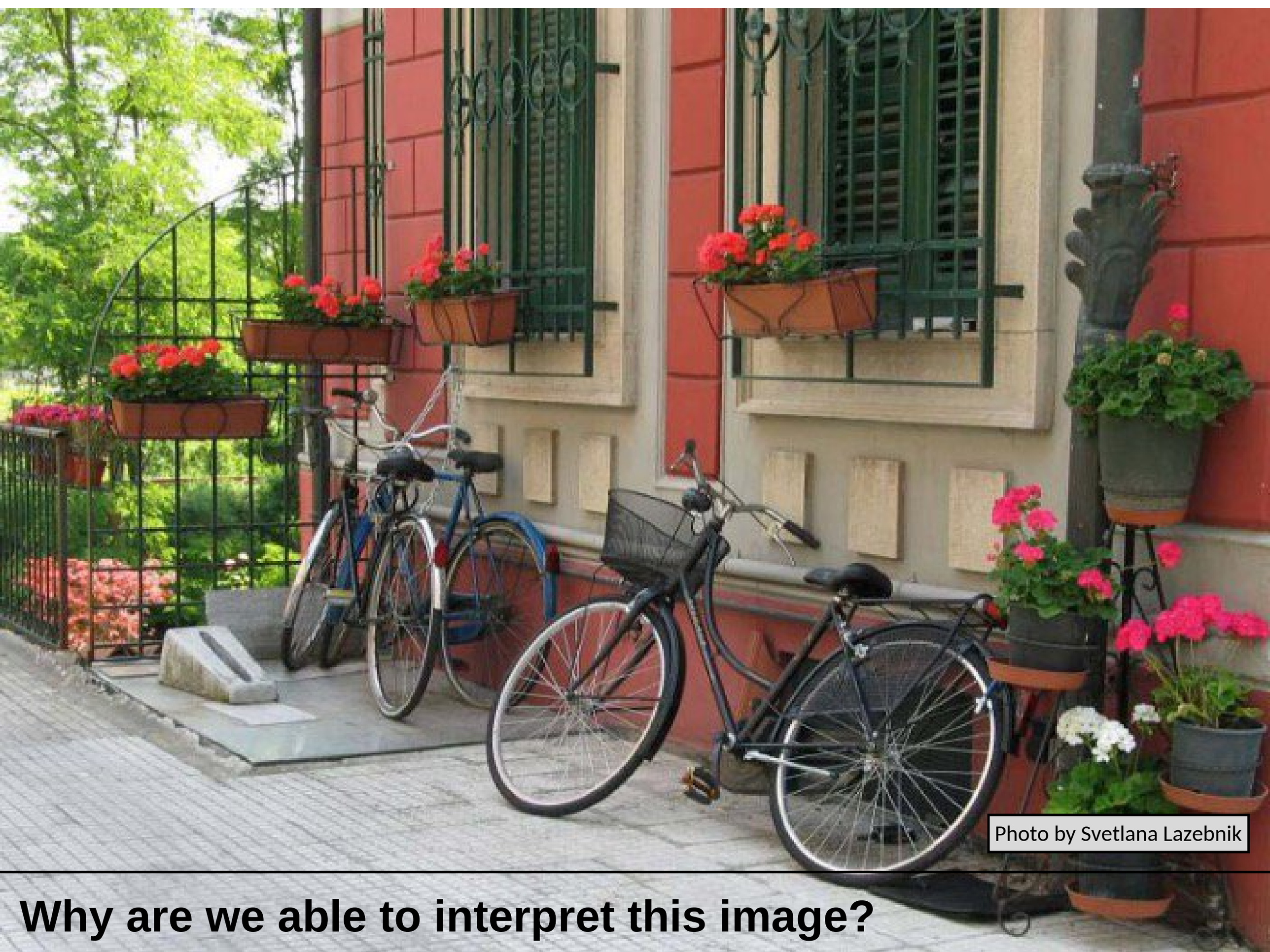
- What is computer vision?
- Course fast-forward and logistics

What is computer vision?

What a person sees



What a computer sees



Why are we able to interpret this image?

The goal of computer vision is

to give computers

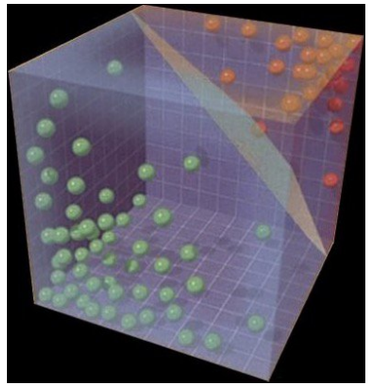
(super) human-level perception

Typical perception pipeline

input

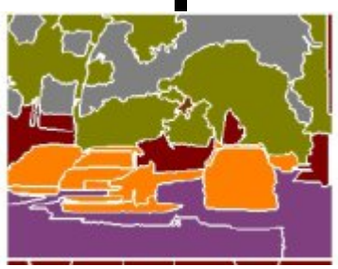
what should we look at?

image representation



‘fancy math’

output



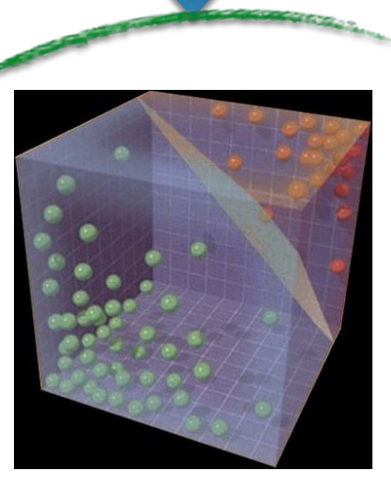
what can we understand?
(semantic segmentation)

Typical perception pipeline

input

what should we look at?

