06 Classifai : Open-source and Comprehensive Annotation Tool
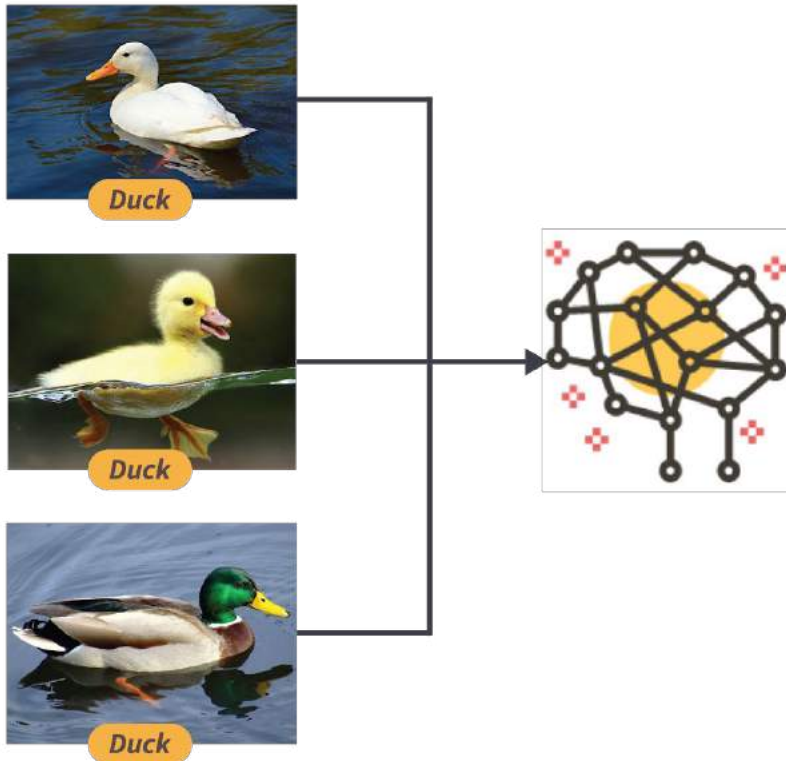
Introduction to Classifai

More than 80% of AI Solutions implement **supervised learning**.

Step 1
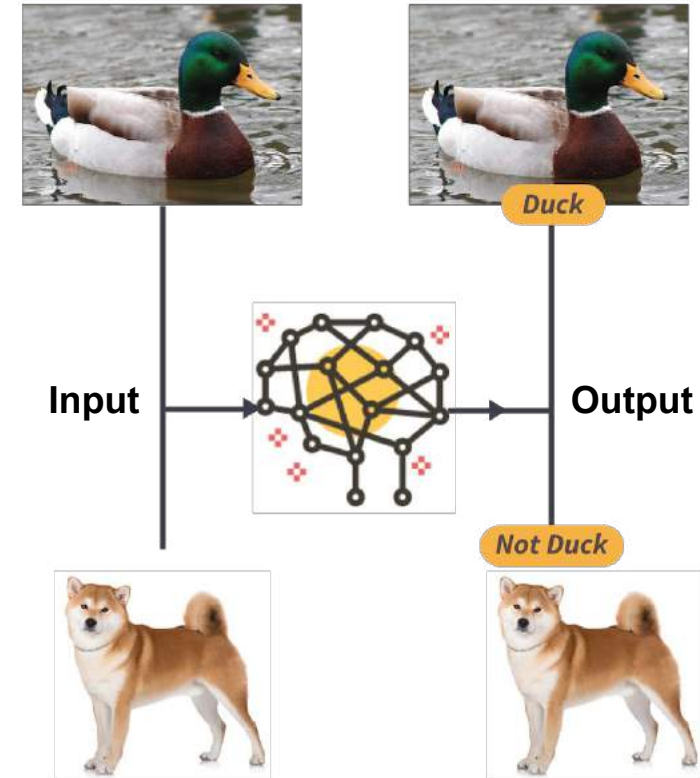Provide the machine learning algorithm with "labeled" input data to learn.

Duck

Duck

Duck

Images labeled with "Duck"

Step 2
Feed the algorithm with "unlabeled" data to see if it labels the data correctly.
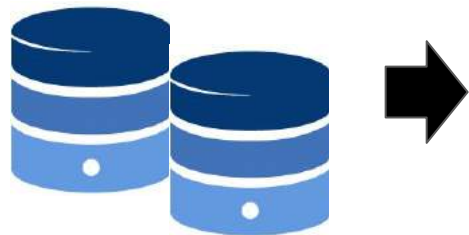
Duck

Input → Output

Not Duck

Introduction to Classifai

What is **Classifai**?

Data annotation tool developed by CertifAI to enable seamless and intuitive preparation of data for supervised learning.

