

Let's plAIy! – Object Detection in Snap! NVIDIA Jetson | JetBot | Tello Drone

Rolf Becker | Harley Lara

Ali Farzizada | Ilgar Rasulov | Shreya Gupta

– Rhine-Waal University of Applied Sciences –

hsrw.eu | eolab.de | fablab.green

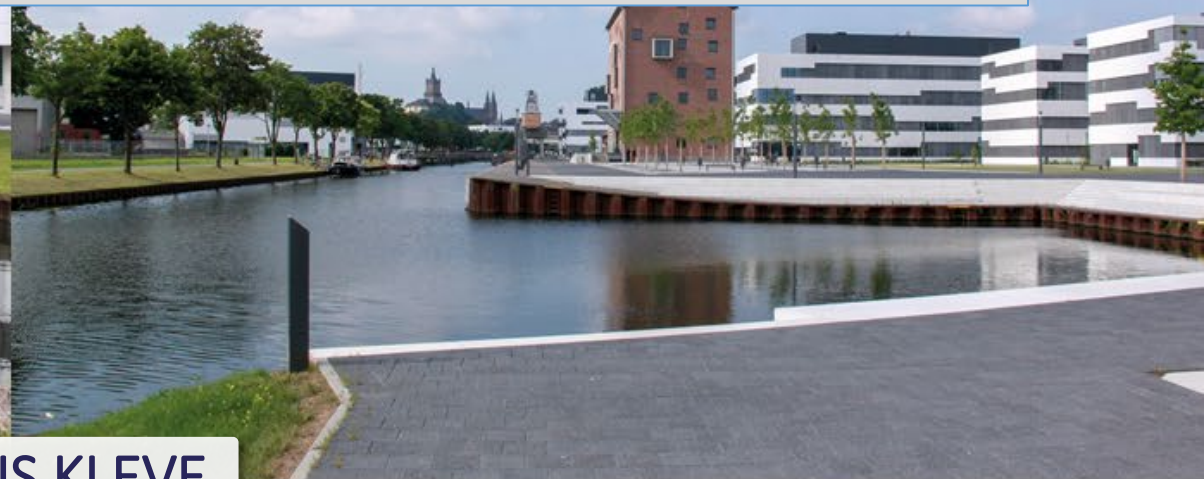
Rhine-Waal University of Applied Sciences (hsrw.eu)



CAMPUS KAMP-LINTFORT



Rhine-Waal University of Applied Sciences (hsrw.eu)