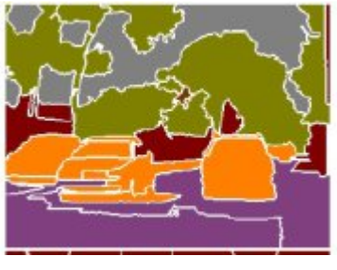
image representation



‘fancy math’

easy to get lost in the techniques

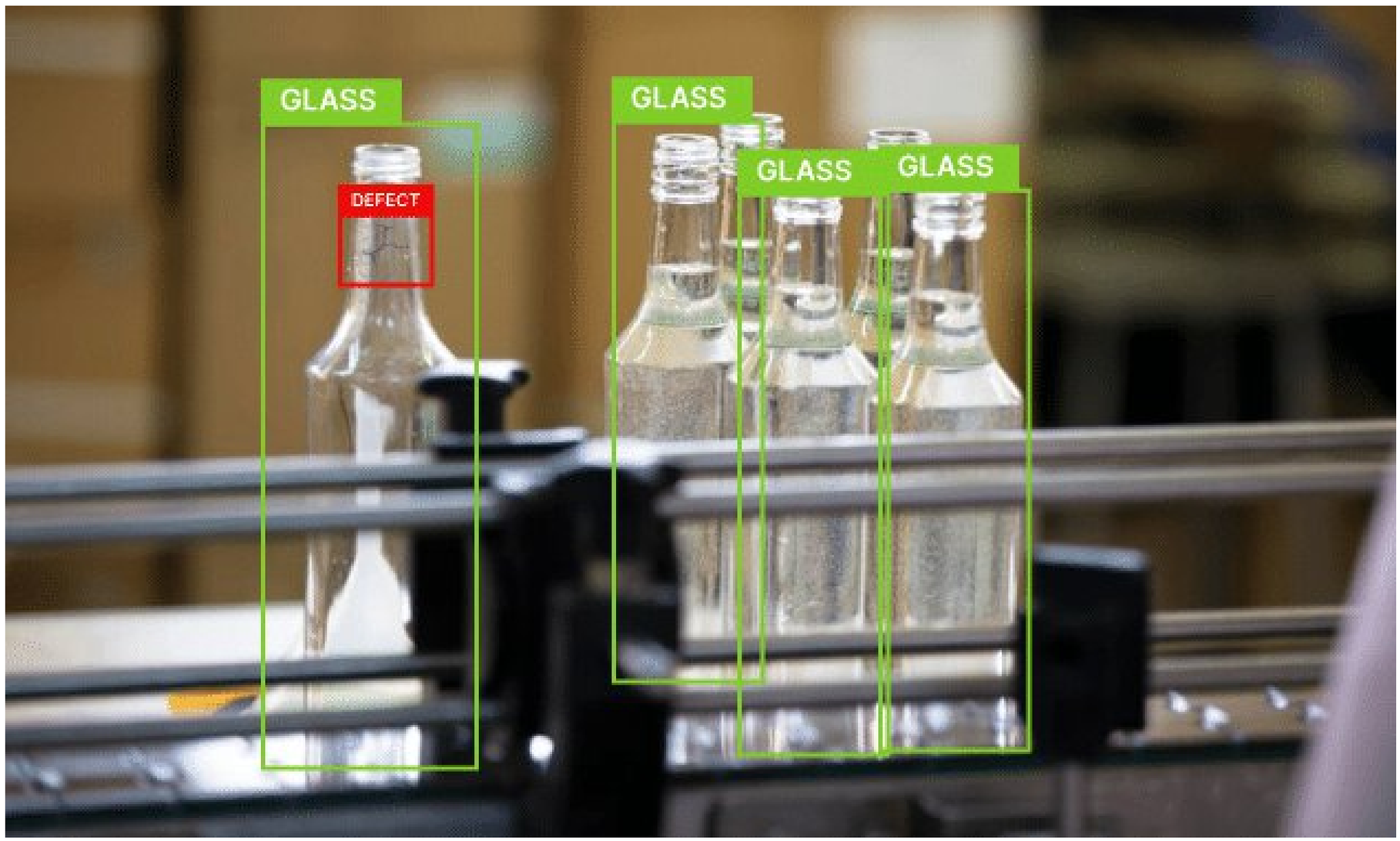
output



what can we understand? (semantic segmentation)