Raw Data Sources

AI model training

Labelled data
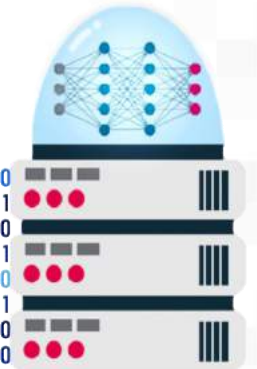
Introduction to **Classifai**

Get Started with Classifai

Step 1

Download and install the distribution

classifai-1.2.0.pkg

classifai-win-1.2.0

Step 2

Run the Application
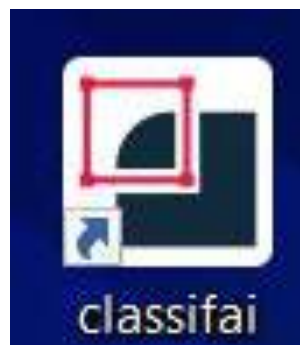
classifai

Step 3

Start an instance in browser

Welcome Launcher
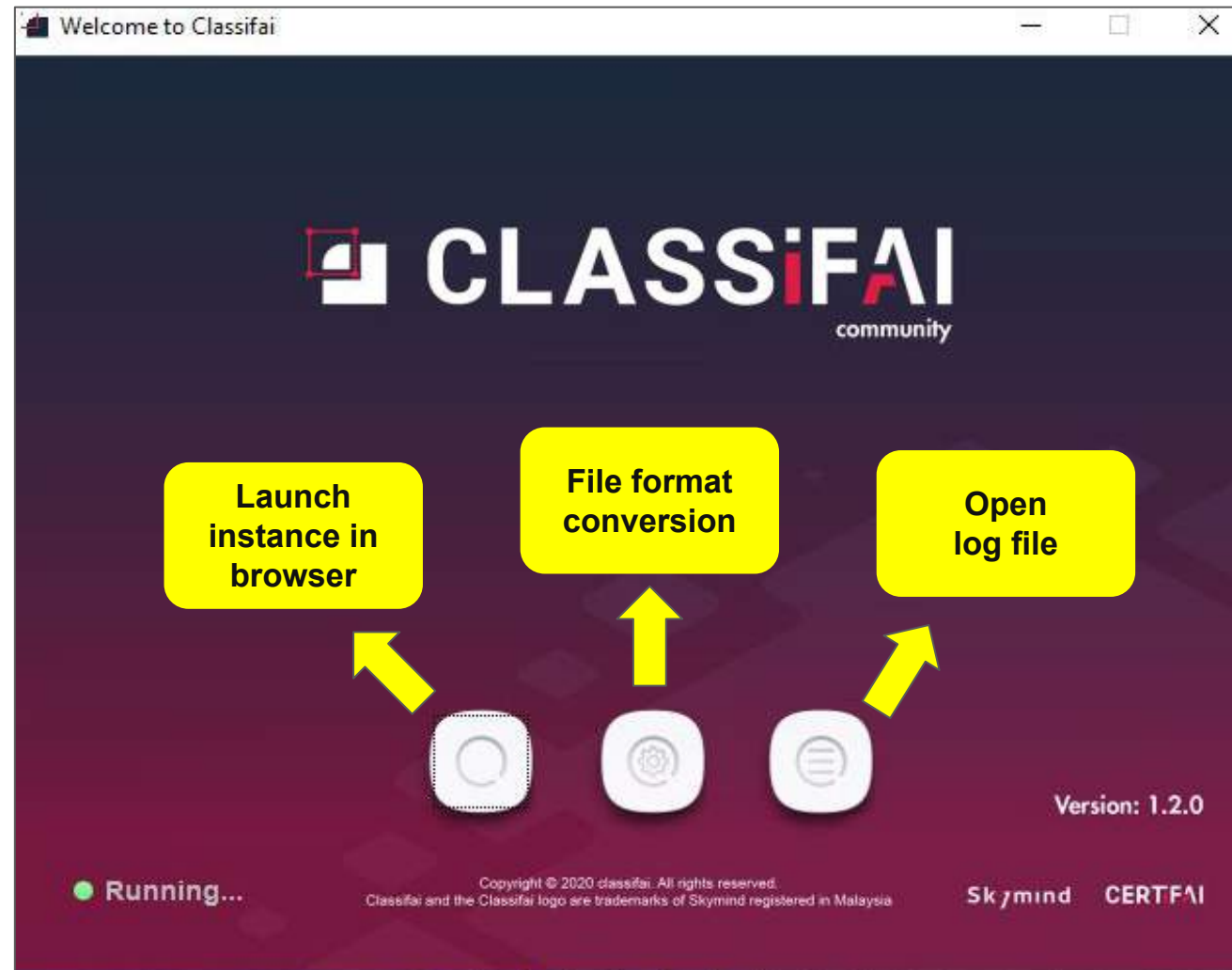
Navigation Page

Upon launching the server, you will come to the navigation page. Choose your preferred mode and start labelling!

