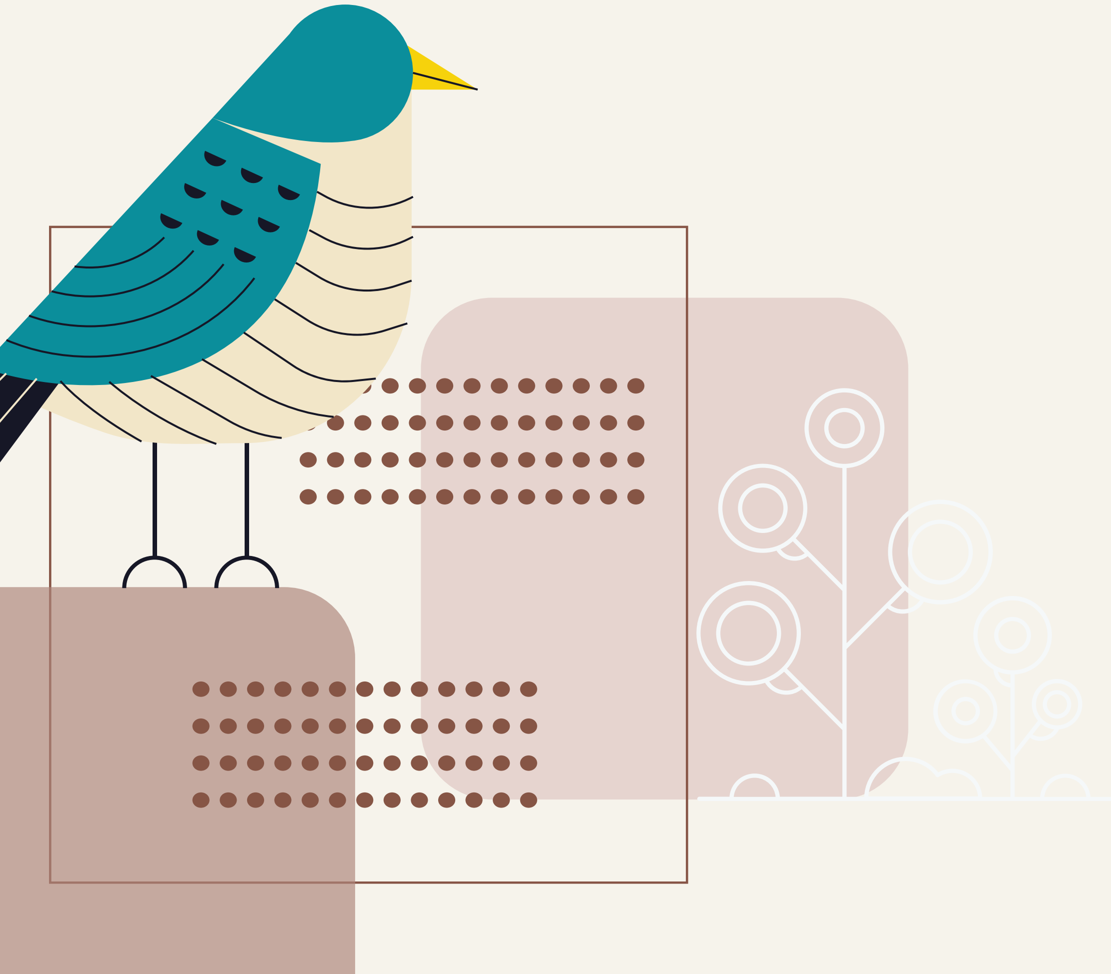
YOLO

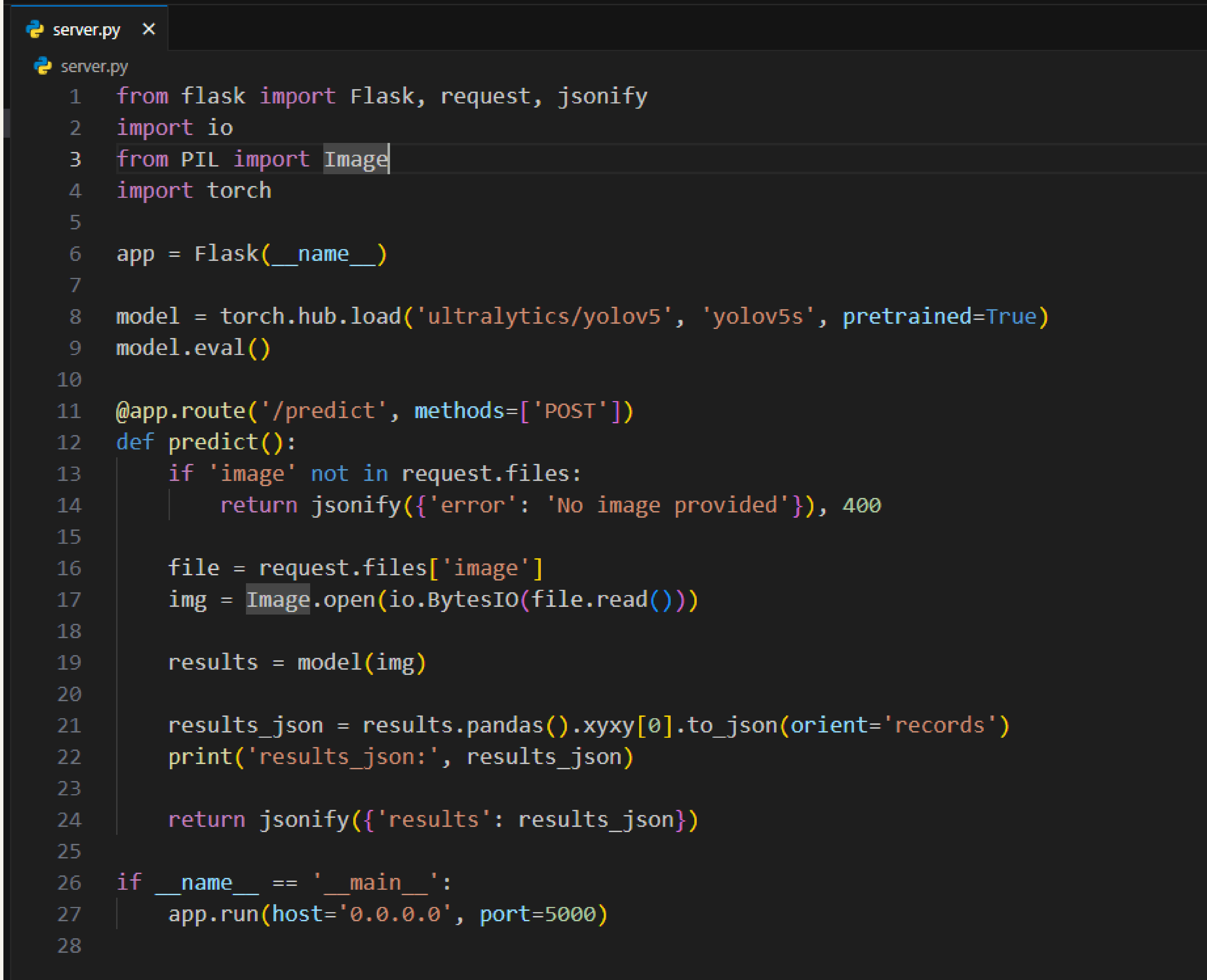
(You Only Look Once)