CAMPUS KLEVE



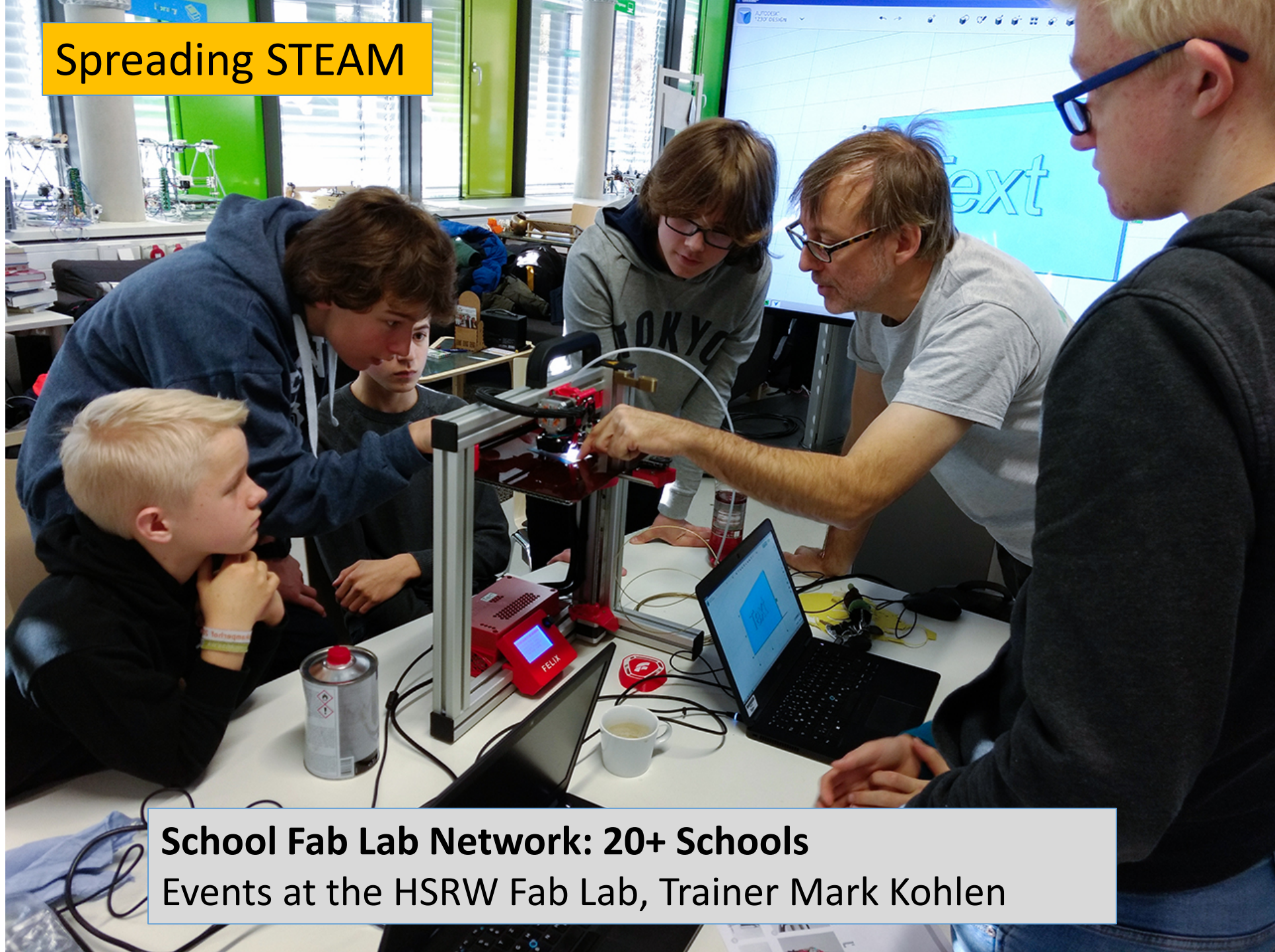
Lower Rhine Region, close to the Netherlands



Learning in an Inspiring Atmosphere



Spreading STEAM



School Fab Lab Network: 20+ Schools
Events at the HSRW Fab Lab, Trainer Mark Kohlen

Why Snap? Why AI?

