Algorithmic Intelligence
Module B
Unit #10
CoCo SSD Bounding Box Video Classification

Content

Module B Unit #10 CoCoSSD bounding box video classification

Introduction to coco ssd bounding box video classification

In the last unit, we looked at a single image. Now we are going to see how well it works with a live stream video from your webcam or other device.

Sketch B10.1 index.html

Make sure you have the `ml5.js` line of code in your `index.html` file.

```
<!DOCTYPE html>
<html lang="en"><head>
    <script src="https://cdn.jsdelivr.net/npm/p5@2.2.2/lib/p5.js"></script>
    <script src="https://unpkg.com/ml5@1/dist/ml5.min.js"></script>
    <link rel="stylesheet" type="text/css" href="style.css">
    <meta charset="utf-8">
  </head>
  <body>
    <main>
    </main>
    <script src="sketch.js"></script>
</body></html>
```

Sketch B10.2 getting the video stream

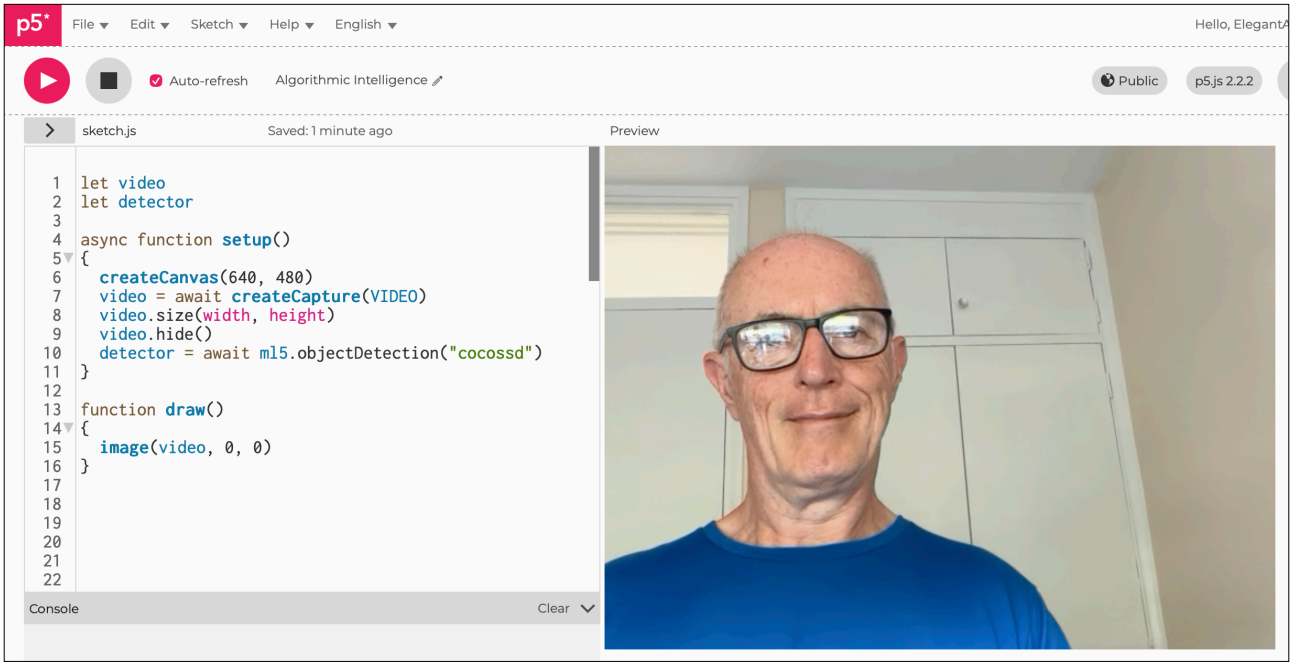
First, set up a video stream from the webcam.

```
let video
let detector

async function setup()
{
  createCanvas(640, 480)
  video = await createCapture(VIDEO)
  video.size(width, height)
  video.hide()
  detector = await ml5.objectDetection("cocossd")
}

function draw()
{
  image(video, 0, 0)
}
```

Notes

You should have a video image; you may have to allow access.