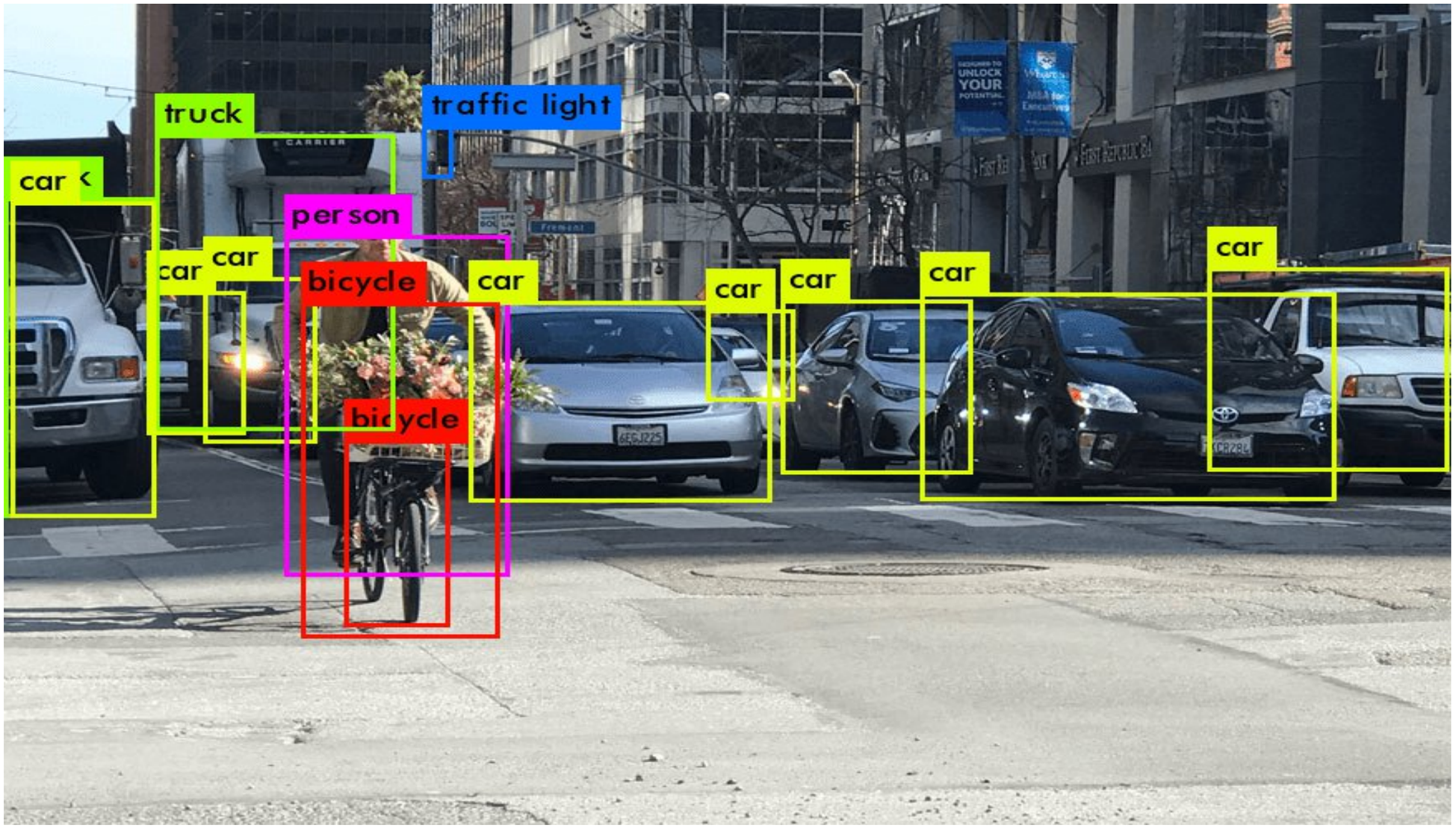
Applications of computer vision

Computer Vision in Industry



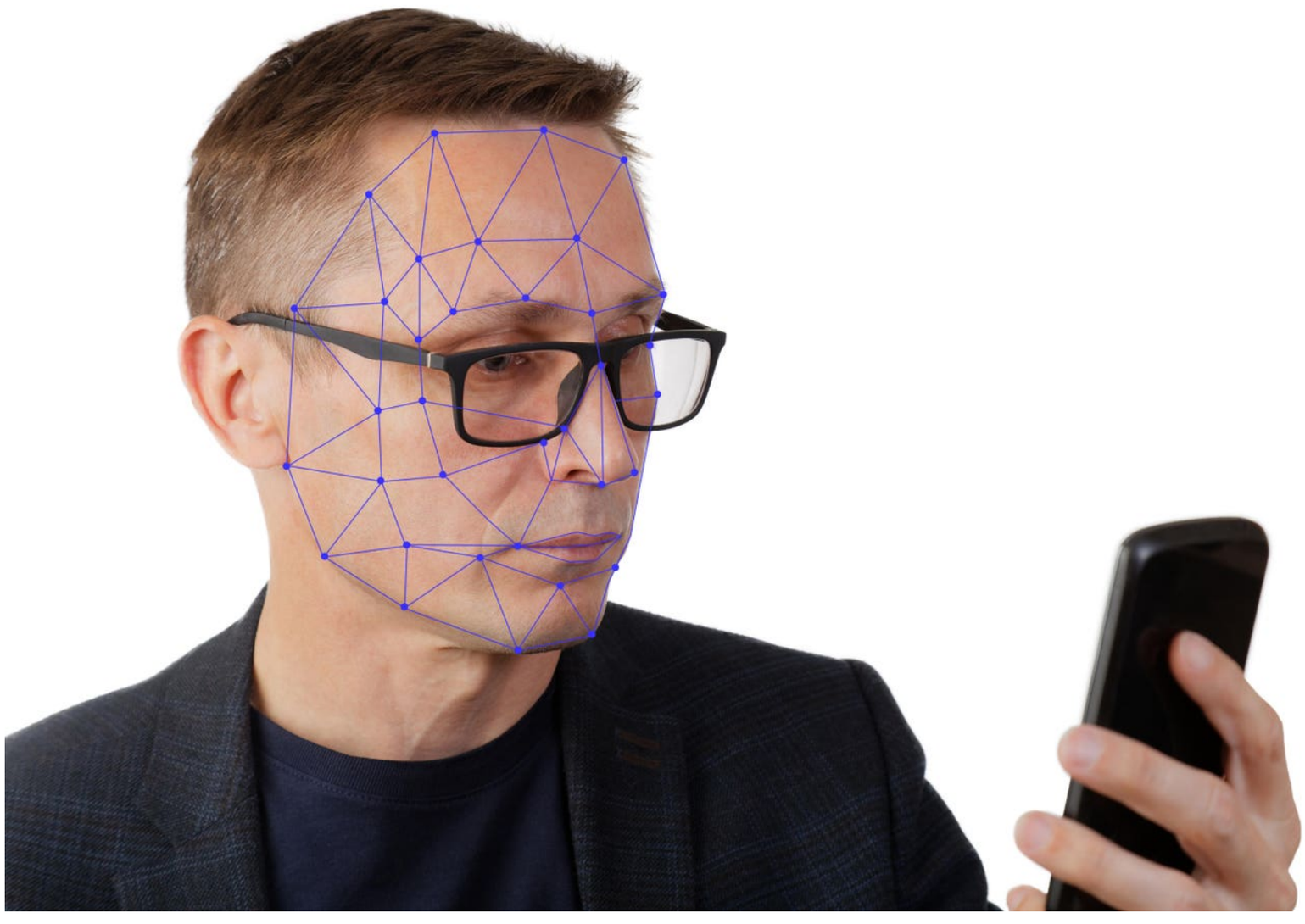