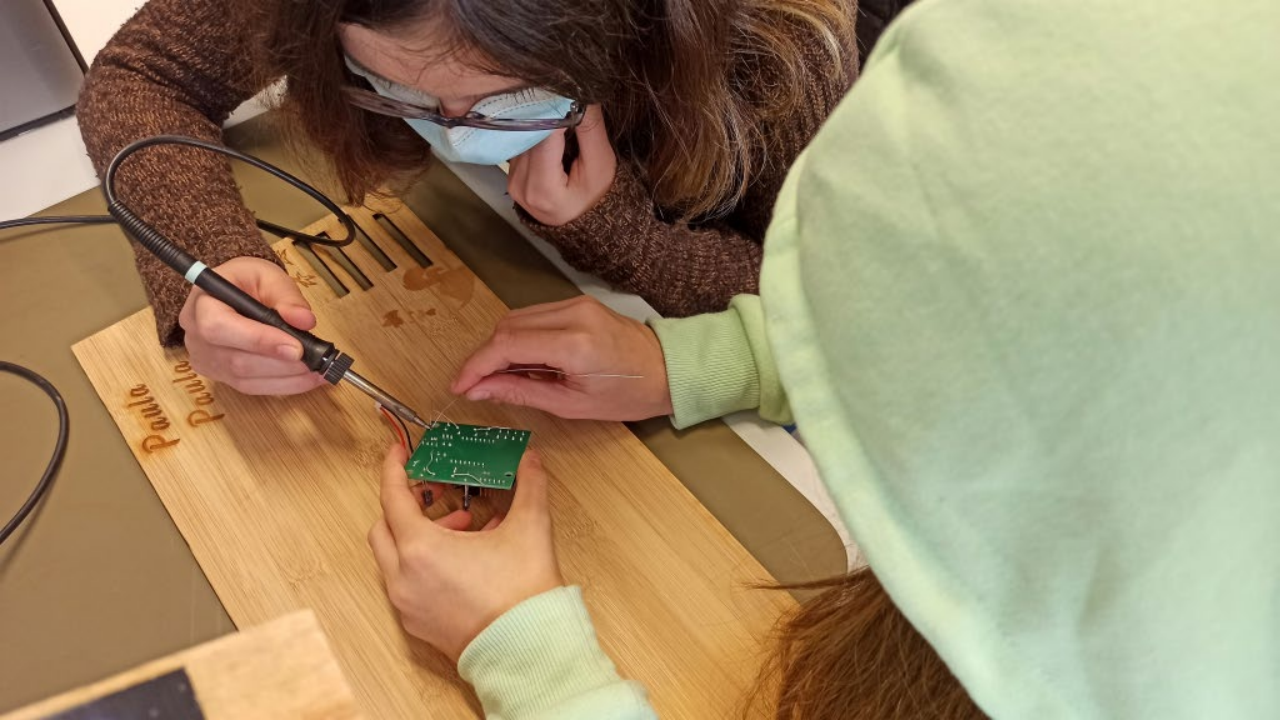
- Motivating STEAM at schools
- Integrating Snap!
in our School Fab Lab network
- Crossover between CS
and life sciences (e.g. ecology)
- AI for the common good
- Earth observation research
(e.g. conservation, prec. farming)