Figure B10.2


p5*
File
Edit
Sketch
Help
English
Hello, ElegantA
Auto-refresh
Algorithmic Intelligence
Public
p5.js 2.2.2
sketch.js
Saved: 1 minute ago
Preview
let video
let detector
async function setup()
{
createCanvas(640, 480)
video = await createCapture(VIDEO)
video.size(width, height)
video.hide()
detector = await ml5.objectDetection("cocossd")
}
function draw()
{
image(video, 0, 0)
}
Console
Clear

Sketch B10.3 now to detect

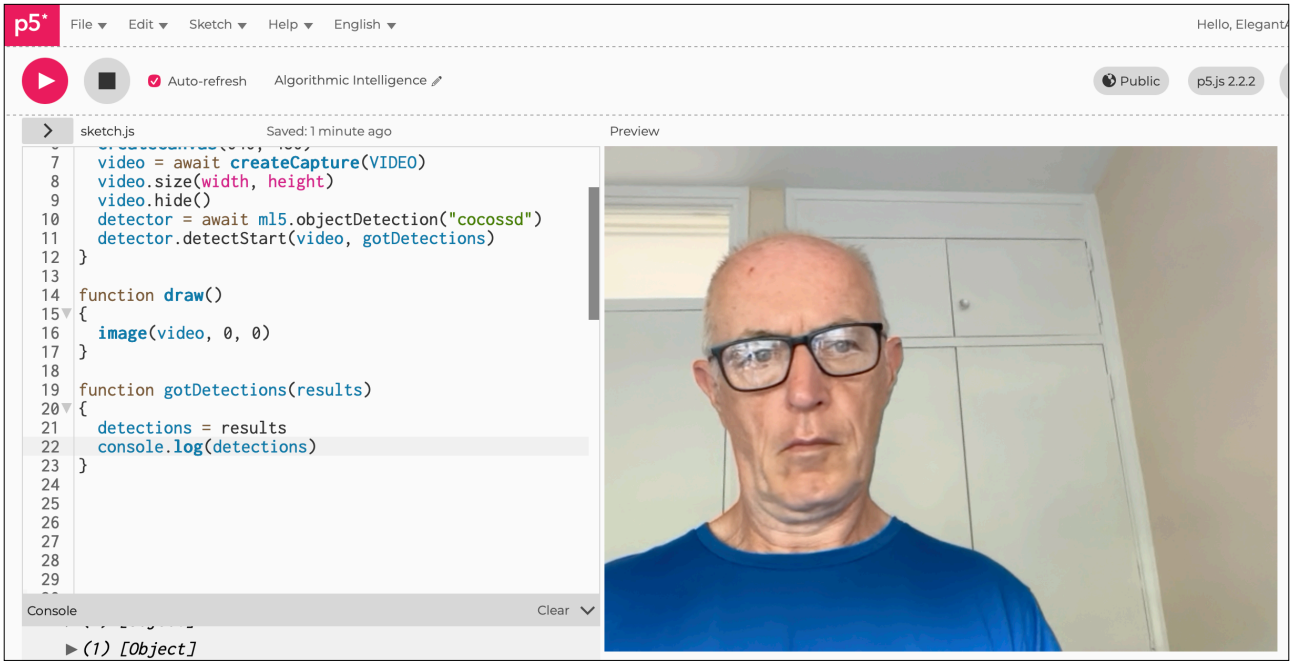
Let's start detecting something or somebody.

```
let video
let detector

async function setup()
{
  createCanvas(640, 480)
  video = await createCapture(VIDEO)
  video.size(width, height)
  video.hide()
  detector = await ml5.objectDetection("cocossd")
  detector.detectStart(video, gotDetections)
}

function draw()
{
  image(video, 0, 0)
}

function gotDetections(results)
{
  detections = results
  console.log(detections)
}
```

Notes

You may get more than one object detected depending on what is in the background. You can pause the sketch and take a look in the console.

Figure B10.3


p5*
File
Edit
Sketch
Help
English
Hello, Elegant
Auto-refresh
Algorithmic Intelligence
Public
p5.js 2.2.2
sketch.js
Saved: 1 minute ago
Preview
video = await createCapture(VIDEO)
video.size(width, height)
video.hide()
detector = await ml5.objectDetection("cocossd")
detector.detectStart(video, gotDetections)
}
function draw()
{
image(video, 0, 0)
}
function gotDetections(results)
{
detections = results
console.log(detections)
}
Console
Clear
▶ (1) [Object]