Presented By : Thanh Dang

YOLO APP DEMO

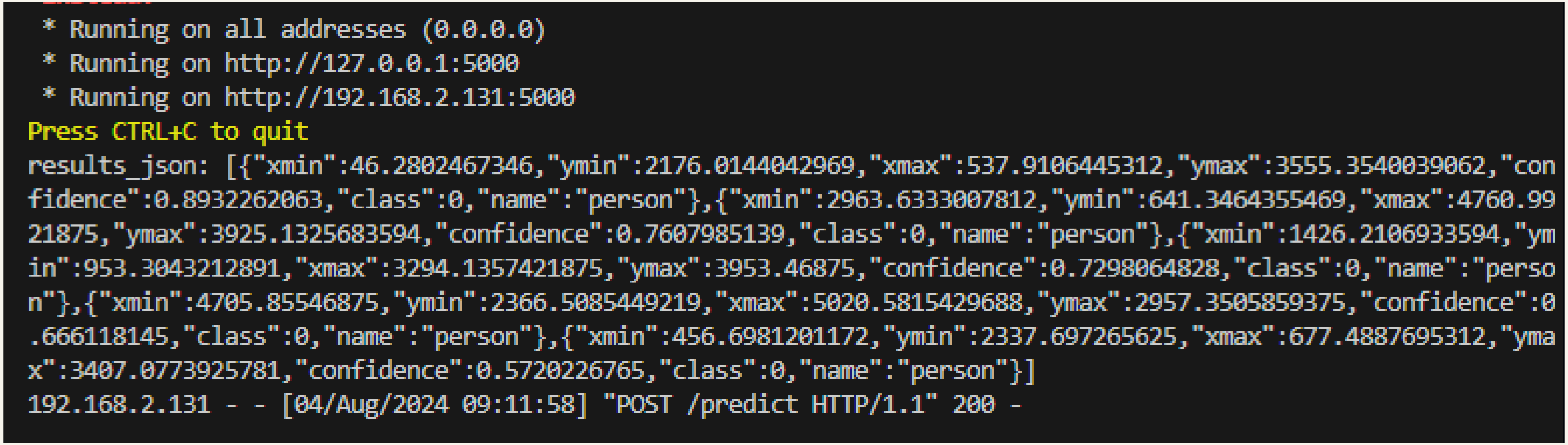


SERVER

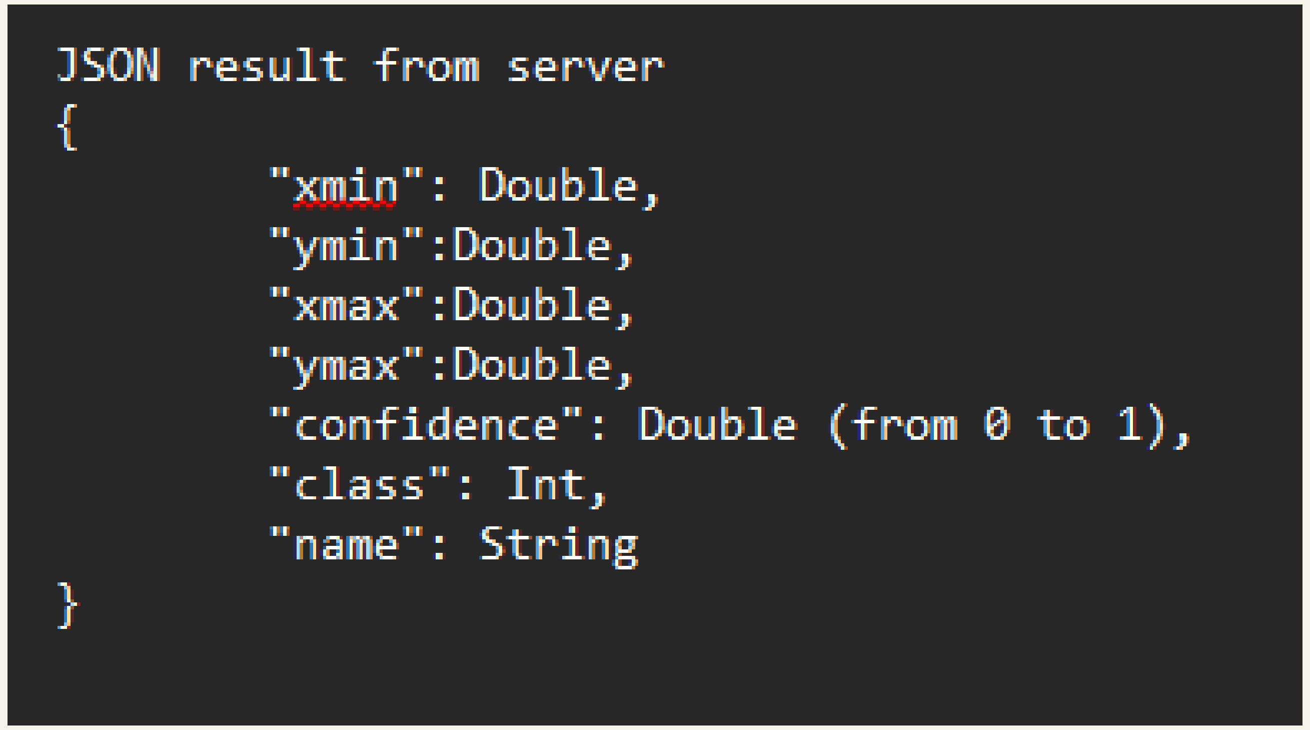


```python
from flask import Flask, request, jsonify
import io
from PIL import Image
import torch

app = Flask(__name__)

model = torch.hub.load('ultralytics/yolov5', 'yolov5s', pretrained=True)
model.eval()

@app.route('/predict', methods=['POST'])
def predict():
    if 'image' not in request.files:
        return jsonify({'error': 'No image provided'}), 400

    file = request.files['image']
    img = Image.open(io.BytesIO(file.read()))

    results = model(img)

    results_json = results.pandas().xyxy[0].to_json(orient='records')
    print('results_json:', results_json)

    return jsonify({'results': results_json})

if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)