Bird nest boxes with cams at the Green Fab Lab (HSRW)



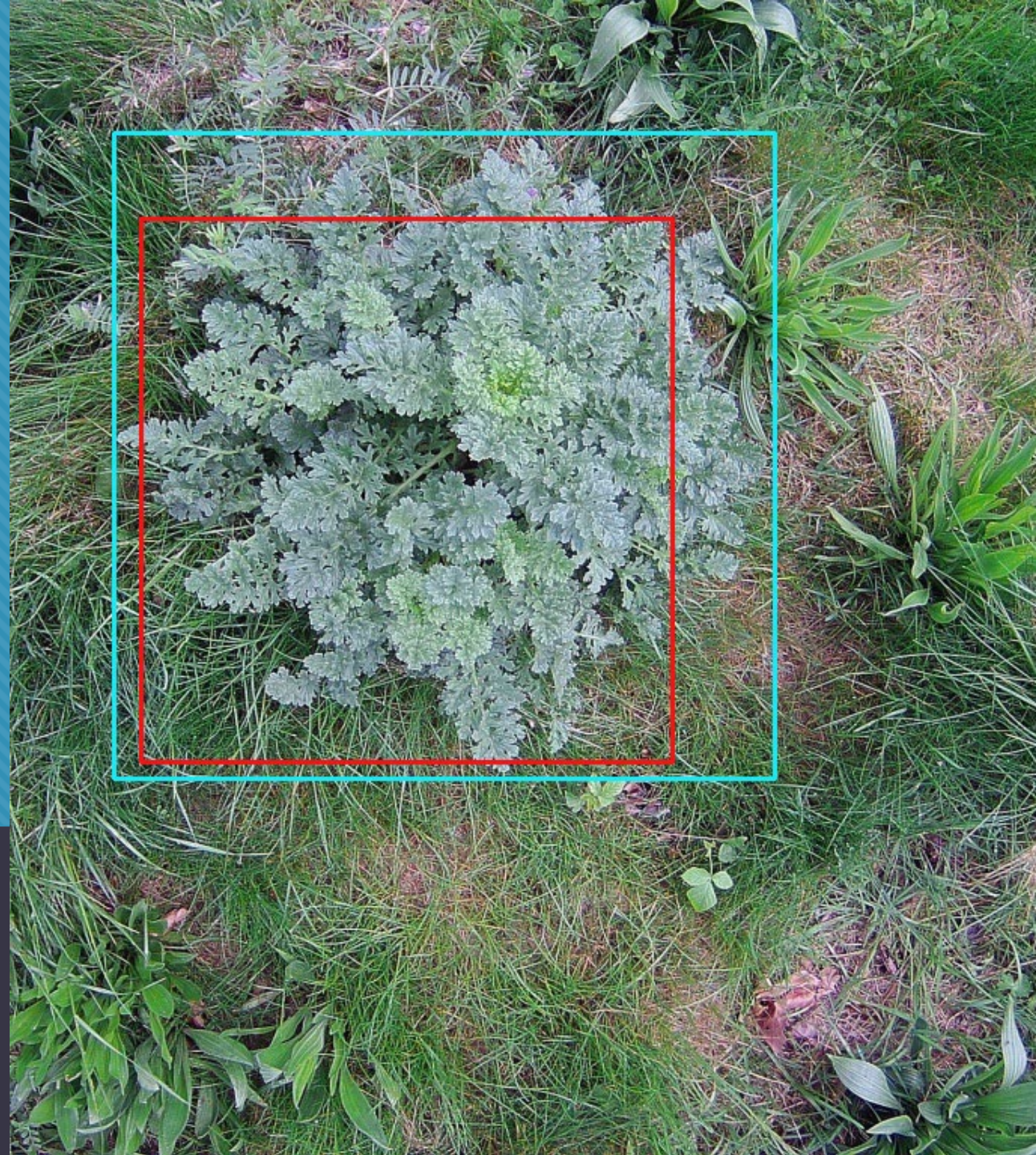
Observing Birds (Gerhard@Pixabay)



