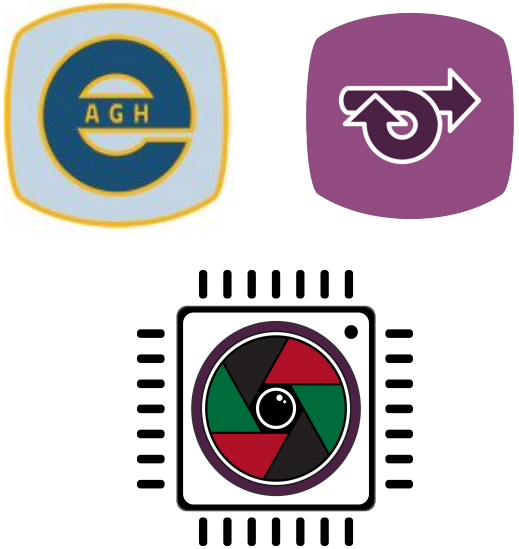
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Real-time Multiple Object Tracking in Embedded Systems

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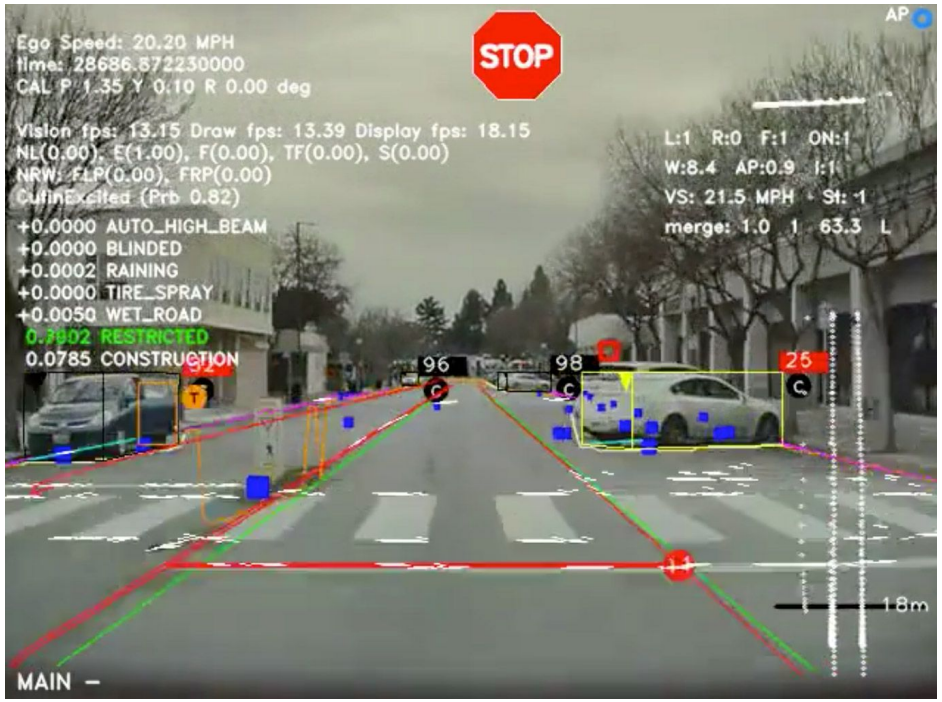


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Motivation

Multiple object tracking (MOT) is an essential component of any vision-based perception system.

autonomous mobile robotics

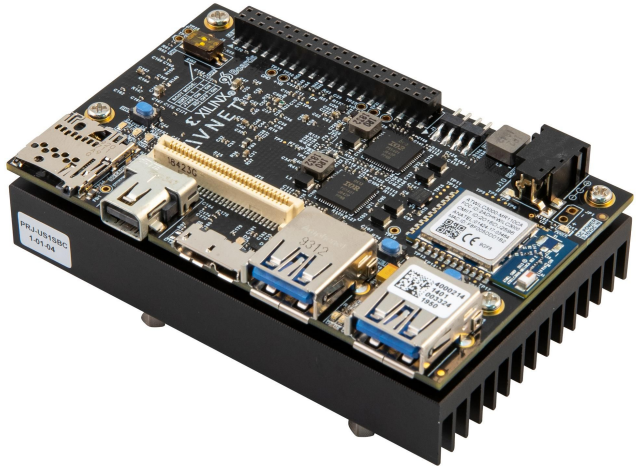


video surveillance systems



Implementation of MOT systems on **low-power** and **real-time embedded platforms** is highly desirable.