e.g. Automated visual inspection

Computer Vision in Transportation



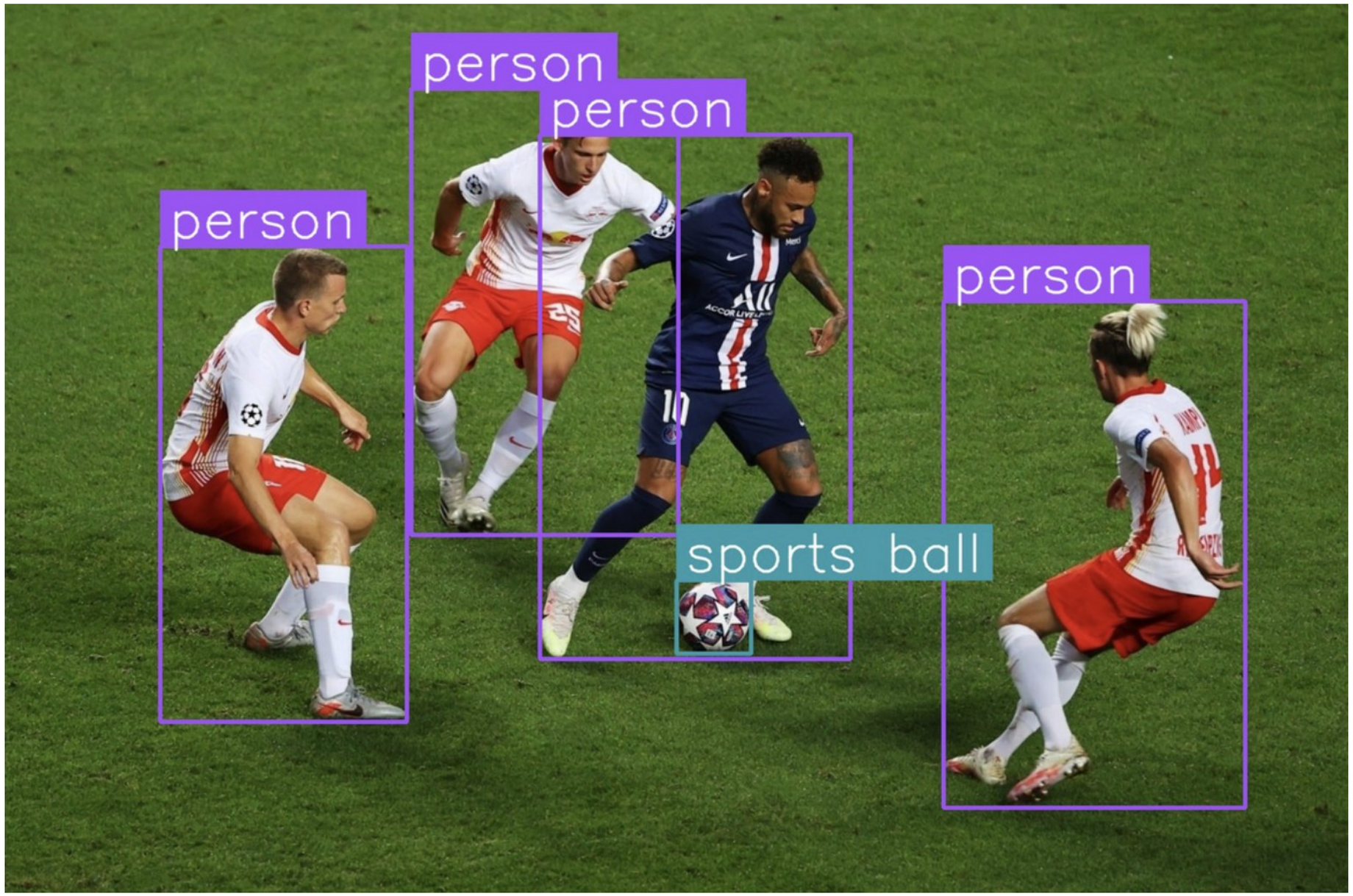
e.g. Object Recognition and Traffic Management