Object Detection Based On Convolutional Neural Networks Of *Senecio jacobaea* For Weed Control

Bachelor Thesis by Jonas Zender (21125)

- 1st Supervisor: Prof. Dr.-Ing. Rolf Becker
- 2nd Supervisor: Prof. Dr. Daniela Lud





Environ-
mental
Sciences

Drones,
Robots

STEAM,
Snap!

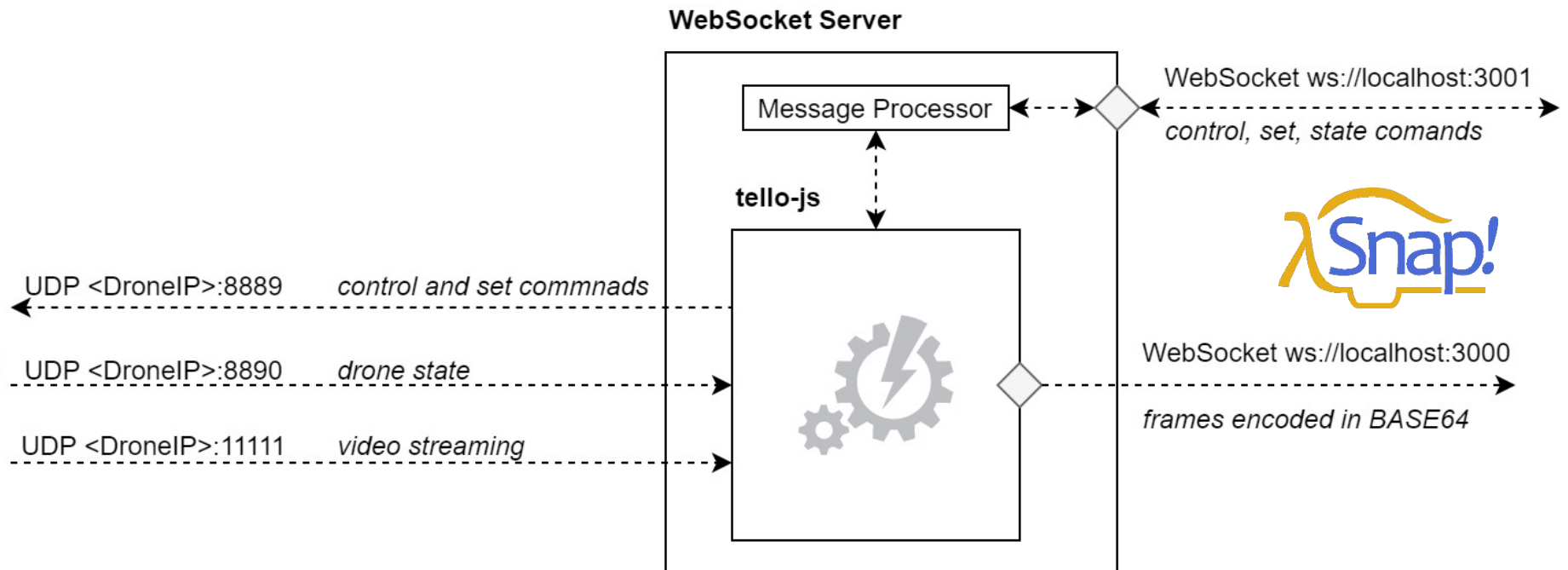
Computer
Vision

Scientific
Compu-
ting

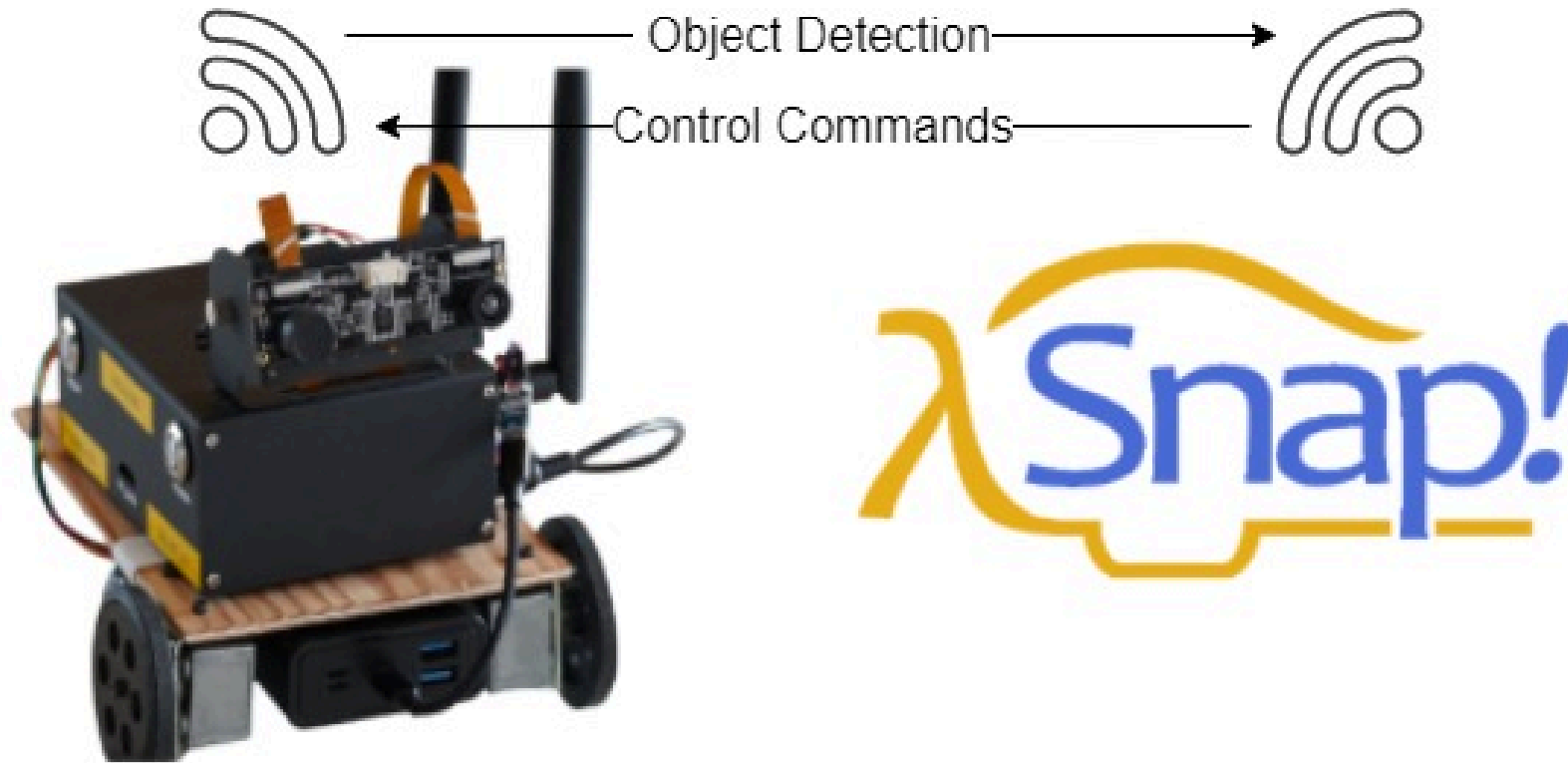
