

IEEE CAS Agrihackathon Challenge-1

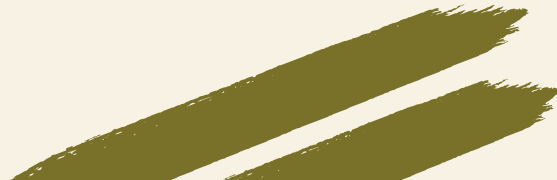


Table of contents



01

introduction

02

Plant seedling
classification



03

real time
classification

04

Our results



Plant seedling classification Competition.



Our Approaches



01

Try Different
Models



02

TTA



03

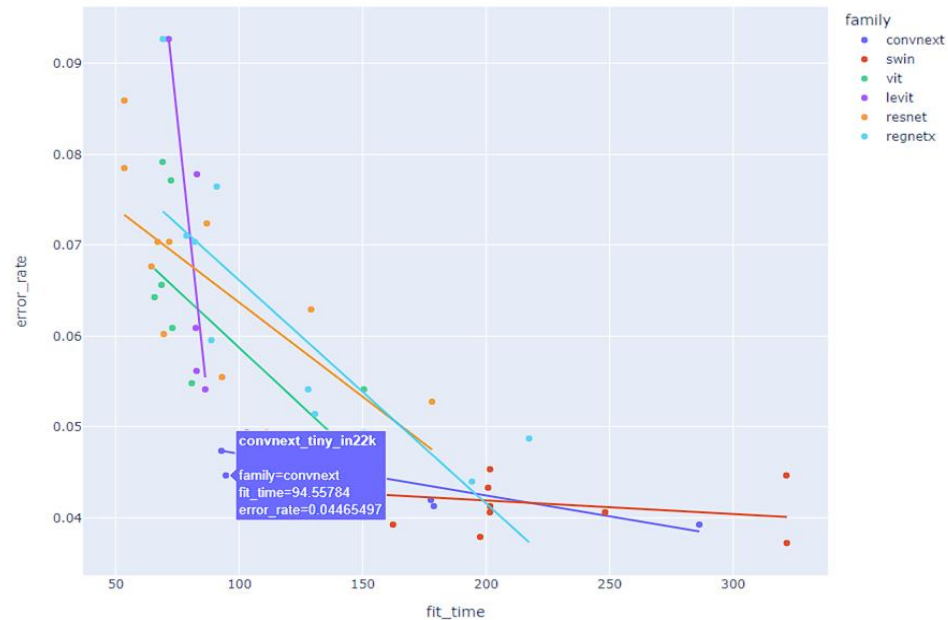
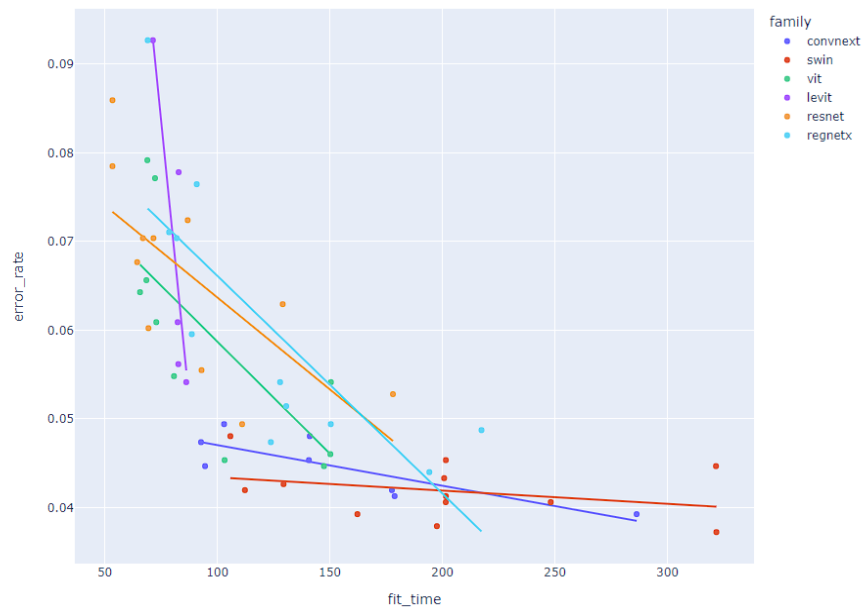
Gradient
Accumulation for
Training Large
Models