Computer Vision in Biometrics



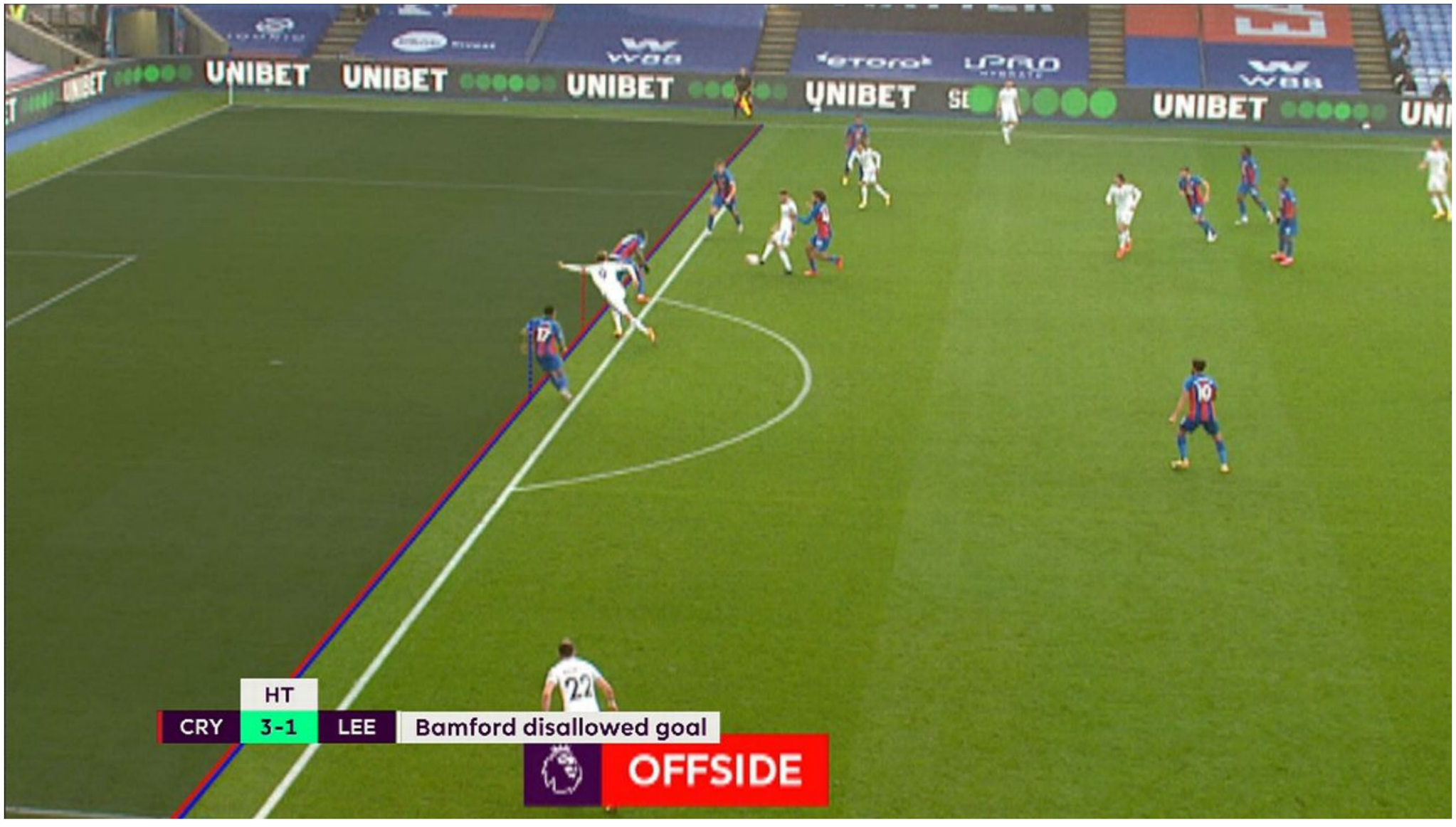
e.g. Face ID

Computer Vision in Sports



e.g. Player and Ball Tracking

Computer Vision in Sports

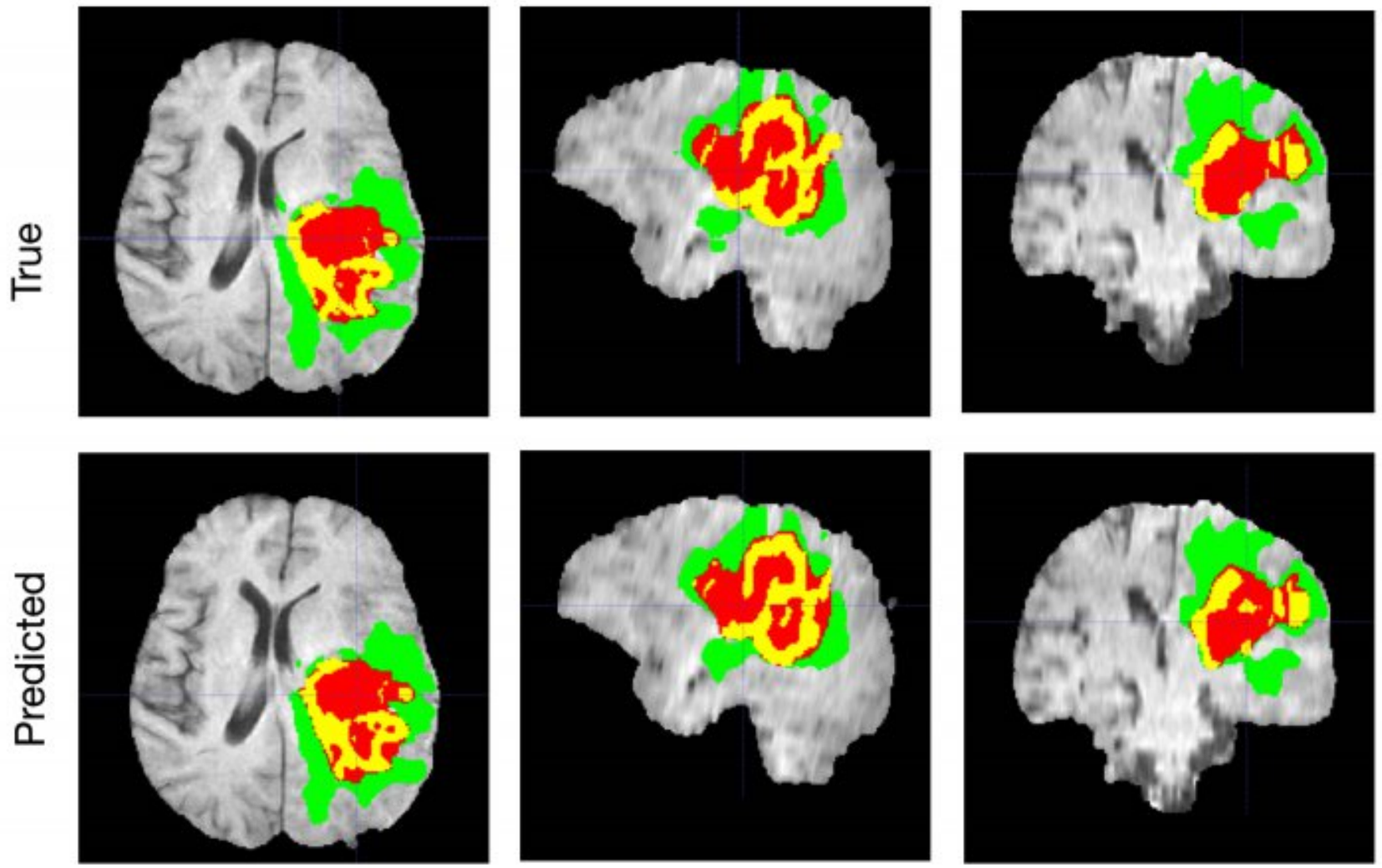


e.g. Video assistant referee (VAR)