```

RUNNING SERVER

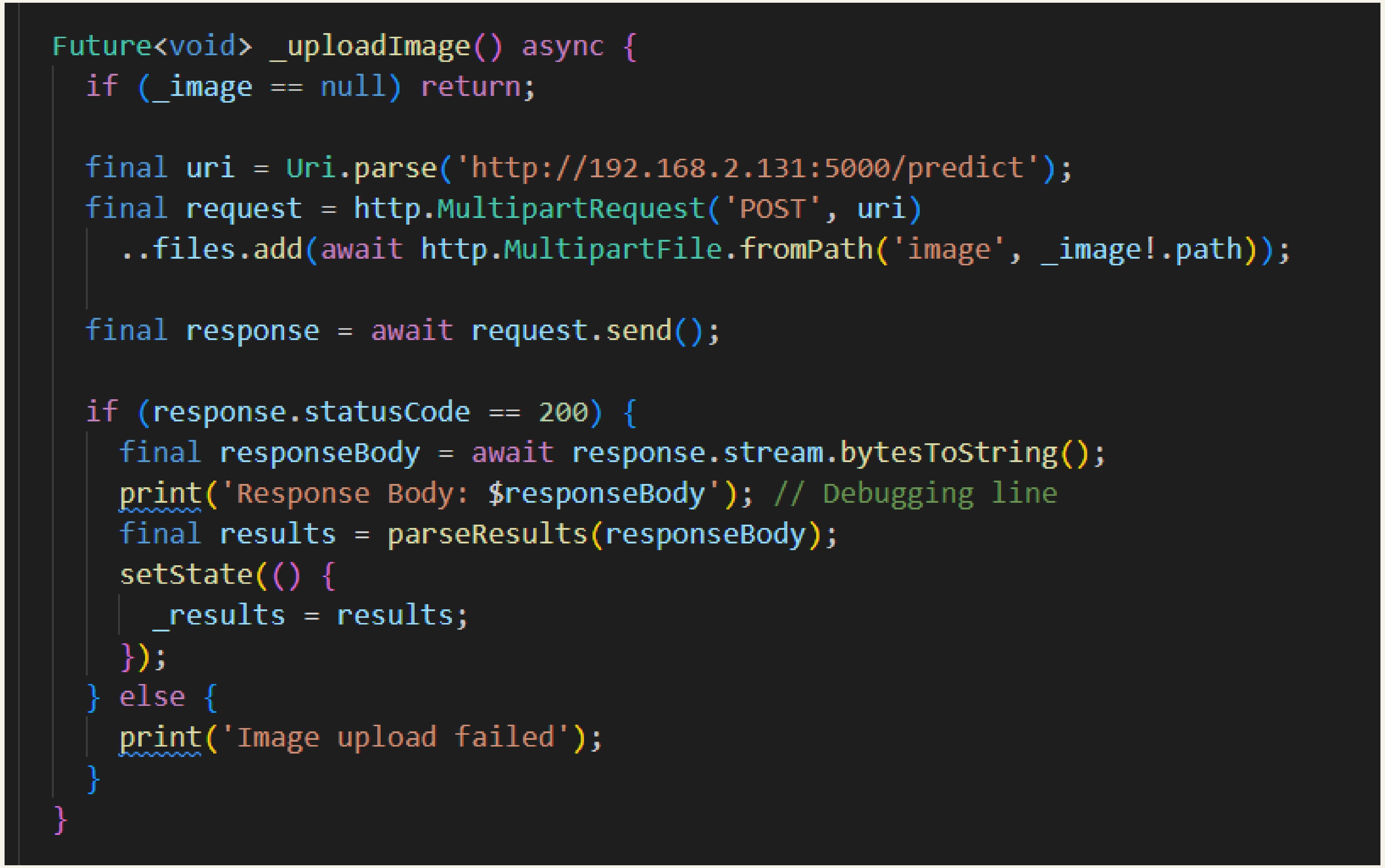


```
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://192.168.2.131:5000
Press CTRL+C to quit
results_json: [{"xmin":46.2802467346,"ymin":2176.0144042969,"xmax":537.9106445312,"ymax":3555.3540039062,"con
fidence":0.8932262063,"class":0,"name":"person"},{"xmin":2963.6333007812,"ymin":641.3464355469,"xmax":4760.99
21875,"ymax":3925.1325683594,"confidence":0.7607985139,"class":0,"name":"person"},{"xmin":1426.2106933594,"ym
in":953.3043212891,"xmax":3294.1357421875,"ymax":3953.46875,"confidence":0.7298064828,"class":0,"name":"perso
n"},{"xmin":4705.85546875,"ymin":2366.5085449219,"xmax":5020.5815429688,"ymax":2957.3505859375,"confidence":0
.666118145,"class":0,"name":"person"},{"xmin":456.6981201172,"ymin":2337.697265625,"xmax":677.4887695312,"yma
x":3407.0773925781,"confidence":0.5720226765,"class":0,"name":"person"}]
192.168.2.131 - - [04/Aug/2024 09:11:58] "POST /predict HTTP/1.1" 200 -
```