Classifai Video Tutorial

CLASSiFAI
powered by Skymind

Scotrraaj Gopal
AI Specialist

Output Types

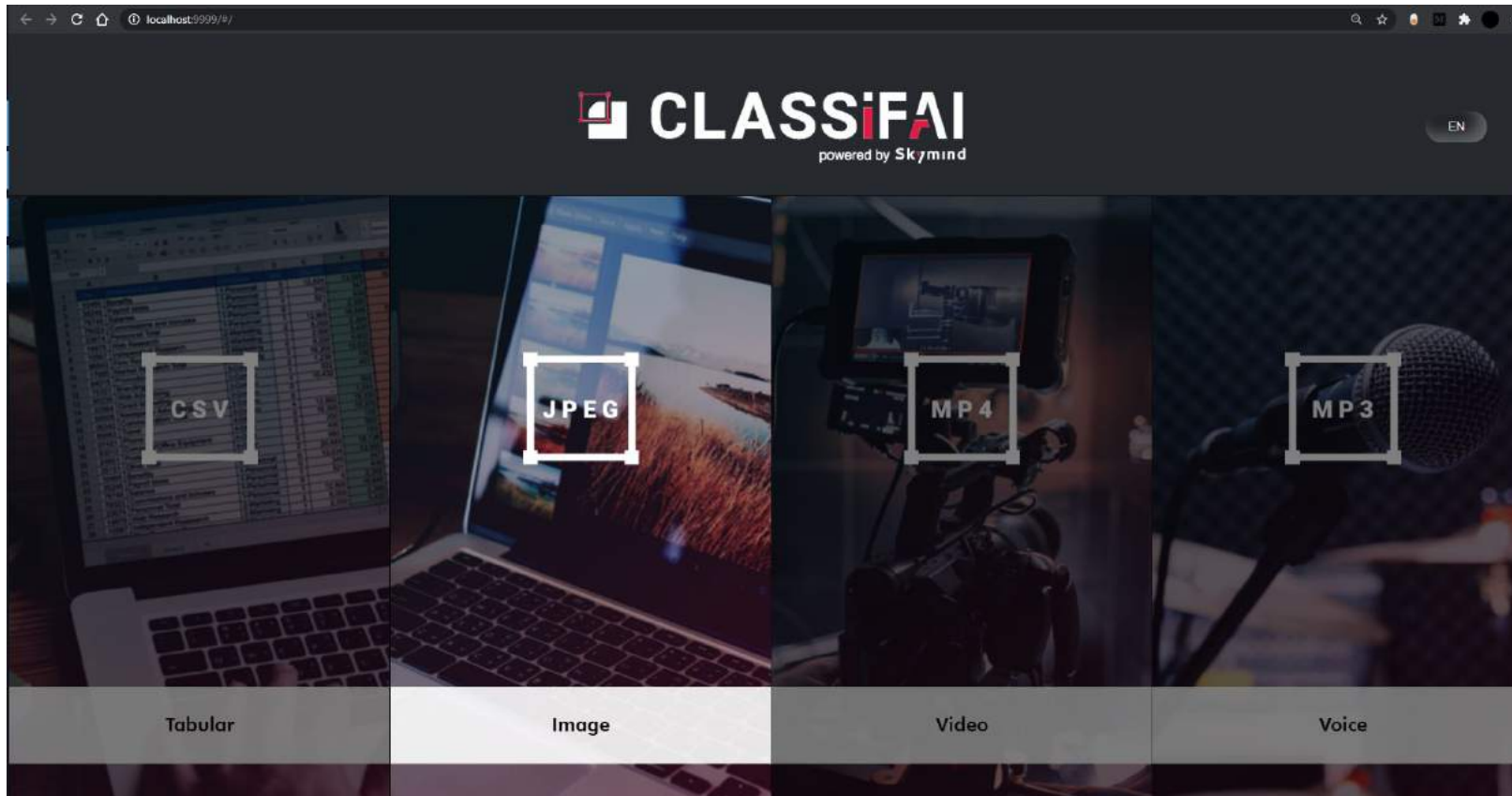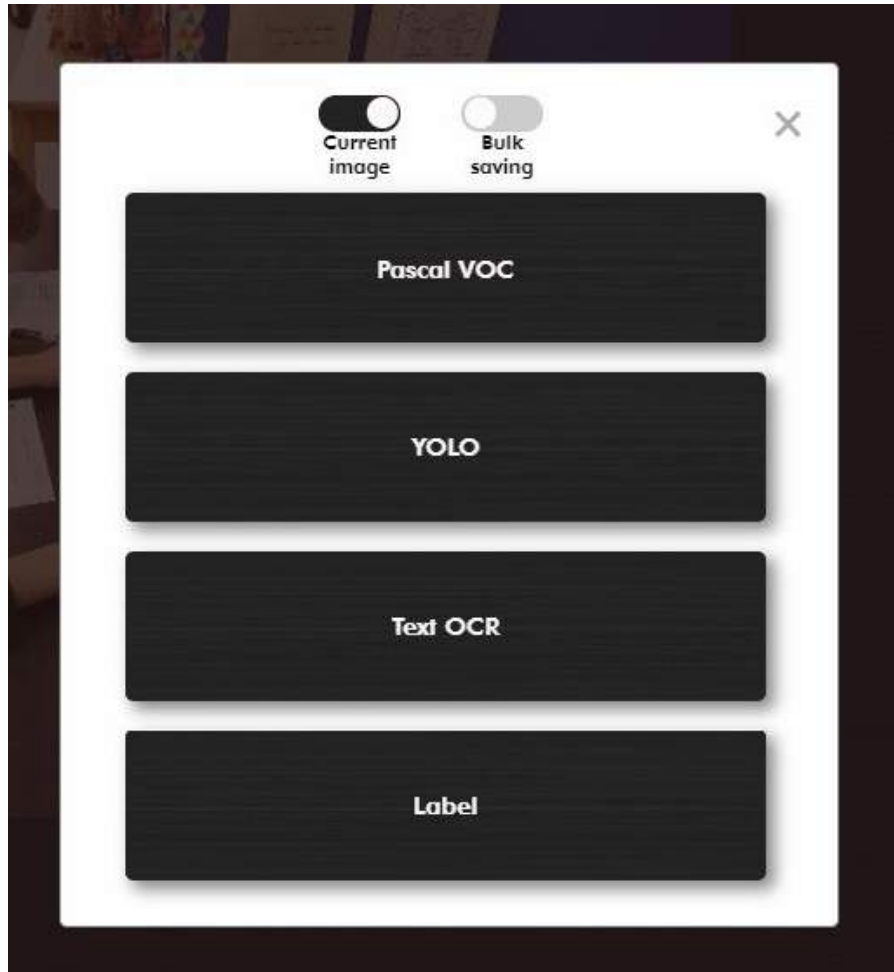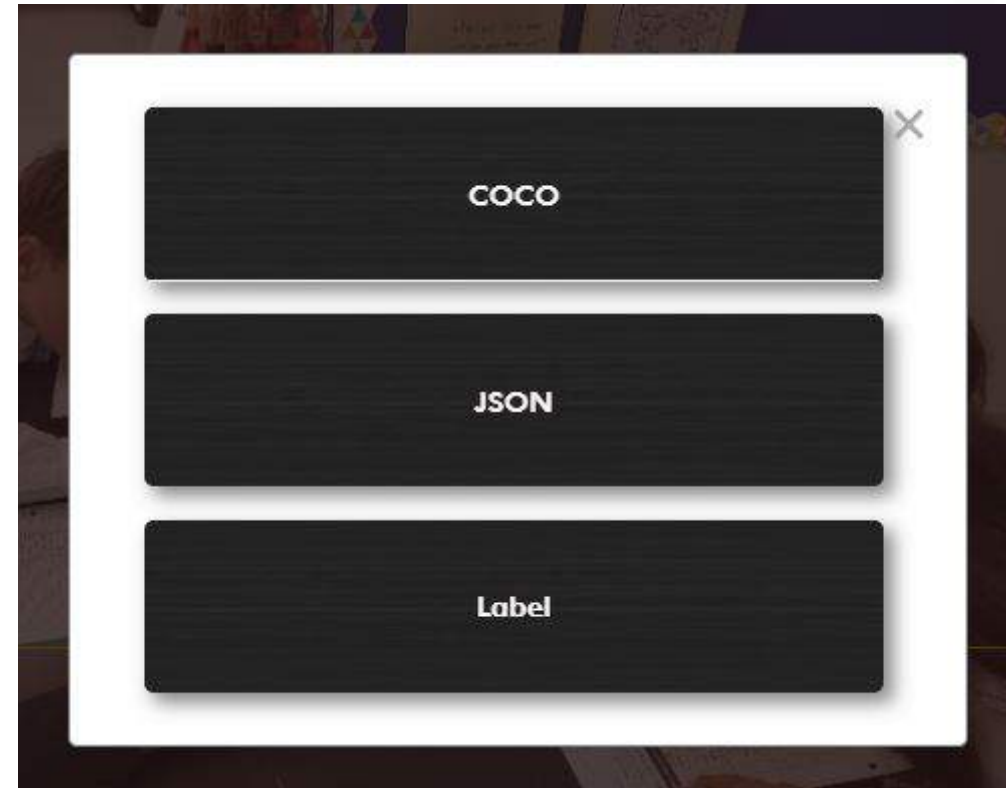**Bounding box mode**