Computer Vision in Agriculture

e.g. Detecting Plant disease

Computer Vision in Healthcare



e.g. Brain tumor segmentation with AI

Computer Vision in Cars

BMW 5/6/7 series

e.g. BMW night vision

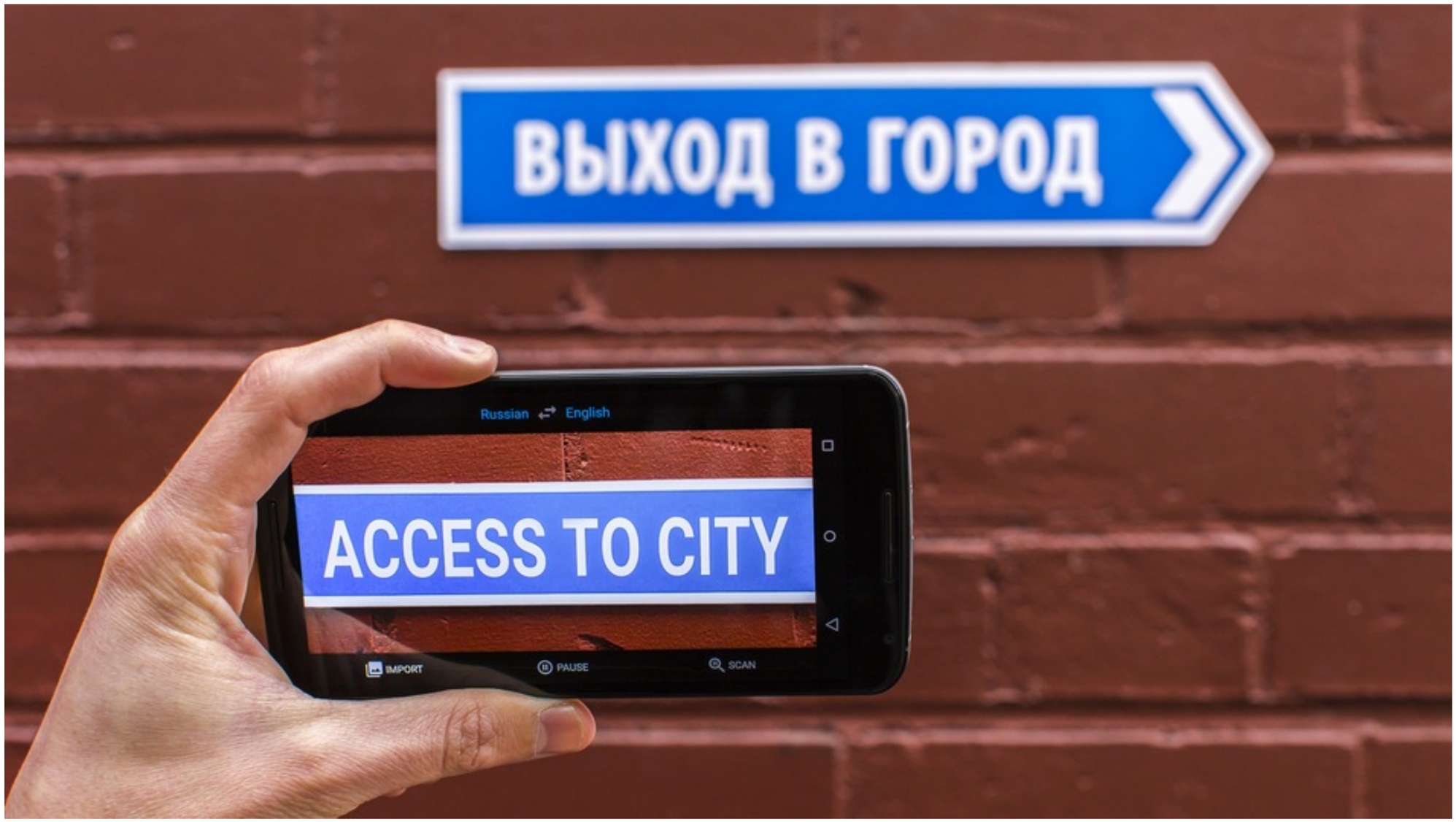
Computer Vision in Cars

e.g. Automated Parking

Computer Vision for VR/AR

e.g., Pokemon GO

Computer Vision in Smartphones



e.g., Google Translate

Computer Vision in Arts

e.g., Style Transfer