Demonstration 1: Snap! & Tello



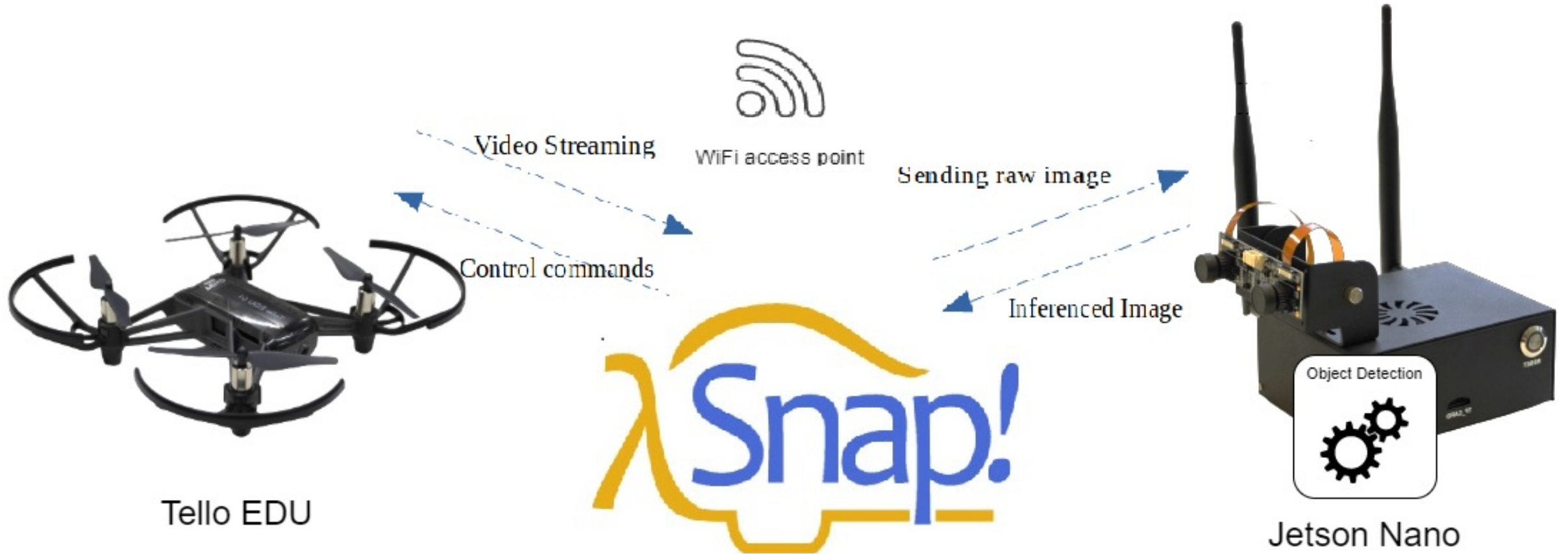
Websocket Server „tello-js“



Demonstration 2: Snap! & JetBot (NVIDIA Jetson AI)



Demonstration 3: Snap! & Tello & Jetson



Let's plAIy! – Workshop at Snap!Con 2022



Workshop Let's plAIy! – Image Classification in Snap! with NVIDIA Jetson

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NVIDIA Software Repo „jetson-inference“ (Dustin Franklin)