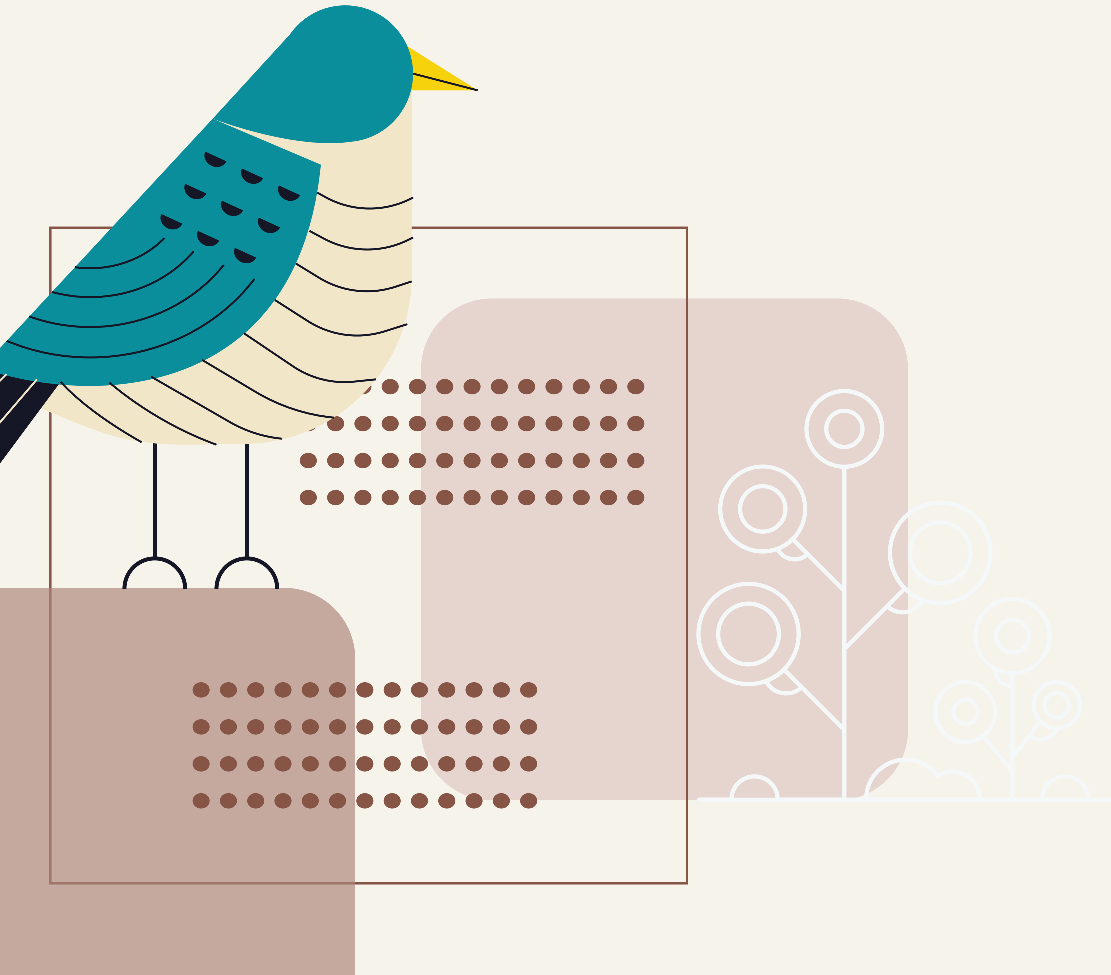


```
JSON result from server
{
        "xmin": Double,
        "ymin":Double,
        "xmax":Double,
        "ymax":Double,
        "confidence": Double (from 0 to 1),
        "class": Int,
        "name": String
}
```