Polygon segmentation mode

Bounding Box

Pascal VOC

```
<annotation>
        <folder>C:/Users/Nur.Atikah/Documents/2021-Updated Version/Petroleum</folder>
        <filename>petroleum01.jpg</filename>
        <path>C:/Users/Nur.Atikah/Documents/2021-Updated Version/Petroleum/petroleum01.jpg</path>
        <source>
                <database>unknown</database>
        </source>
        <size>
                <width>1024</width>
                <height>657</height>
                <depth>3</depth>
        </size>
        <segmented>0</segmented>
        <object>
                <name>oilrig</name>
                <pose>Unspecified</pose>
                <truncated>0</truncated>
                <difficult>0</difficult>
                <bndbox>
                        <xmin>37</xmin>
                        <ymin>114</ymin>
                        <xmax>427</xmax>
                        <ymax>422</ymax>
                </bndbox>
        </object>
        <object>
                <name>ship</name>
                <pose>Unspecified</pose>
                <truncated>0</truncated>
                <difficult>0</difficult>
                <bndbox>
                        <xmin>477</xmin>
                        <ymin>190</ymin>
                        <xmax>991</xmax>
                        <ymax>545</ymax>
                </bndbox>
        </object>
</annotation>
```

Bounding Box

YOLO

```
3 0.356892641540286 0.8148963941915485 0.138210148474656 0.344264969815307
3 0.48748490078153043 0.867922989683636 0.07726709087942572 0.24473813020068533
3 0.631136400717983 0.779817262961169 0.175211290585739 0.42747534083637
3 0.78567052477498 0.869554576603047 0.07509055310817428 0.25779083047805507
3 0.87327627769617 0.776554087126774 0.14147495513134276 0.42094958394517873
2 0.5876056452928698 0.2797356281938327 0.808583782019053 0.533529123837938
```

Bounding Box

Text OCR

	A	B	C	D	E	F
1	filename	x1	y1	x2	y2	label
2	petroleum01.jpg	37.12482	114.6454	427.3157	422.2959	oilrig
3	petroleum01.jpg	477.6975	190.754	991.163	545.5705	ship
4	petroleum02.jpg	1030.674	182.8166	1754.041	993.4872	oilrig
5	petroleum02.jpg	558.822	615.1743	955.8427	879.1619	ship
6	petroleum02.jpg	236.6324	856.2968	976.6291	1122.363	ship
7	petroleum03.jpg	43.65541	212.742	328.8047	503.0602	oilrig
8	petroleum03.jpg	370.1557	191.2051	779.3578	496.1684	oilrig
9	petroleum04.jpg	415	63	783	397	oilrig
10	petroleum04.jpg	108	244	412	328	ship
11	petroleum04.jpg	184	406	387	491	ship
12	petroleum04.jpg	702	417	887	474	ship
13	petroleum05.jpg	55	310	233	427	ship
14	petroleum05.jpg	358	426	603	561	ship
15	petroleum05.jpg	967	193	1057	327	ship
16	petroleum05.jpg	396	84	728	387	oilrig
17	petroleum06.jpg	416.9369	129.4138	678.3663	405.5716	oilrig
18	petroleum06.jpg	89.22966	401.8895	180.0549	497.6242	ship
19	petroleum06.jpg	240.1959	464.4852	340.8401	562.6747	ship
20	petroleum06.jpg	607.179	464.4852	733.5979	574.9484	ship
21	petroleum06.jpg	907.8841	449.7568	1020.802	535.6726	ship
22	petroleum06.jpg	1045.349	401.8895	1145.994	475.5315	ship