- Dustin Franklin, aka Dusty-NV
- <https://github.com/dusty-nv/jetson-inference>



Image Classification



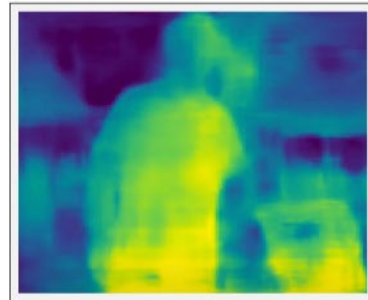
Object Detection



Semantic Segmentation



Pose Estimation



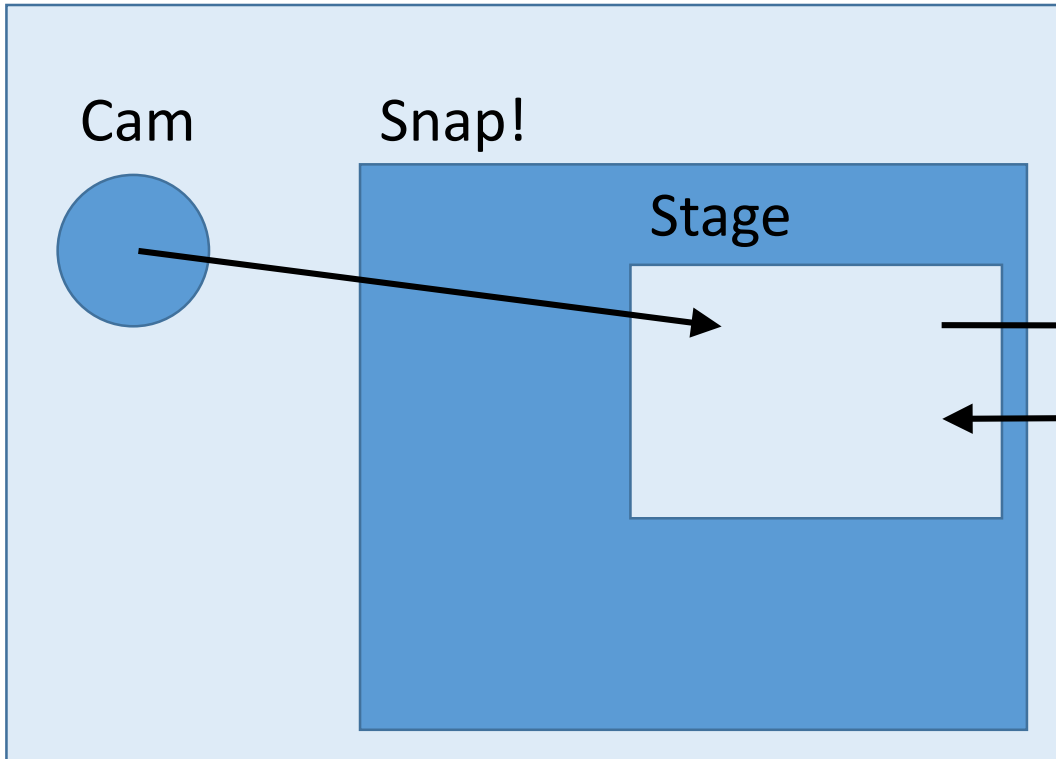
Mono Depth

jetson-inference

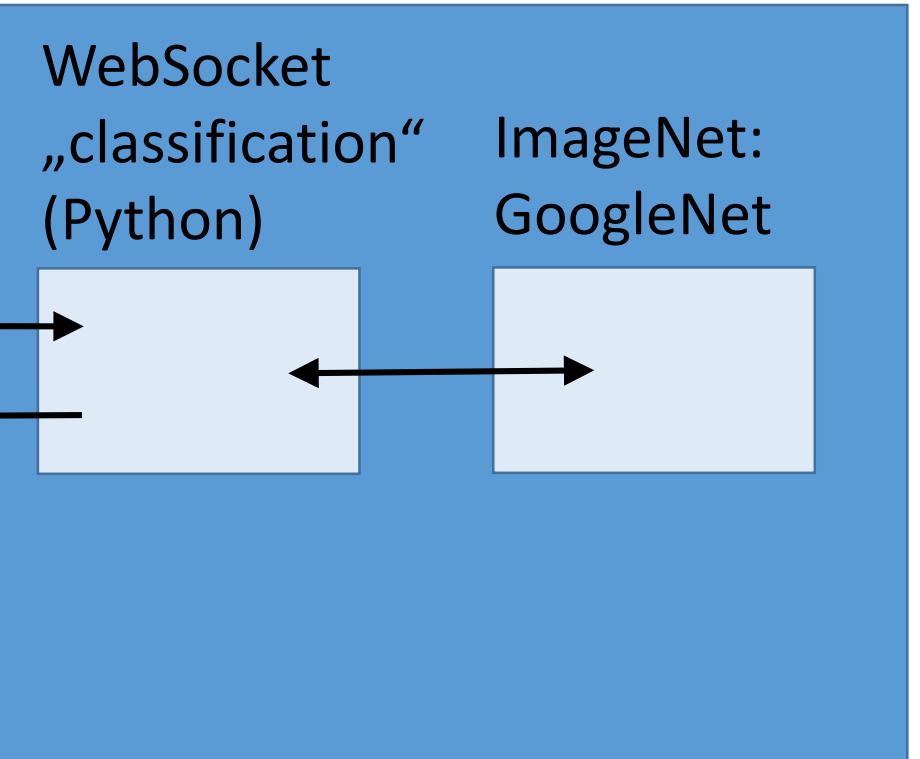
	C++	Python
Image Recognition	<code>imageNet</code>	<code>imageNet</code>
Object Detection	<code>detectNet</code>	<code>detectNet</code>
Segmentation	<code>segNet</code>	<code>segNet</code>
Pose Estimation	<code>poseNet</code>	<code>poseNet</code>
Monocular Depth	<code>depthNet</code>	<code>depthNet</code>