Low power single object detection

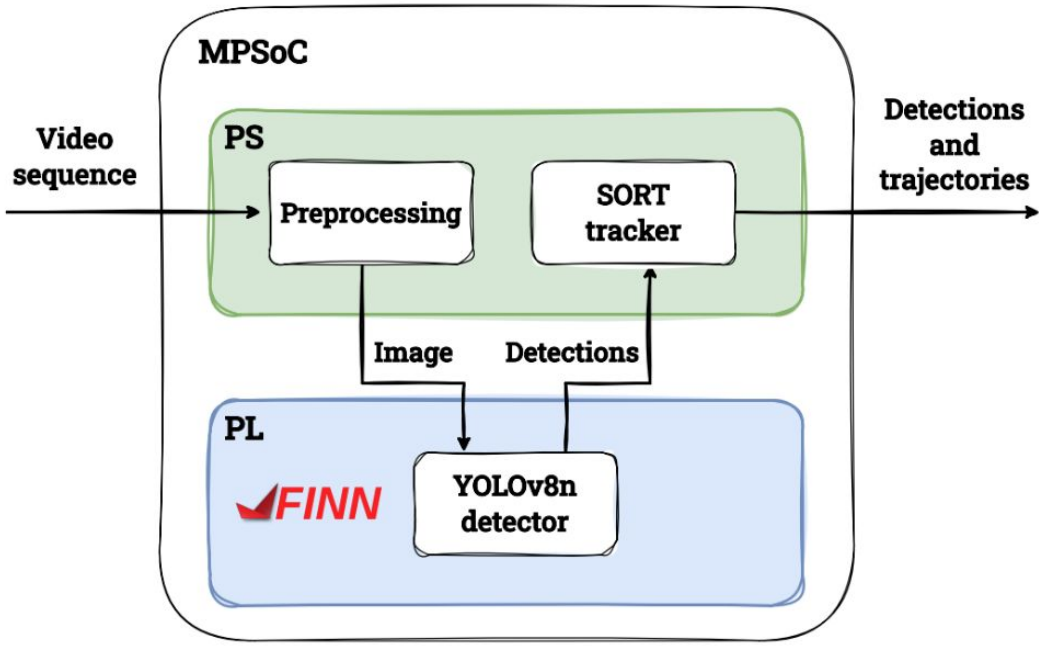


- 4-bit object detector
- Single object detection on the **DAC-SDC** dataset
- Power consumption: **2.95W**
- Processing speed: **111 fps**
- Platform: **Ultra96-V2**



Tracking by detection with YOLOv8

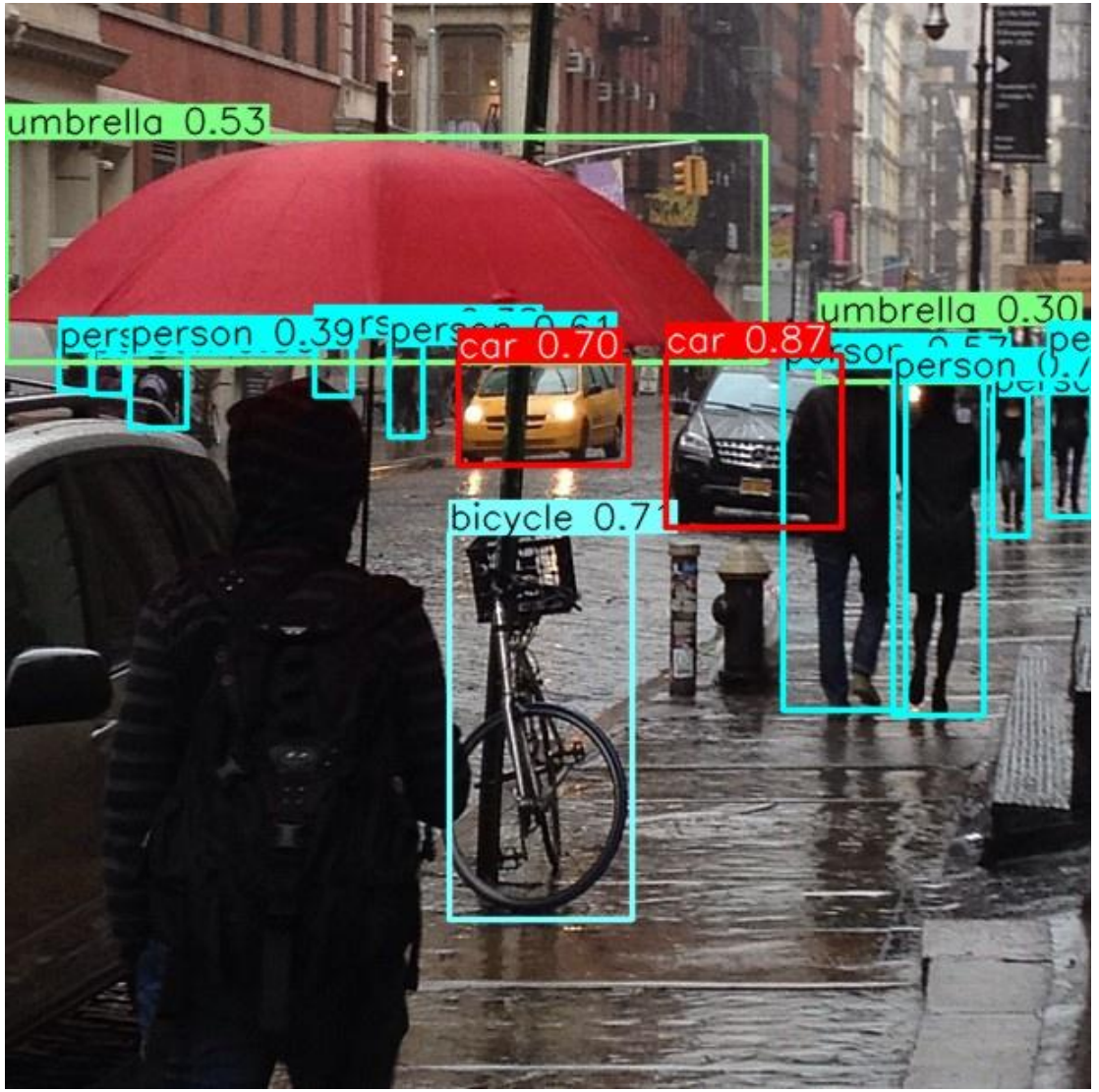






Tracking by detection with YOLOv8

- 4-bit object detector
- High quality detection on the COCO dataset - **0.283 mAP**
- Processing speed: **48.8 fps**
- Platform: **ZCU102**



Currently working on

- Optimization of low-precision object detection
- Exploring different quantization schemes
- Efficient Multiple object tracking algorithms

Thank you for
your attention