Bounding Box

Label

default
ship
oilrig
worker

Polygon Segmentation

COCO

i.
```
"info":{"year":2021,"version":"1.0","description":"VIA project exported
to COCO format using
classifai(https://classifai.ai/)","contributor":"","url":"https://classif
ai.ai/","date_created":"Wed, 27 Jan 2021 07:07:49 GMT"},
```

ii.
```
"images":[{"id":1,"width":4032,"height":3024,"file_name":"edu01.jpg","license":0,"date_captured":""},
{"id":2,"width":700,"height":545,"file_name":"edu02.jpg","license":0,"date_captured":""},
{"id":3,"width":1021,"height":580,"file_name":"edu03.jpg","license":0,"date_captured":""},
{"id":4,"width":1440,"height":720,"file_name":"edu04.jpg","license":0,"date_captured":""},
{"id":5,"width":1200,"height":800,"file_name":"edu05.jpg","license":0,"date_captured":""},
{"id":6,"width":768,"height":576,"file_name":"edu06.jpg","license":0,"date_captured":""},
{"id":7,"width":750,"height":560,"file_name":"edu07.png","license":0,"date_captured":""},
{"id":8,"width":967,"height":645,"file_name":"edu08.jpg","license":0,"date_captured":""},
{"id":9,"width":560,"height":420,"file_name":"edu09.jpg","license":0,"date_captured":""},
{"id":10,"width":1000,"height":471,"file_name":"edu10.jpg","license":0,"date_captured":""},
{"id":11,"width":2197,"height":1463,"file_name":"edu11.jpg","license":0,"date_captured":""},
{"id":12,"width":800,"height":533,"file_name":"edu12.jpg","license":0,"date_captured":""},
{"id":13,"width":621,"height":414,"file_name":"edu13.jpg","license":0,"date_captured":""}],
```

Polygon Segmentation

COCO

iii.

```
"licenses":[{"id":1,"name":"APACHE LICENSE, VERSION
2.0","url":"https://www.apache.org/licenses/LICENSE-2.0"}],
```

iv.a

```
"categories":[
{"supercategory":"type","id":1,"name":"paper"},
{"supercategory":"type","id":2,"name":"beaker"},
{"supercategory":"type","id":3,"name":"flag"},
{"supercategory":"type","id":4,"name":"laptop"},
{"supercategory":"type","id":5,"name":"keyboard"},
{"supercategory":"type","id":6,"name":"bag"},
{"supercategory":"type","id":7,"name":"smartphone"},
{"supercategory":"type","id":8,"name":"books"},
{"supercategory":"type","id":9,"name":"projector"},
{"supercategory":"type","id":10,"name":"files"},
{"supercategory":"type","id":11,"name":"microscope"}
]}
```

Polygon Segmentation

COCO

iv.b

```
"segmentation":
[[253.48692403486916,319.4950752858598,362.3287671232875,315.849654703951
05,388.888259934337,335.118306351183,272.23480131325704,345.5337937280651
,253.48692403486916,318.9743009170157]],
"area":4019.272078890571,
"bbox":[253.48692403486916,315.84965470395105,135.40133589946782,
       29.684139024114074],
"iscrowd":0,
"id":13,
"image_id":13,
"category_id":1}],
```