Image Classification, from NVIDIA Jetson Inference Pkg. (Default CNN: GoogleNet)

Laptop



NVIDIA Jetson Nano

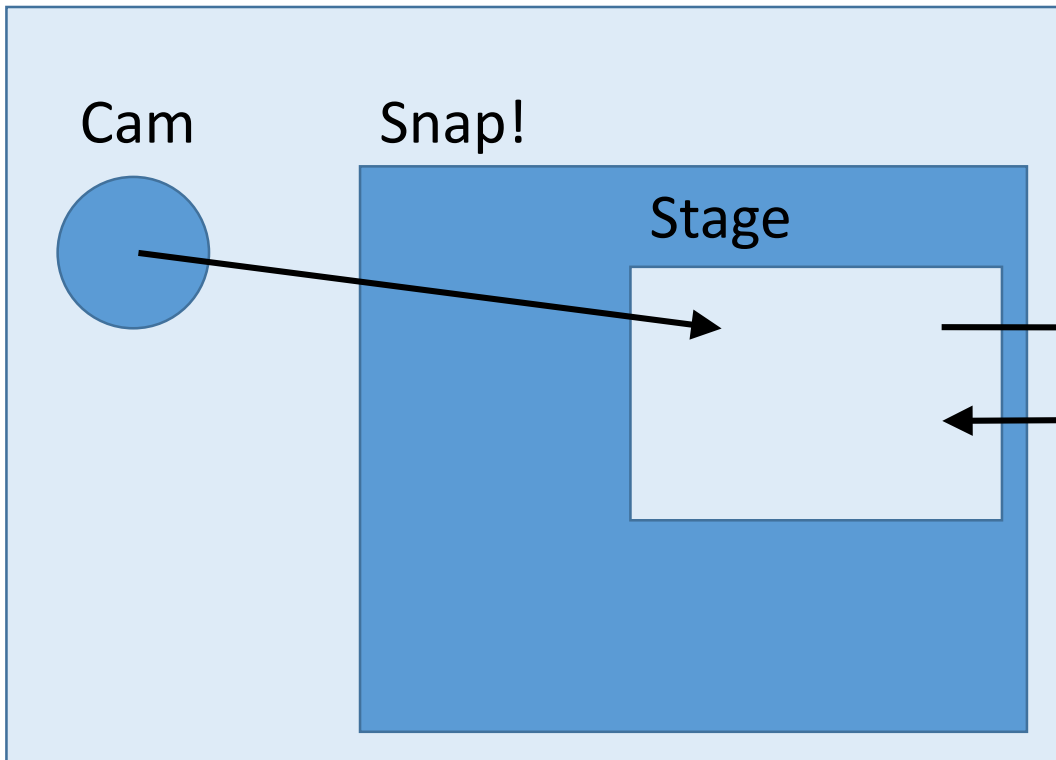


frame (base64)

image label
confidence val.

Object Detection, from NVIDIA Jetson Inference Pkg. (Default CNN: SSD MobileNet V2, COCO, 91 Classes)

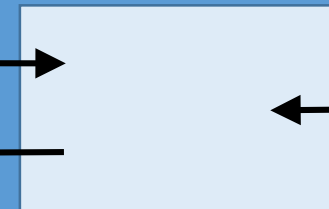
Laptop



NVIDIA Jetson Nano

WebSocket
„detection“
(Python)

DetectNet:
SSD MobileNet V2
COCO Dataset



frame (base64)

List of objects
(JSON) having:
class label
confidence val.
bounding box

Workshop Manual: snap.eolab.de