4

Ensemble


Best Vision Models For Finetuning




Our Kaggle submissions for the plant seedlings competitions

 subm convnext 15 epoch.csv Complete (after deadline) · 4 d ago · convnext 15 epoch	0.9534	0.9534	<input type="checkbox"/>
 subm.csv Complete (after deadline) · 3d ago · d	0.95214	0.95214	<input type="checkbox"/>
 resnet 152 no seg.csv Complete (after deadline) · 3d ago · resnet 152 no seg	0.94962	0.94962	<input type="checkbox"/>
 convnext tiny2.csv Complete (after deadline) · 1d ago	0.9471	0.9471	<input type="checkbox"/>
 subm small convnext.csv Complete (after deadline) · 4 d ago · small convnext	0.94332	0.94332	<input type="checkbox"/>
 subm resnet 152.csv Complete (after deadline) · 3d ago · resnet 152 96%	0.94206	0.94206	<input type="checkbox"/>
 subm convnext 15 epoch.csv Complete (after deadline) · 3d ago · convnext with sampling and segmentation	0.93954	0.93954	<input type="checkbox"/>
 resnet 95.csv Complete (after deadline) · 3d ago · resnet 152	0.93576	0.93576	<input type="checkbox"/>
 subm (1).csv Complete (after deadline) · 1d ago	0.93198	0.93198	<input type="checkbox"/>
 incepresnet.csv Complete (after deadline) · 3d ago	0.93136	0.93136	<input type="checkbox"/>

ConvNext Tiny

	subm2 convnext tiny.csv Complete (after deadline) · 1d ago	0.97229	0.97229
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Ensemble The best result

	submission.csv Complete (after deadline) · 2d ago · Ensemble 5 epoches	0.98362	0.98362
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Dataset Preparation