Polygon Segmentation

JSON

```
"edu02.jpg":
{
"fileref":"","size":"288895","filename":"edu02.jpg","base64_img_data":"",
"file_attributes":{},
"regions":{"0":{
            "shape_attributes":
                {"name":"polygon",
                "all_points_x":[380.65046018367684,438.24484359487
                155,435.90360849685555,422.3244449283624,389.54715
                35561378,378.3092250856608,380.18221316407363],
                "all_points_y":[402.4583133489585,405.736042486180
                96,482.5285537011073,490.02050601475867,490.020506
                01475867,482.99680072071055,403.3948073881649]},
                "region_attributes":{"beaker":"1"}
            }
        }
},
```
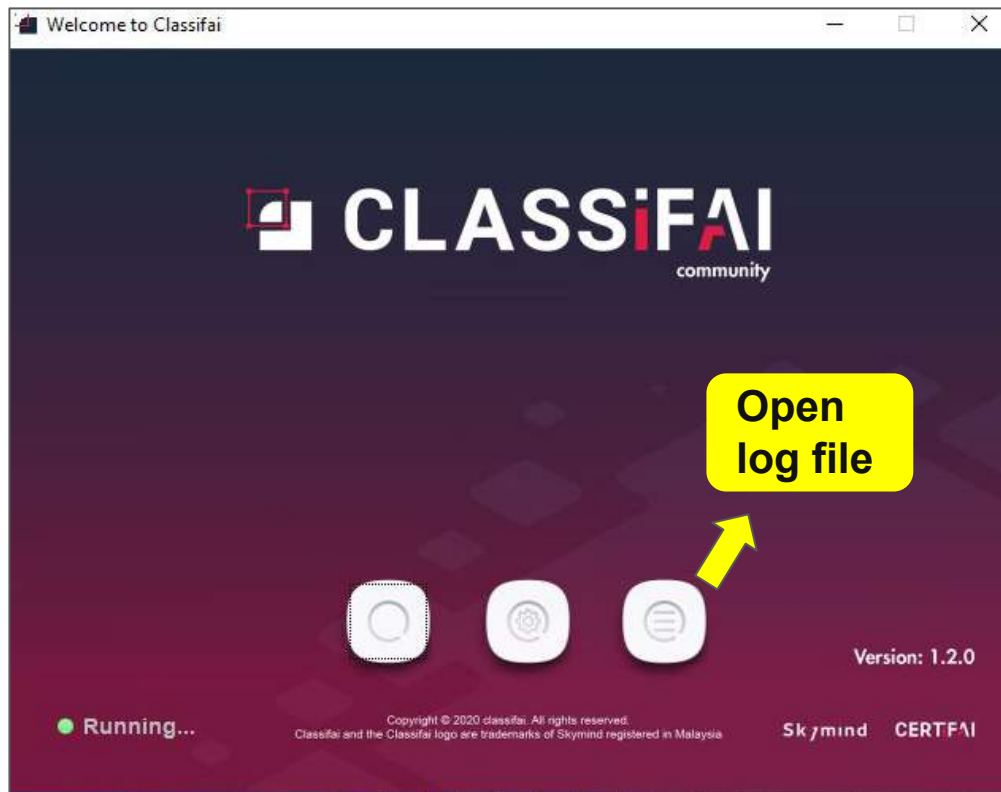
Polygon Segmentation

Label

```
default
paper
beaker
flag
laptop
keyboard
bag
smartphone
books
projector
files
microscope
```
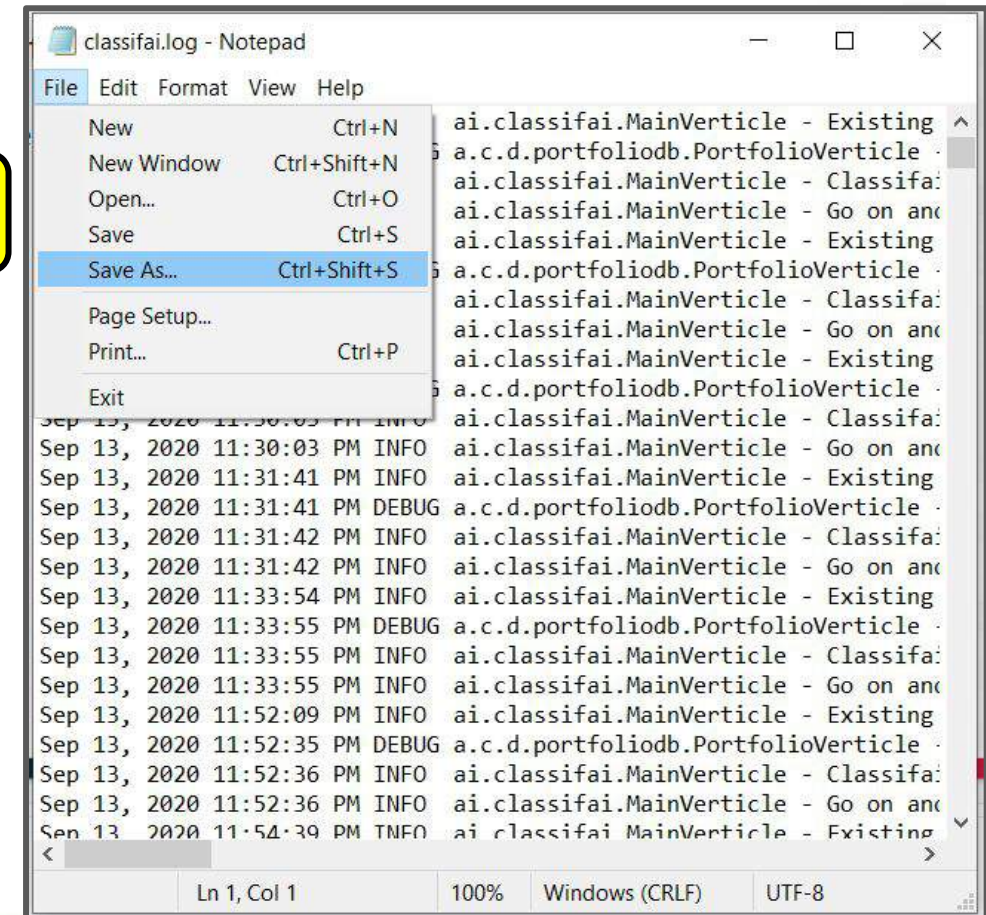
Classifai's Tool Overview

When hit into errors, support Classifai's developers by:

