

YOLO-Based Object Detection with Hierarchical JSON Output

Processor: Intel i7 CPU

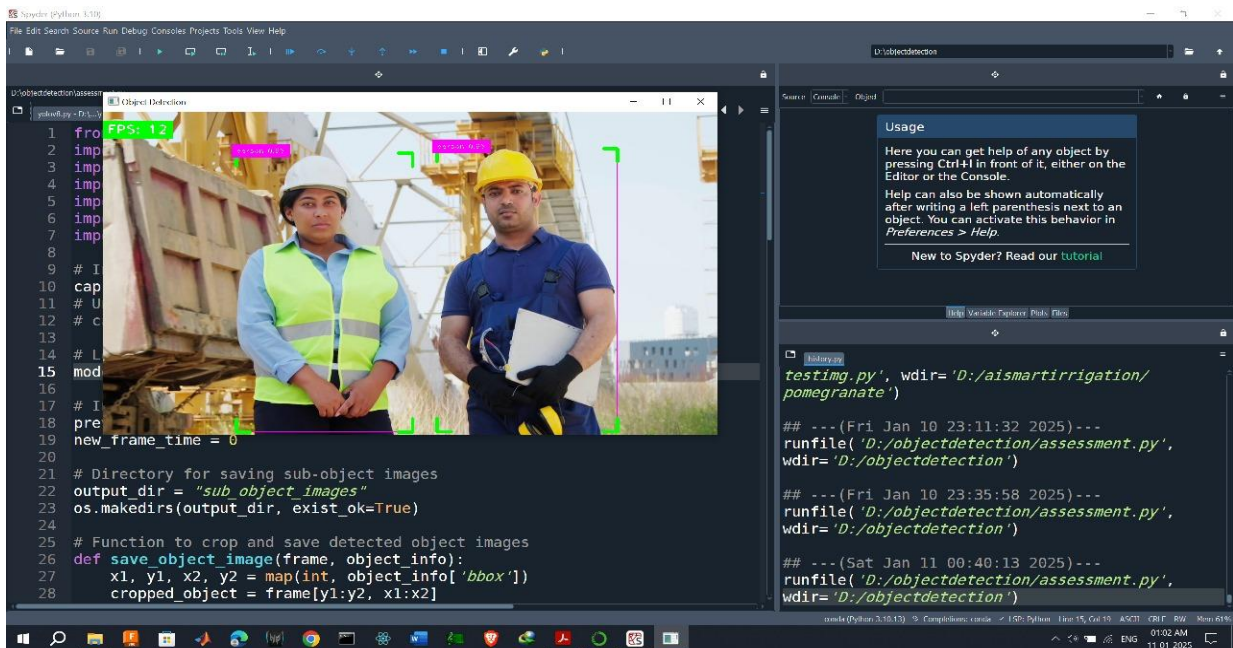
```
0: 384x640 2 persons, 1 book, 40.0ms
Speed: 2.0ms preprocess, 40.0ms inference, 0.0ms postprocess per image at shape (1, 3, 384, 640)
[
  {
    "object": "person",
    "id": 1,
    "bbox": [
      309,
      85,
      671,
      714
    ],
    "subobject": []
  },
```

In the first image, our detection system identified two **people and one book**. The first person is labeled as **ID 1**, located at coordinates spanning from **(309, 85) to (671, 714)**. This indicates the area where the person is detected within the image.

```
    {
      "object": "person",
      "id": 2,
      "bbox": [
        723,
        70,
        1100,
        713
      ],
      "subobject": [
        {
          "object": "book",
          "id": 3,
          "bbox": [
            854,
            417,
            1020,
            581
          ],
          "subobject": []
        }
      ]
    }
  ]
]
```

Detected a **person**, identified as ID 2. This person is situated within a bounding box that stretches from (723, 70) to (1100, 713). Interestingly, this person is accompanied by a **book**, labeled as ID 3, located at coordinates (854, 417) to (1020, 581).

YOLOv11 Nano Object Detection Overview



1. Inference Speed Results

- **Current FPS:** 12 FPS (frames per second)
- **Latency:** The model typically processes each frame within a specific time range

2. System Architecture

- **Model Framework:** YOLOv11 Nano is a lightweight variant optimized for speed and efficiency

3. Optimization Strategies

- **Model Quantization:** Reduces the model size and improves inference speed by using lower precision

Functionality to Retrieve and Save Cropped Images of Specific Sub-Objects