Leaf Segmentation



Leaf Segmentation





Image Augmentations

Rotation

Random
Cropping

Lighting

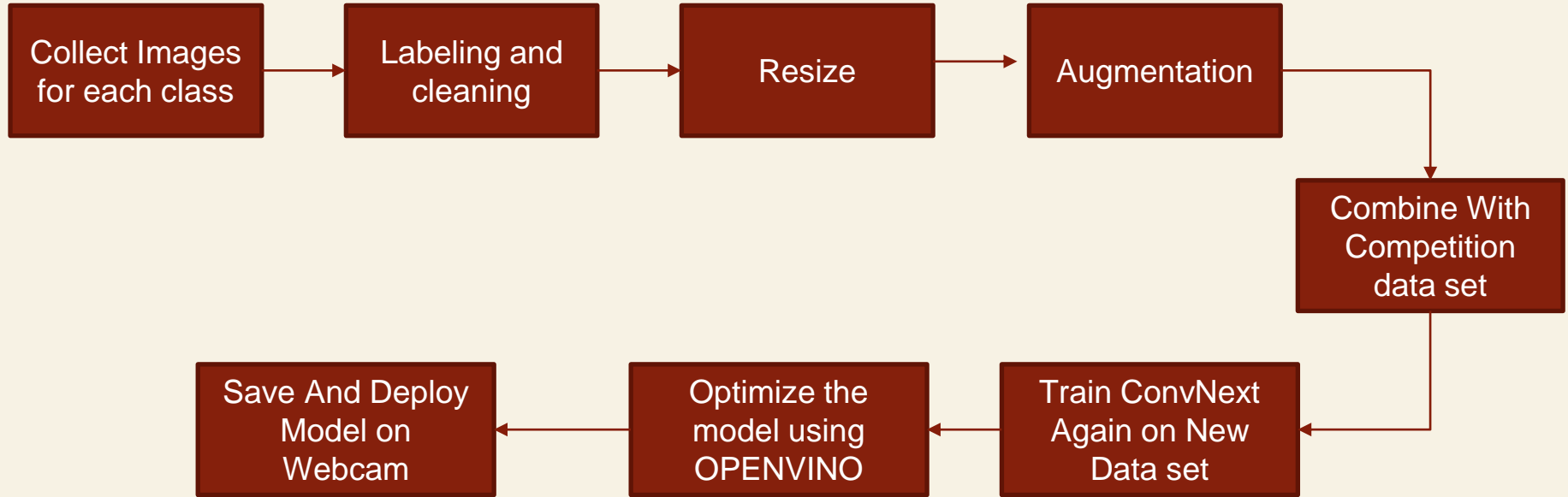
Vertical &
Horizontal Flip



Workflow & Results



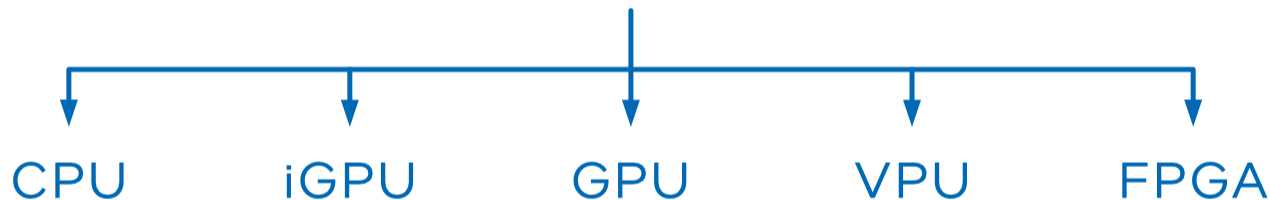
Our Flow For real time Detection







OpenVINO™

optimized performance



Linux Windows macOS

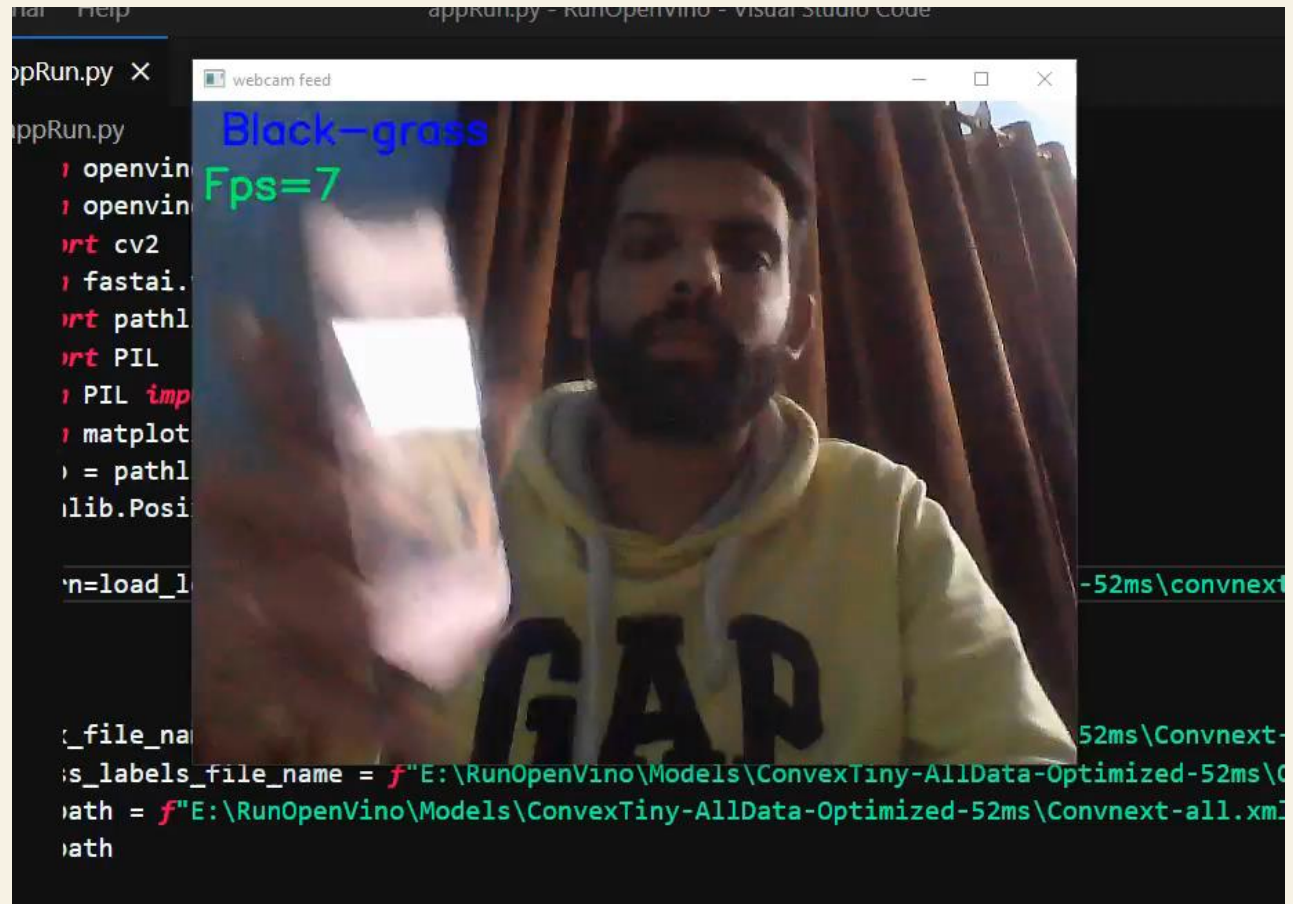


Model Name	Accuracy	Inference Time
EfficientNet_el_pruned	88%	20ms
EfficientNet_B3	93%	50ms
ConvnextTiny_480x480	97.292%	150ms
ConvnextTiny_124x124	95%	21ms