- Stating how did the error happened (So that developers can reproduce the error).
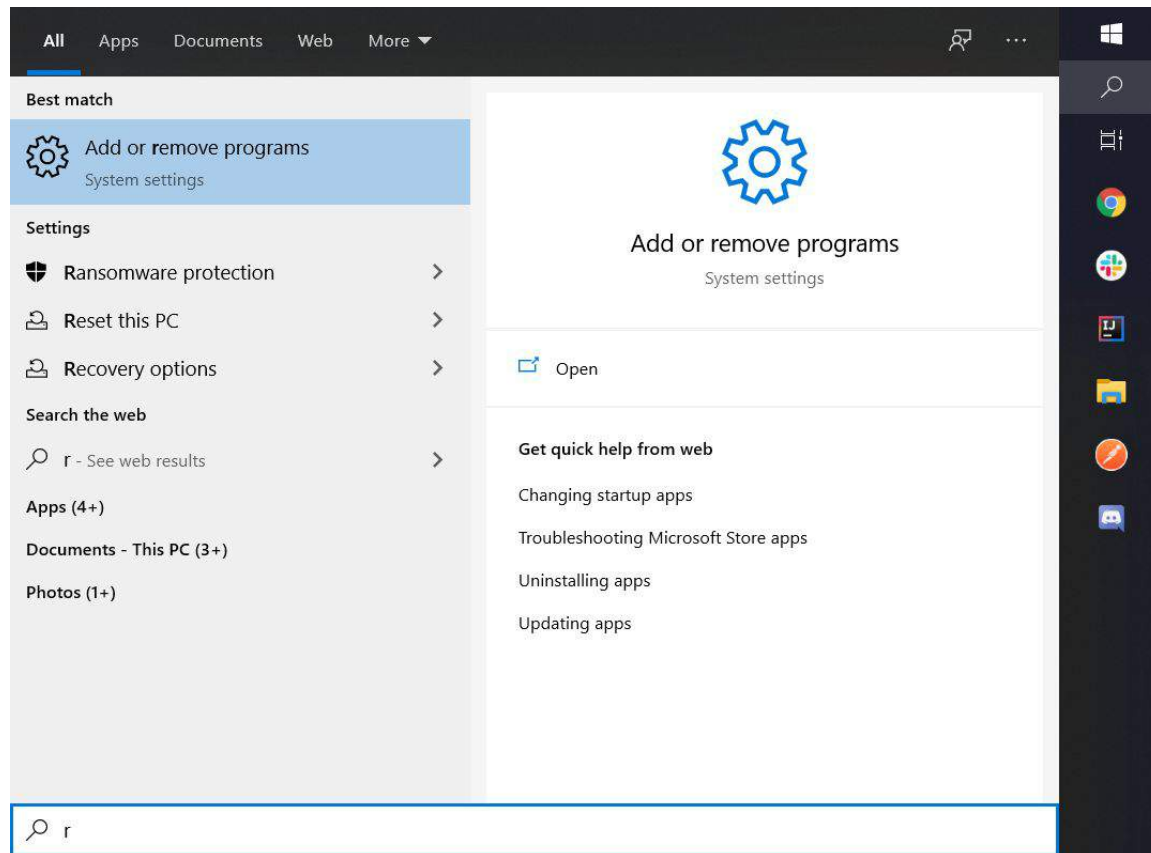- Open, save the log file and attach with report.
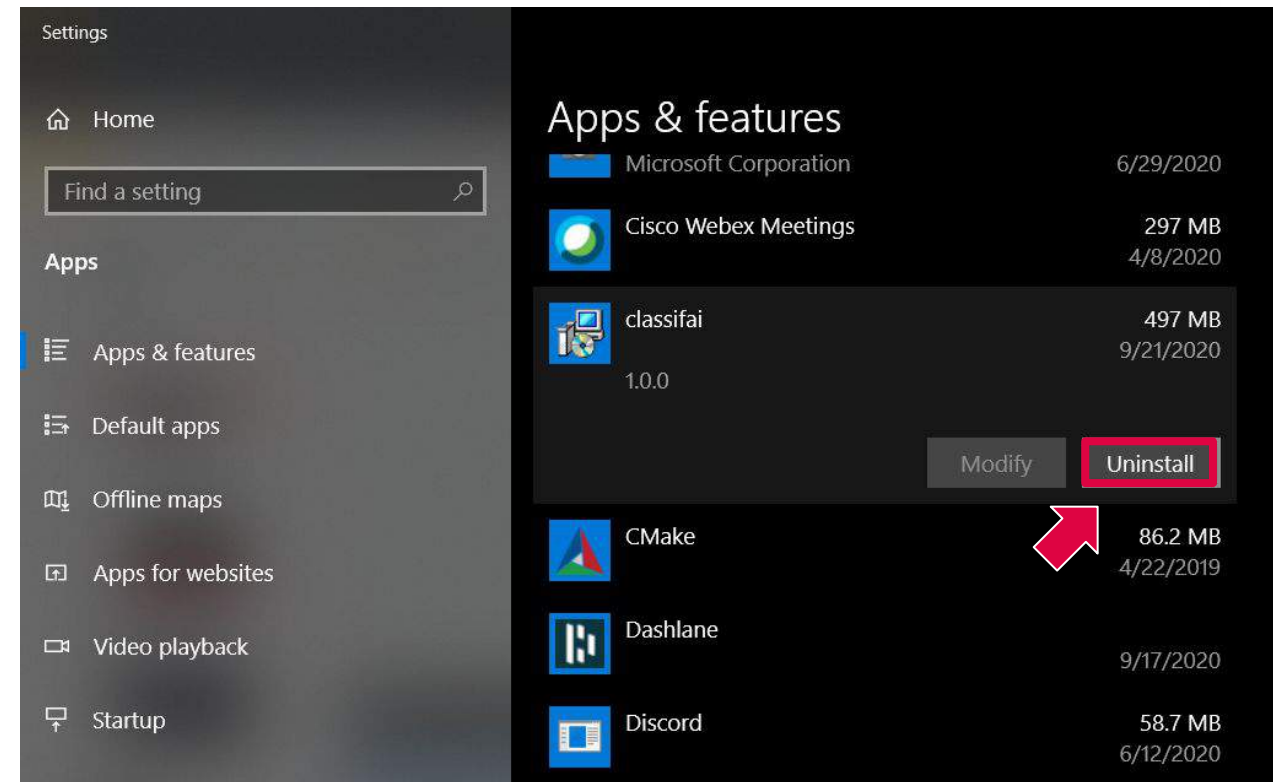
Uninstall Classifai (Windows)