MOBILE APP

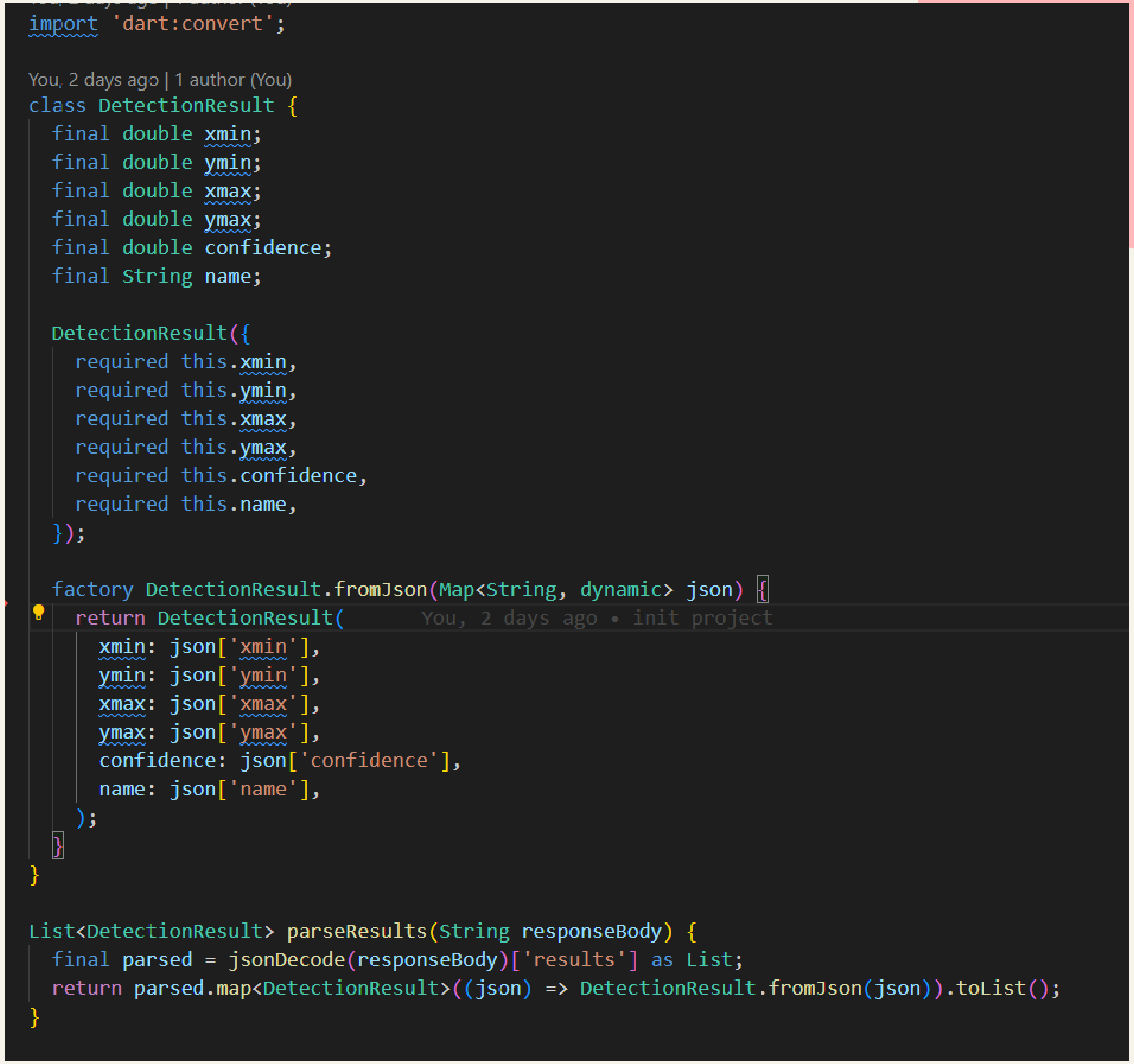


```dart
Future<void> _uploadImage() async {
  if (_image == null) return;

  final uri = Uri.parse('http://192.168.2.131:5000/predict');
  final request = http.MultipartRequest('POST', uri)
    ..files.add(await http.MultipartFile.fromPath('image', _image!.path));

  final response = await request.send();

  if (response.statusCode == 200) {
    final responseBody = await response.stream.bytesToString();
    print('Response Body: $responseBody'); // Debugging line
    final results = parseResults(responseBody);
    setState(() {
      _results = results;
    });
  } else {
    print('Image upload failed');
  }
}
```