Results

ConvNext Without
OpenVino Optimization

Note: This model
trained on all data
Kaggle competition and
our hackathon types



Results

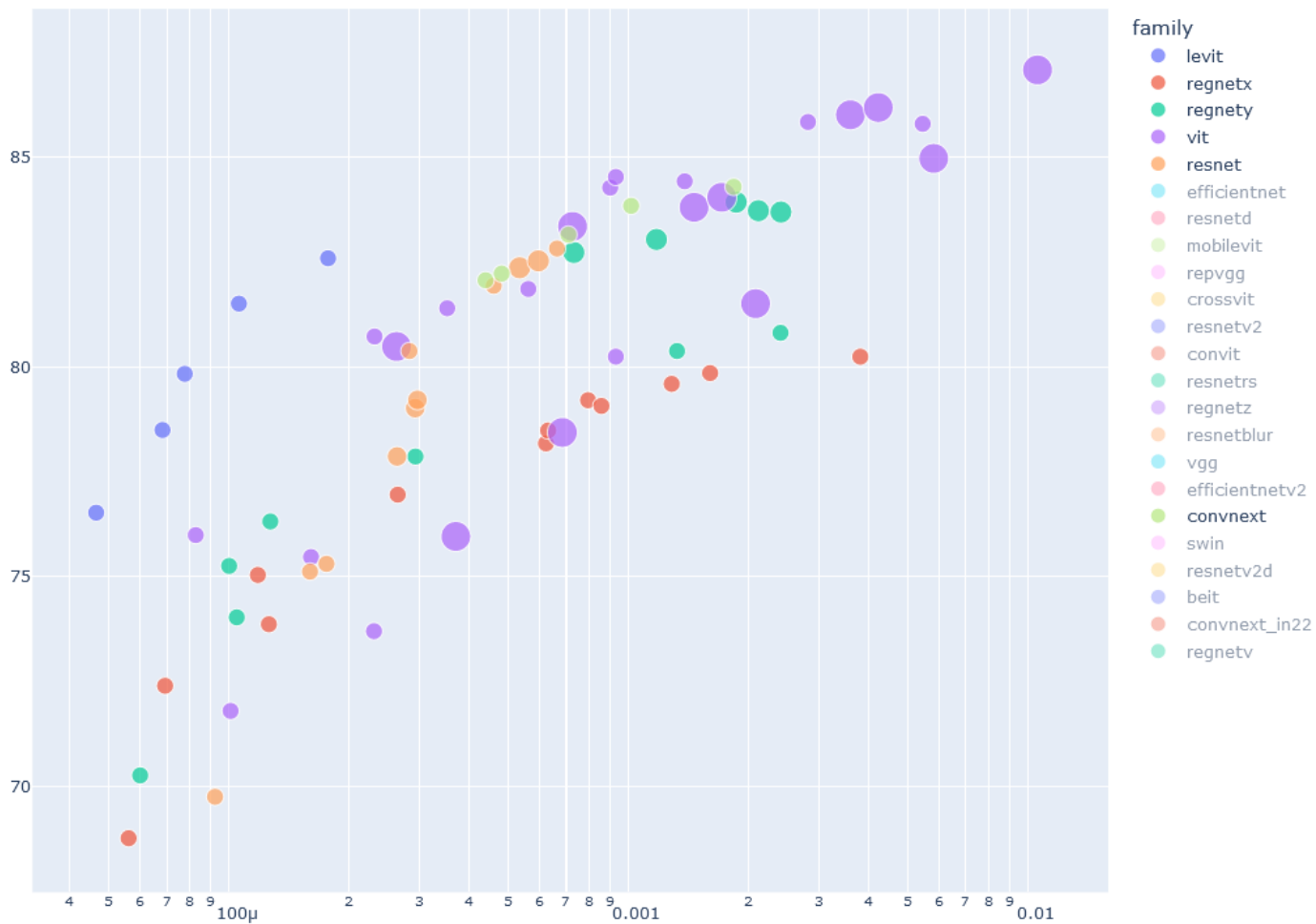
ConvNext with OpenVino
Optimization

```
Terminal  Help  appRun.py - RunOpenVino - Visual Studio Code

appRun.py x {} convnext-classes.json

appRun.py
6  import PIL
7  from PIL im
8  from matplo
9  temp = path
10  pathlib.Pos
11
12  learn=load_
13
14
15
16  onnx_file_n
17  class_label
18  ir_path = f
19  ir_path
20
21
22
23  # Load the
24  ie = Core()
25  model_ir = ie.read_model(model=ir_path)
26  model_ir.reshape(torch.Size([1, 3, 124, 124]))
27  compiled_model_ir = ie.compile_model(model=model_ir, device_name="CPU")
28
29  # Get input and output layers
30  input1 = ie.get_input_names()[0]
31  output1 = ie.get_output_names()[0]

webcam feed
Lemon atalya
Fps=22
d-52ms\convnext_
onvnexttiny.onnx
-50.ms\convnext-
tiny.xml"
```





BUILD A BETTER DATASET , we MADE THIS IN A
DAY



Thanks For Your Time.