Step 1

Search for "Add or Remove Programs"

Step 2

Uninstall Classifai

Classifai Hands-on

Demo Structure

- **Part 1**
  - Classifai Installation
  - Component Introduction
  - Bounding Box Mode
    - Object Detection
    - Text Recognition
- **Part 2**
  - Polygon Mode
    - Image Segmentation
  - Classifai Resources
    - Official website
    - Documentation
    - GitHub Repository

Resources

Classifai Distribution

https://classifai.ai/products/

Classifai Documentation

https://docs.classifai.ai/

Classifai Support

https://discord.gg/WsBFgNP

Classifai Code Repository

https://github.com/CertifaiAI/classifai

Classifai Blogs

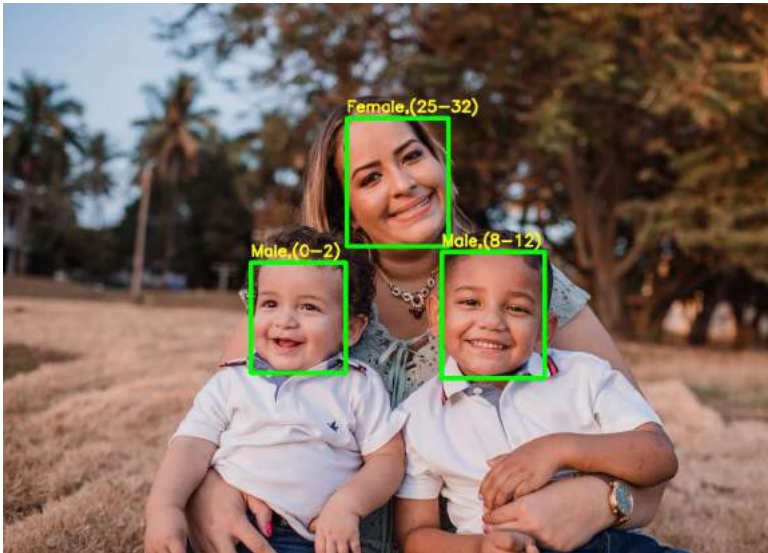**https://medium.com/classifai-ai**

Above & Beyond

Above & Beyond

- **Build interesting demo use cases using approaches of**
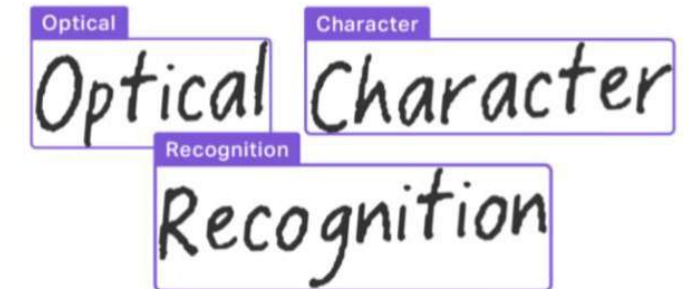 - Classification with Bounding Boxes

Age and Gender Prediction
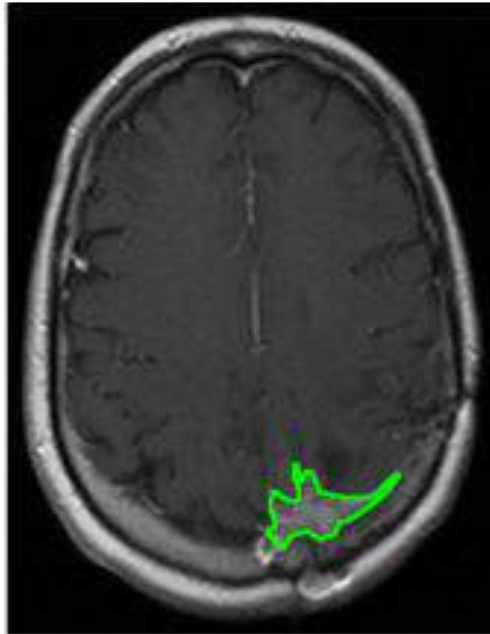
Car Plate Detection

Optical Character Recognition

Above & Beyond

- **Build interesting demo use cases using approaches of**
  - Pixel-based Segmentation

Tumor Identification

Object Detection

Above & Beyond

- In another words, build models with the **self-labelled data** in any deep learning frameworks that you are familiar with.

Keywords Glossary

- Artificial Intelligence
- Data Science
- Big Data
- Machine Learning
- Deep Learning
- Neural Network
- Supervised Learning
- Semi-Supervised Learning
- Unsupervised Learning
- Inference
- Reinforcement Learning
- Annotation, Labelling
- Intra-class Variation
- Classification

- Segmentation (Semantic, Instance)
- Optical Character Recognition
- Subject Matter Expert
- Operating System
- Algorithms

Thank you