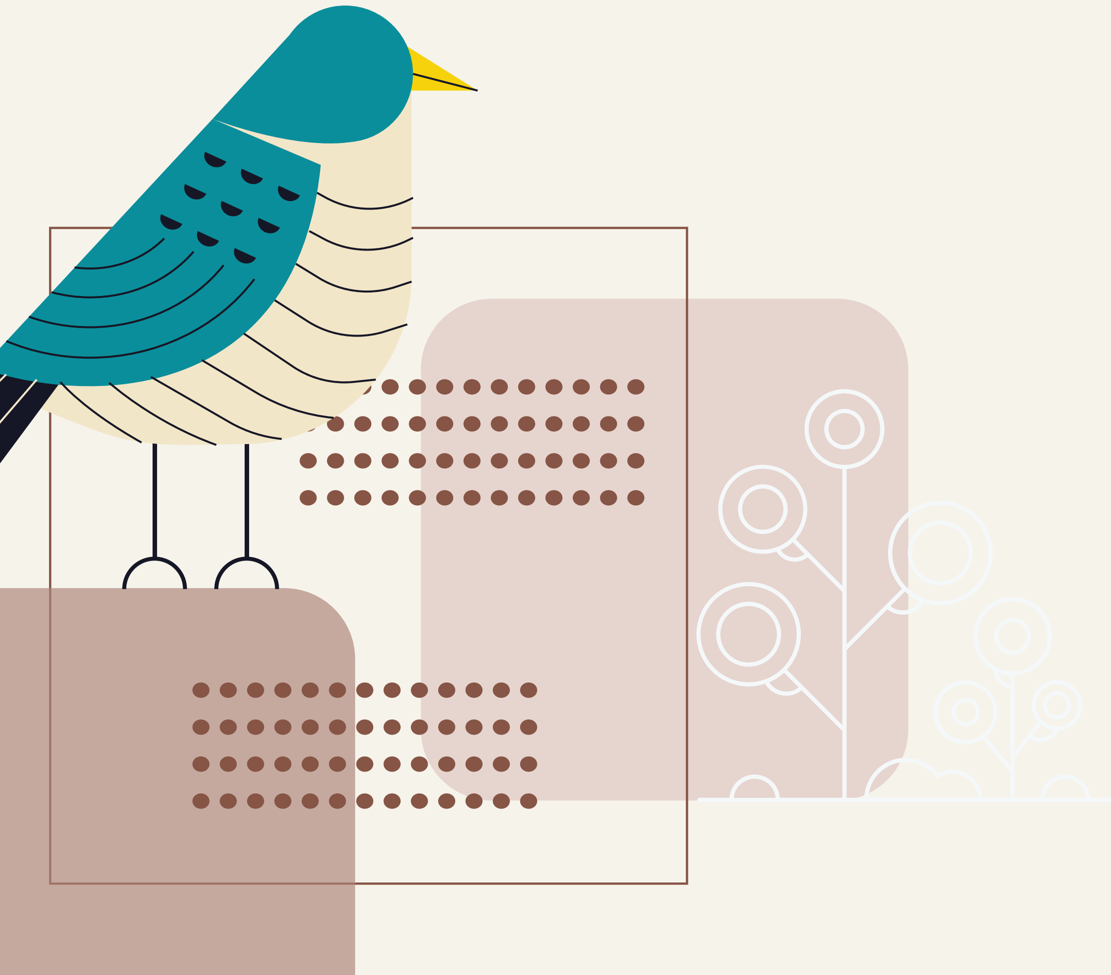


Send Image To Server

MOBILE APP

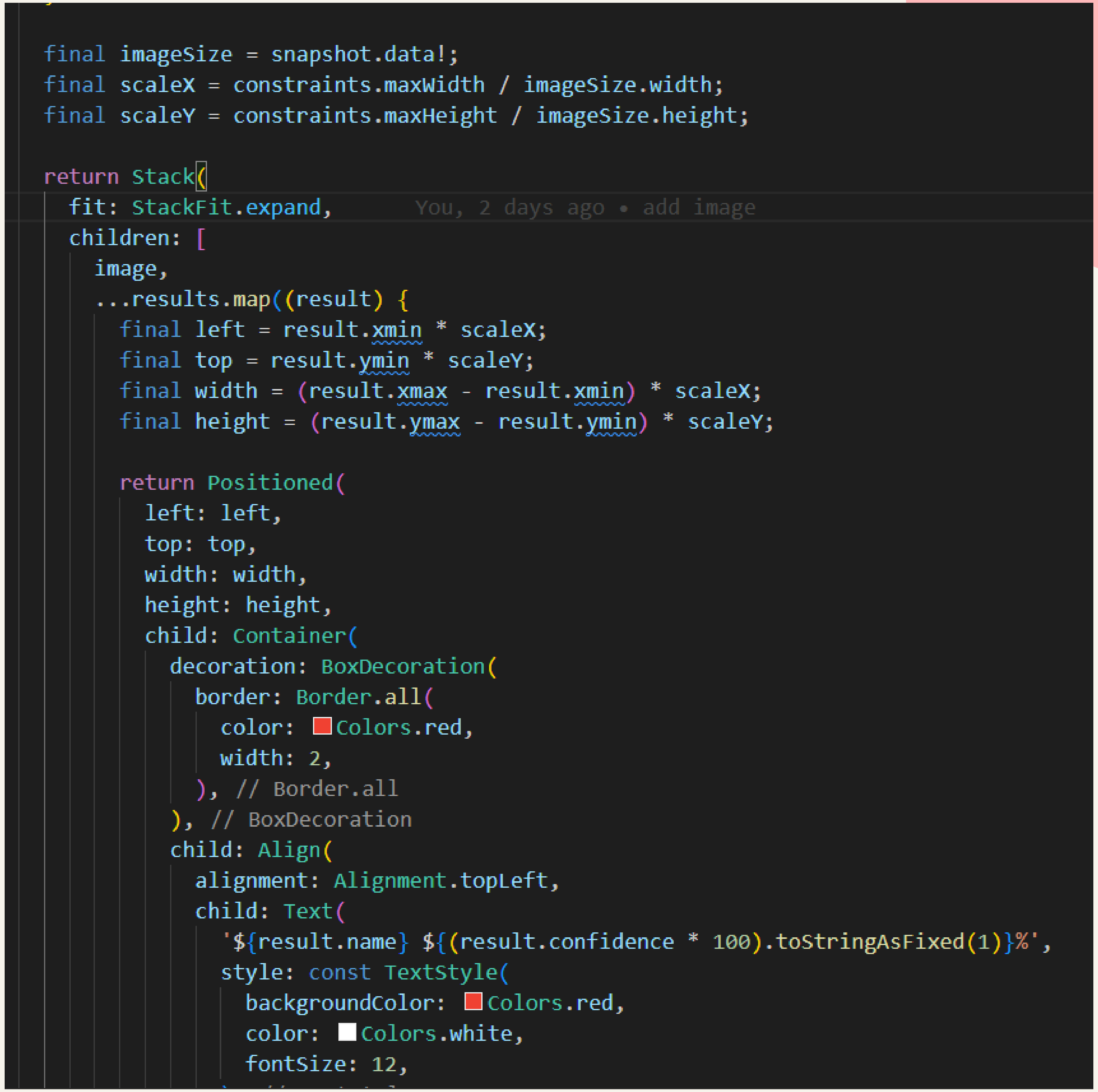


```dart
import 'dart:convert';

You, 2 days ago | 1 author (You)
class DetectionResult {
  final double xmin;
  final double ymin;
  final double xmax;
  final double ymax;
  final double confidence;
  final String name;

  DetectionResult({
    required this.xmin,
    required this.ymin,
    required this.xmax,
    required this.ymax,
    required this.confidence,
    required this.name,
  });

  factory DetectionResult.fromJson(Map<String, dynamic> json) {
    return DetectionResult(        You, 2 days ago • init project
      xmin: json['xmin'],
      ymin: json['ymin'],
      xmax: json['xmax'],
      ymax: json['ymax'],
      confidence: json['confidence'],
      name: json['name'],
    );
  }
}

List<DetectionResult> parseResults(String responseBody) {
  final parsed = jsonDecode(responseBody)['results'] as List;
  return parsed.map<DetectionResult>((json) => DetectionResult.fromJson(json)).toList();
}
```