Sketch B10.4 drawing the bounding box

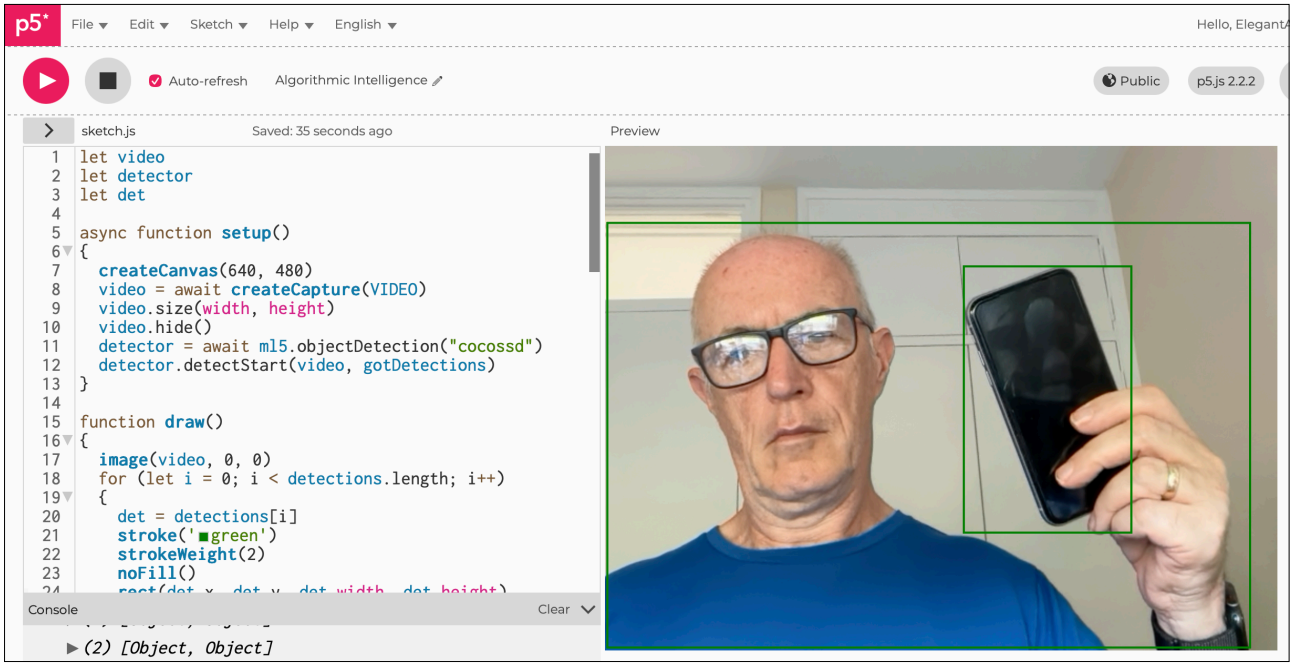
The bounding box is just as before, although this time it moves with the object or comes and goes.

```
let video
let detector
let det

async function setup()
{
  createCanvas(640, 480)
  video = await createCapture(VIDEO)
  video.size(width, height)
  video.hide()
  detector = await ml5.objectDetection("cocossd")
  detector.detectStart(video, gotDetections)
}

function draw()
{
  image(video, 0, 0)
  for (let i = 0; i < detections.length; i++)
  {
    det = detections[i]
    stroke('green')
    strokeWeight(2)
    noFill()
    rect(det.x, det.y, det.width, det.height)
  }
}

function gotDetections(results)
{
  detections = results
  console.log(detections)
}
```

🗒️ Notes

You should have a bounding box, and if you hold something up (like a mobile phone), it should clock that as well.

Figure B10.4



Sketch B10.5 labelling

We can put the labels in, even though you could stop/pause the programme and look inside the array.

```
let video
let detector
let det

async function setup()
{
  createCanvas(640, 480)
  video = await createCapture(VIDEO)
  video.size(width, height)
  video.hide()
  detector = await ml5.objectDetection("cocossd")
  detector.detectStart(video, gotDetections)
}

function draw()
{
  image(video, 0, 0)
  for (let i = 0; i < detections.length; i++)
  {
    det = detections[i]
    stroke('green')
    strokeWeight(2)
    noFill()
    rect(det.x, det.y, det.width, det.height)
    noStroke()
    fill('white')
    textSize(24)
    text(det.label, det.x + 10, det.y + 24)
  }
}

function gotDetections(results)
{
```

```
  detections = results
  console.log(detections)
}
```

🗒️ Notes

There is a limit to the number of objects it has been trained on, so you may well get some interesting labelling.

🌻 Challenge

Add the confidence score after label.

Figure B10.5