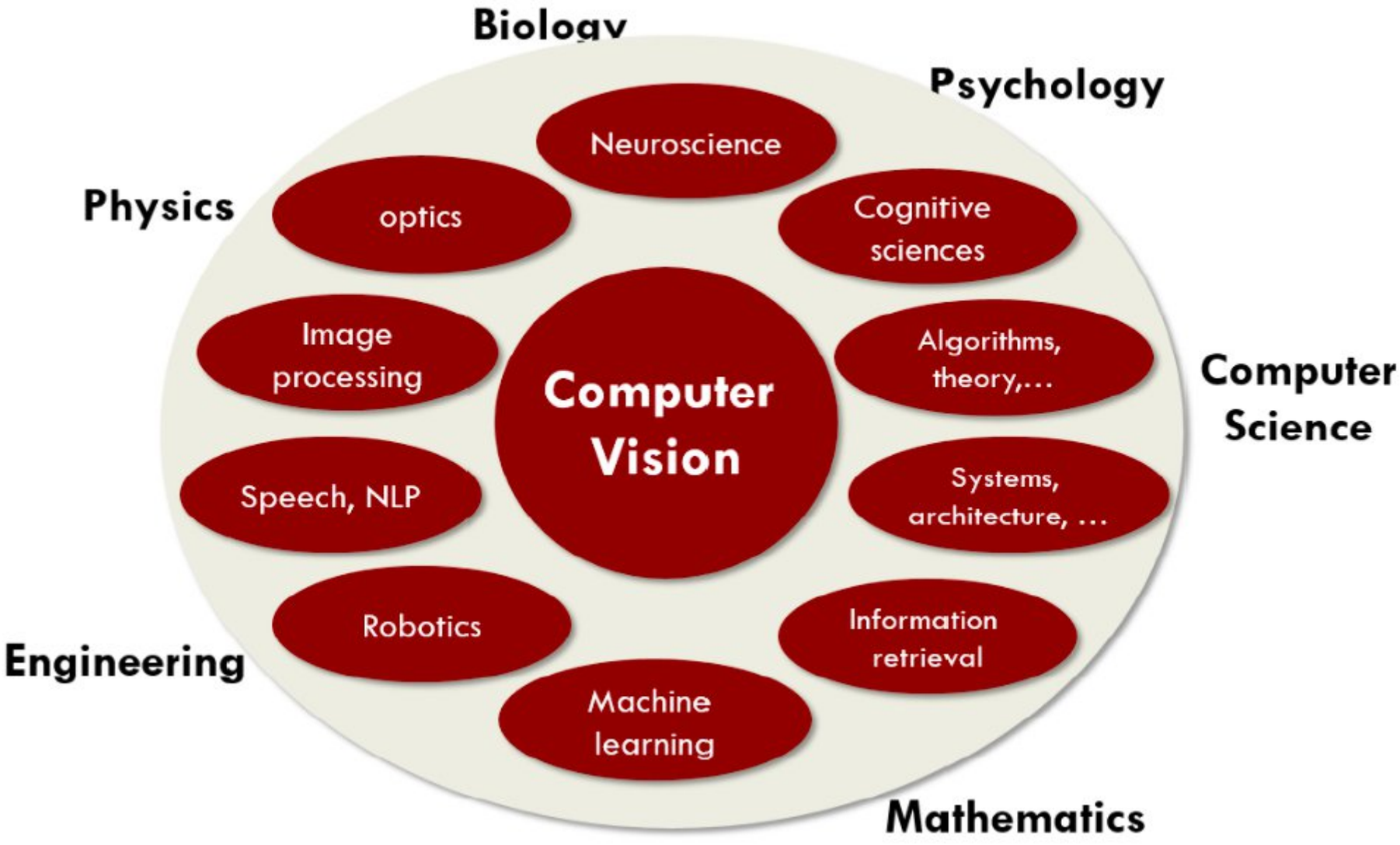
Computer Vision for Visual Effects

e.g., Hollywood Movies

It’s a good time to do computer vision

Industry aggressively hiring CV graduates

CV at the intersection of multiple disciplines

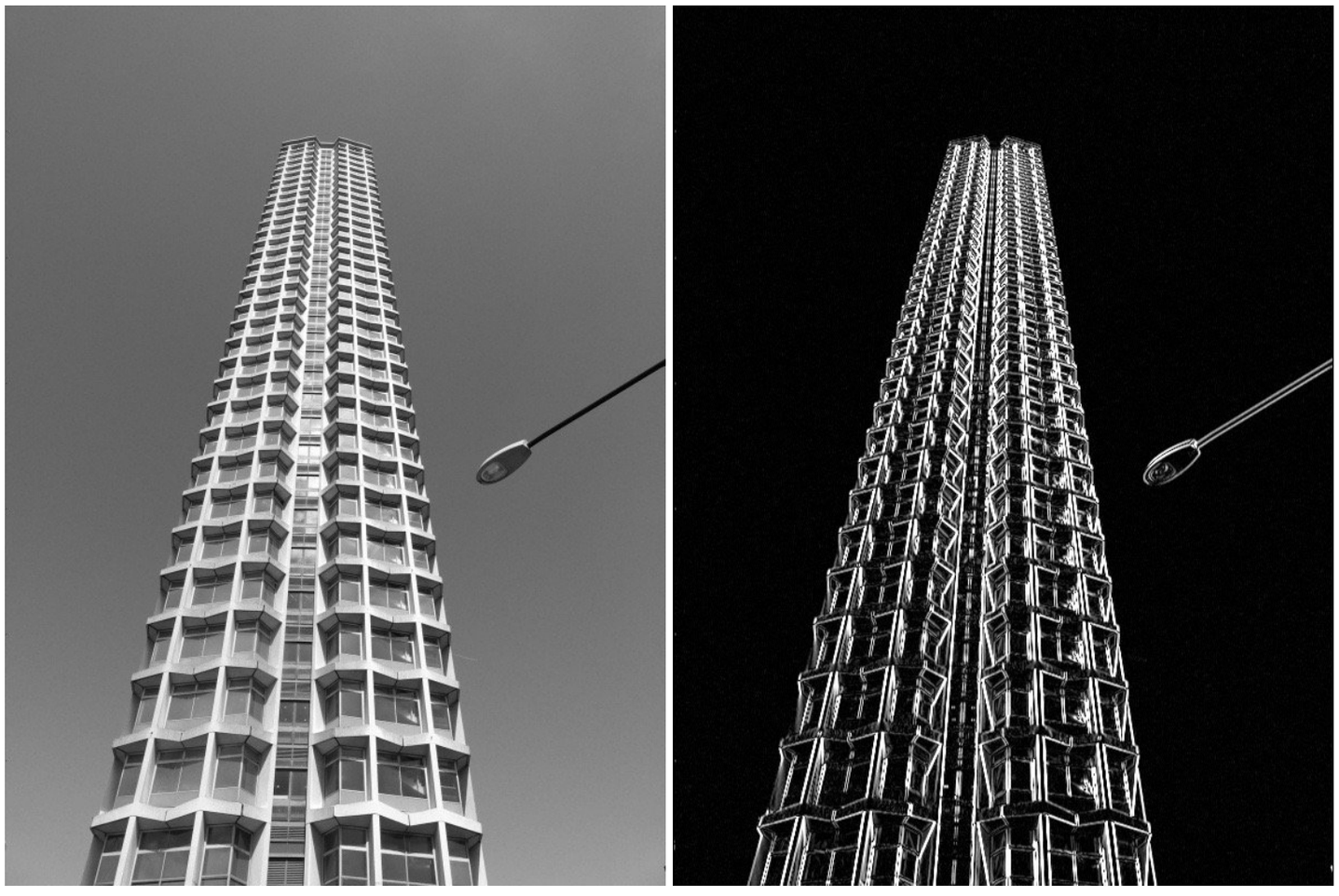


Course logistics

Topics to be covered (Tentative)

Image processing:

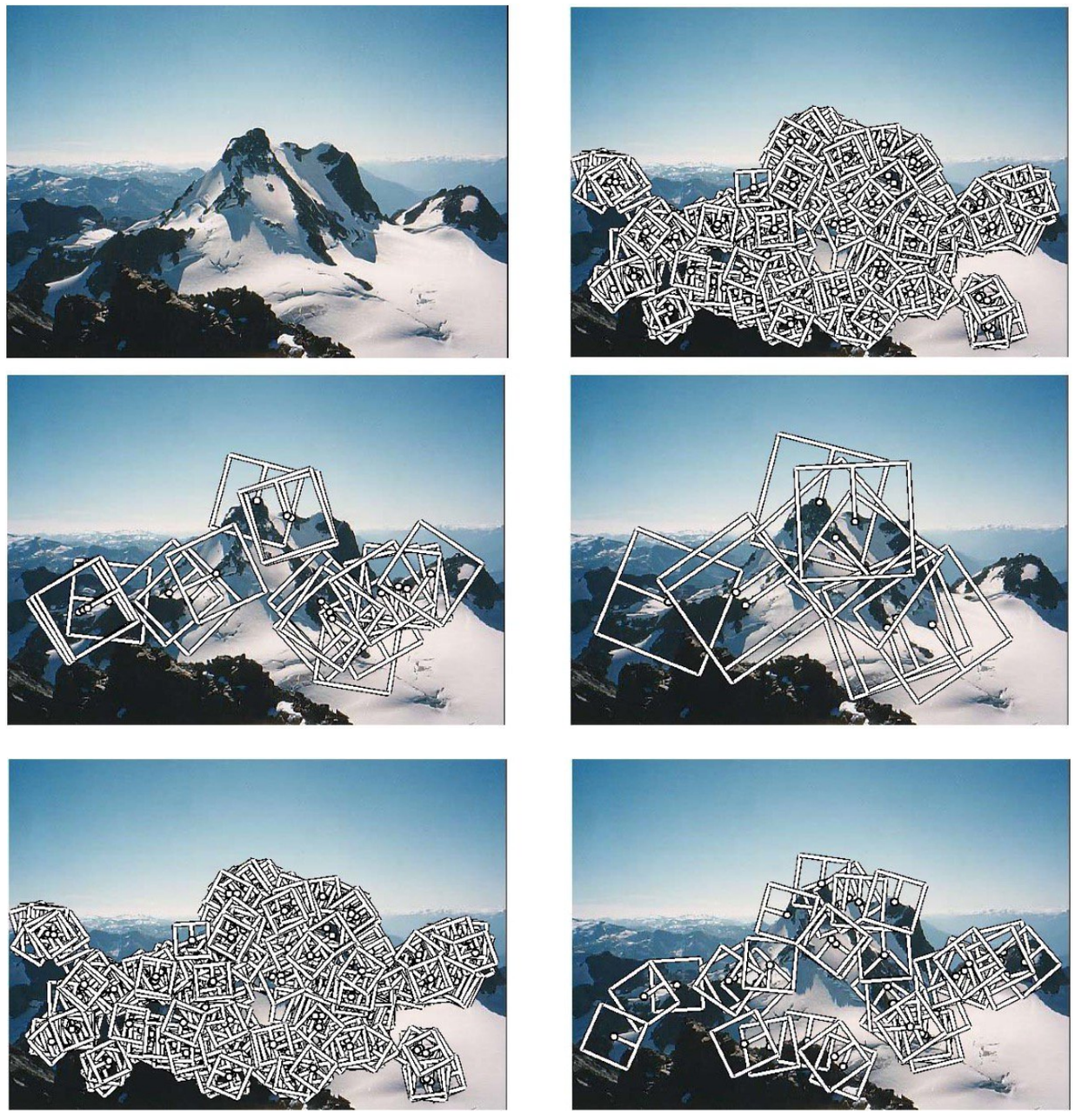
- Point Processing
- LSIS and Convolution
- Image Filtering
- Fourier Transform