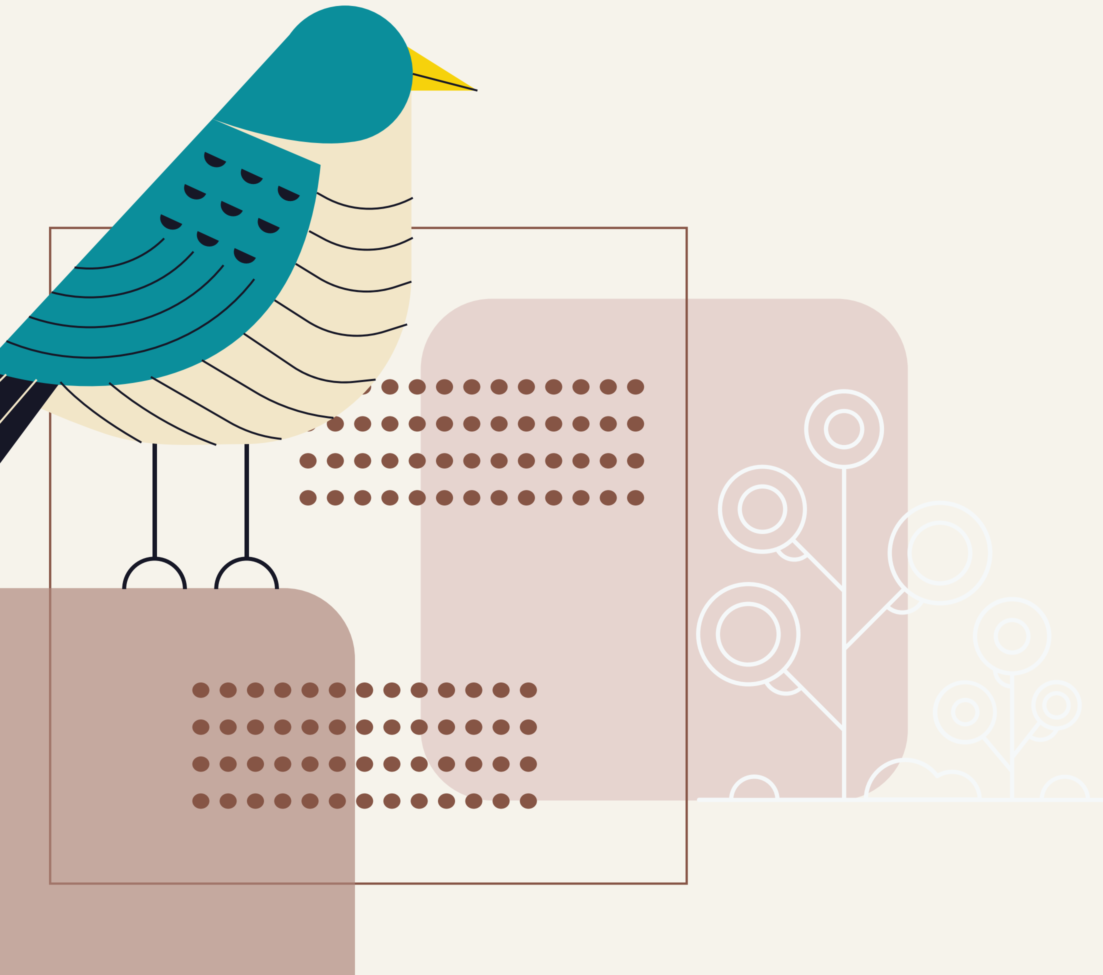


Conver JSON result

MOBILE APP

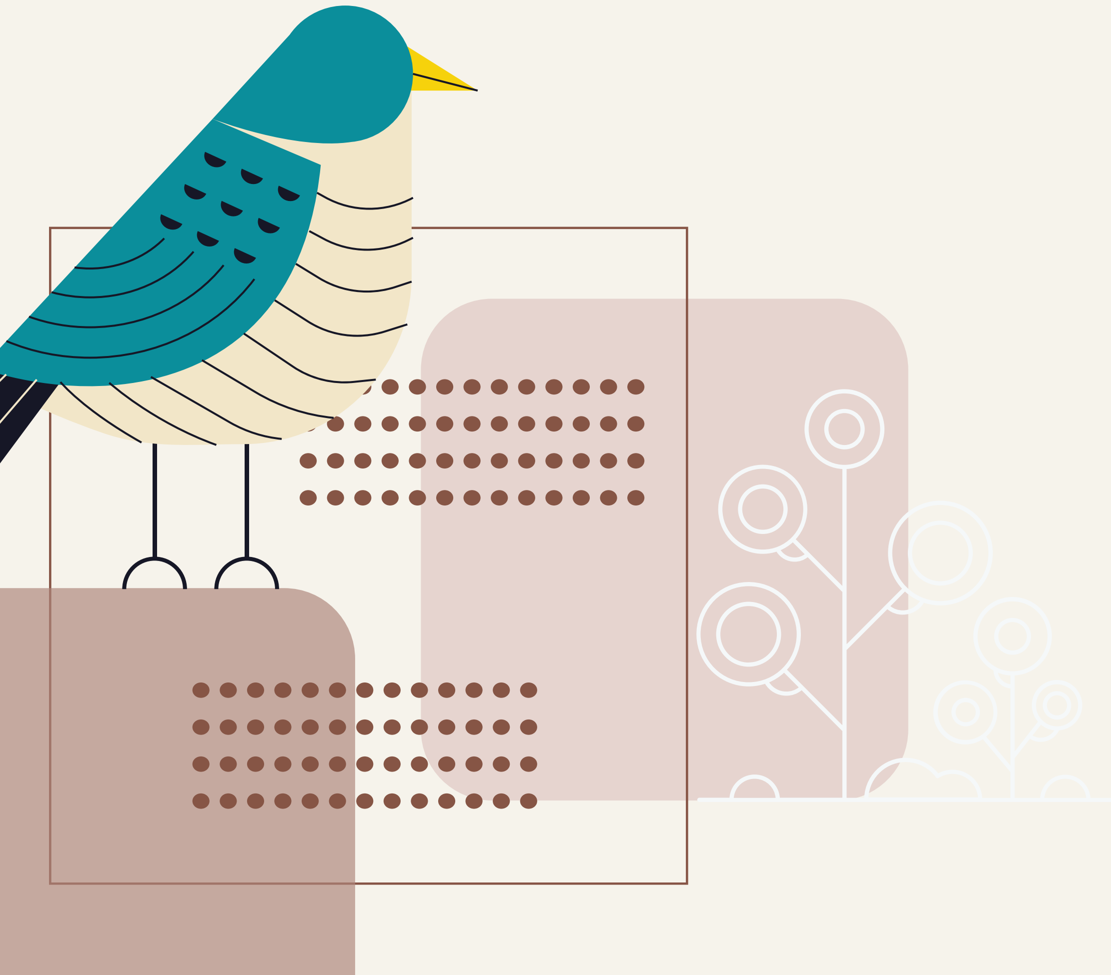


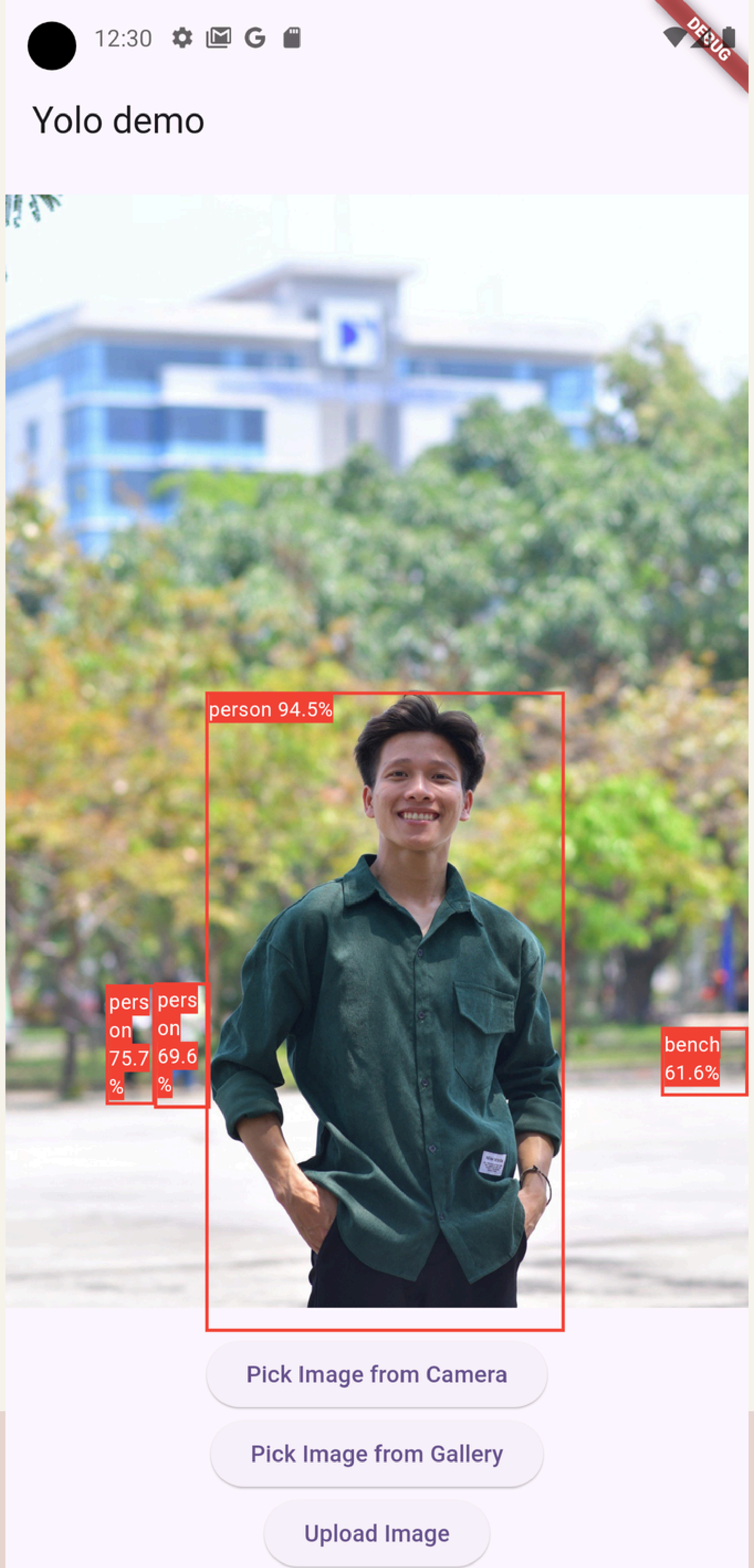
```
final imageSize = snapshot.data!;
final scaleX = constraints.maxWidth / imageSize.width;
final scaleY = constraints.maxHeight / imageSize.height;

return Stack(
  fit: StackFit.expand,        You, 2 days ago • add image
  children: [
    image,
    ...results.map((result) {
      final left = result.xmin * scaleX;
      final top = result.ymin * scaleY;
      final width = (result.xmax - result.xmin) * scaleX;
      final height = (result.ymax - result.ymin) * scaleY;

      return Positioned(
        left: left,
        top: top,
        width: width,
        height: height,
        child: Container(
          decoration: BoxDecoration(
            border: Border.all(
              color: 🟥Colors.red,
              width: 2,
            ), // Border.all
          ), // BoxDecoration
          child: Align(
            alignment: Alignment.topLeft,
            child: Text(
              '${result.name} ${(result.confidence * 100).toStringAsFixed(1)}%',
              style: const TextStyle(
                backgroundColor: 🟥Colors.red,
                color: ⬜Colors.white,
                fontSize: 12,
```



Red box and Object Detection Result for Image

RESULT




12:30
DEBUG
Yolo demo
person 94.5%
pers on 75.7 %
pers on 69.6 %
bench 61.6%
Pick Image from Camera
Pick Image from Gallery
Upload Image

Larana University | 2024

THANK YOU

Presented By : Adeline Palmerston