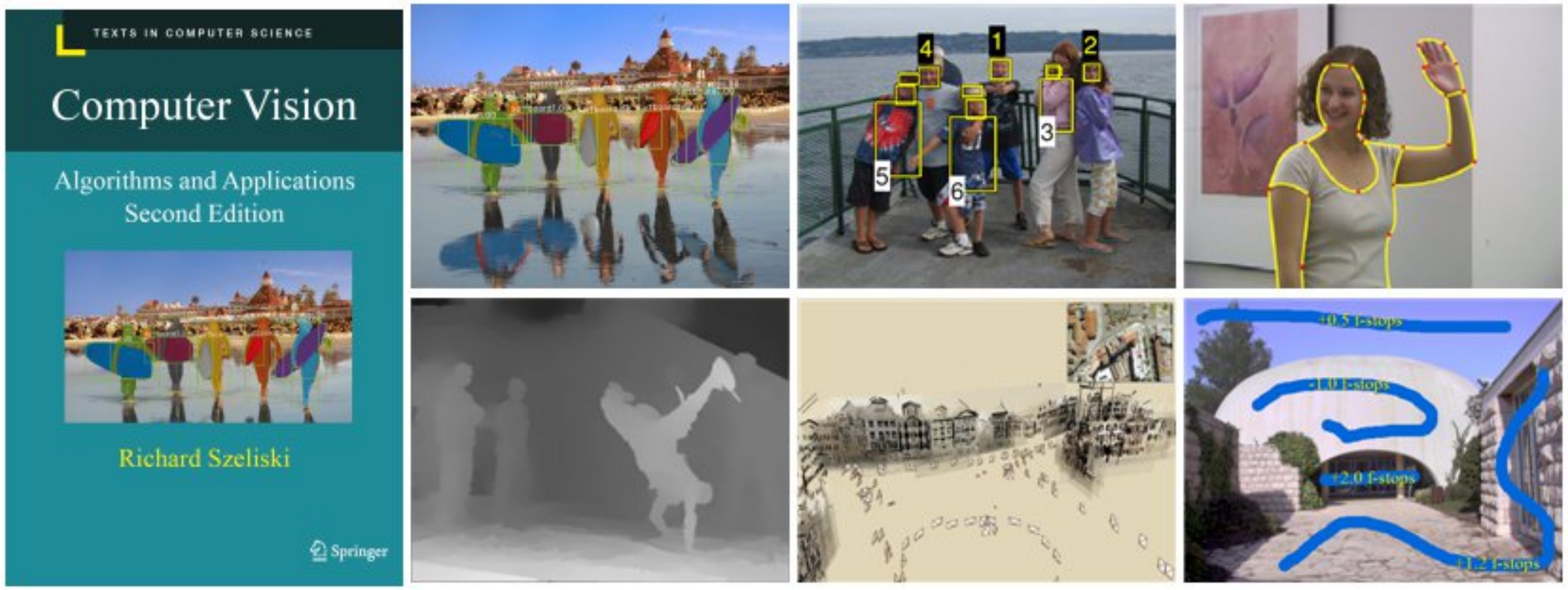
Topics to be covered (Tentative)

Feature detection and correspondences:

- Edge detection
- Boundary detection
- SIFT detector



Free Book



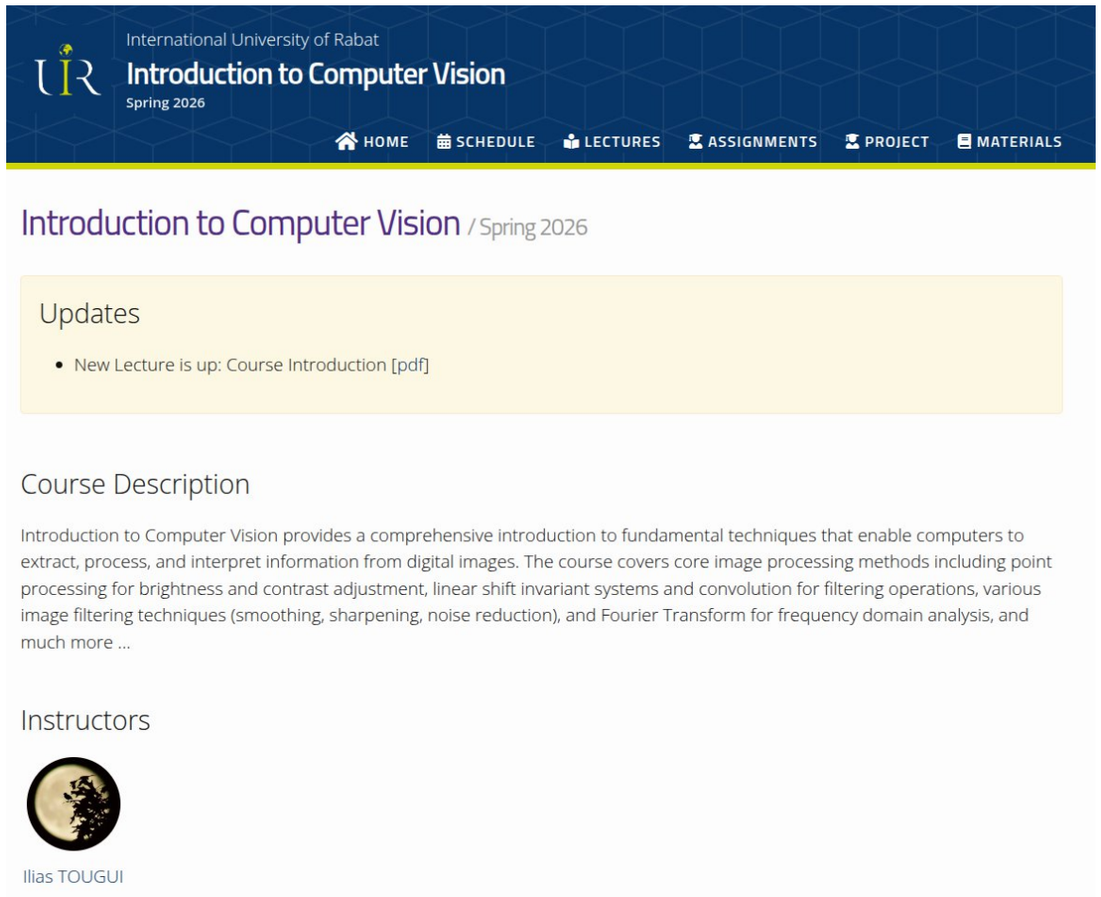
PDF online

http://szeliski.org/Book/

Course Websites

https://liaoux.github.io/uir-cv-2026/

- Lecture slides
- Lab documents
- Suggested Readings
- Final Project Description



https://connect.uir.ac.ma/

- Labs / Project submissions

Grading Policy

The grading is based on:

- Labs / Assignments (individually)
- 1 Final Project (mid-term) (in groups of 2)
- Final Exam