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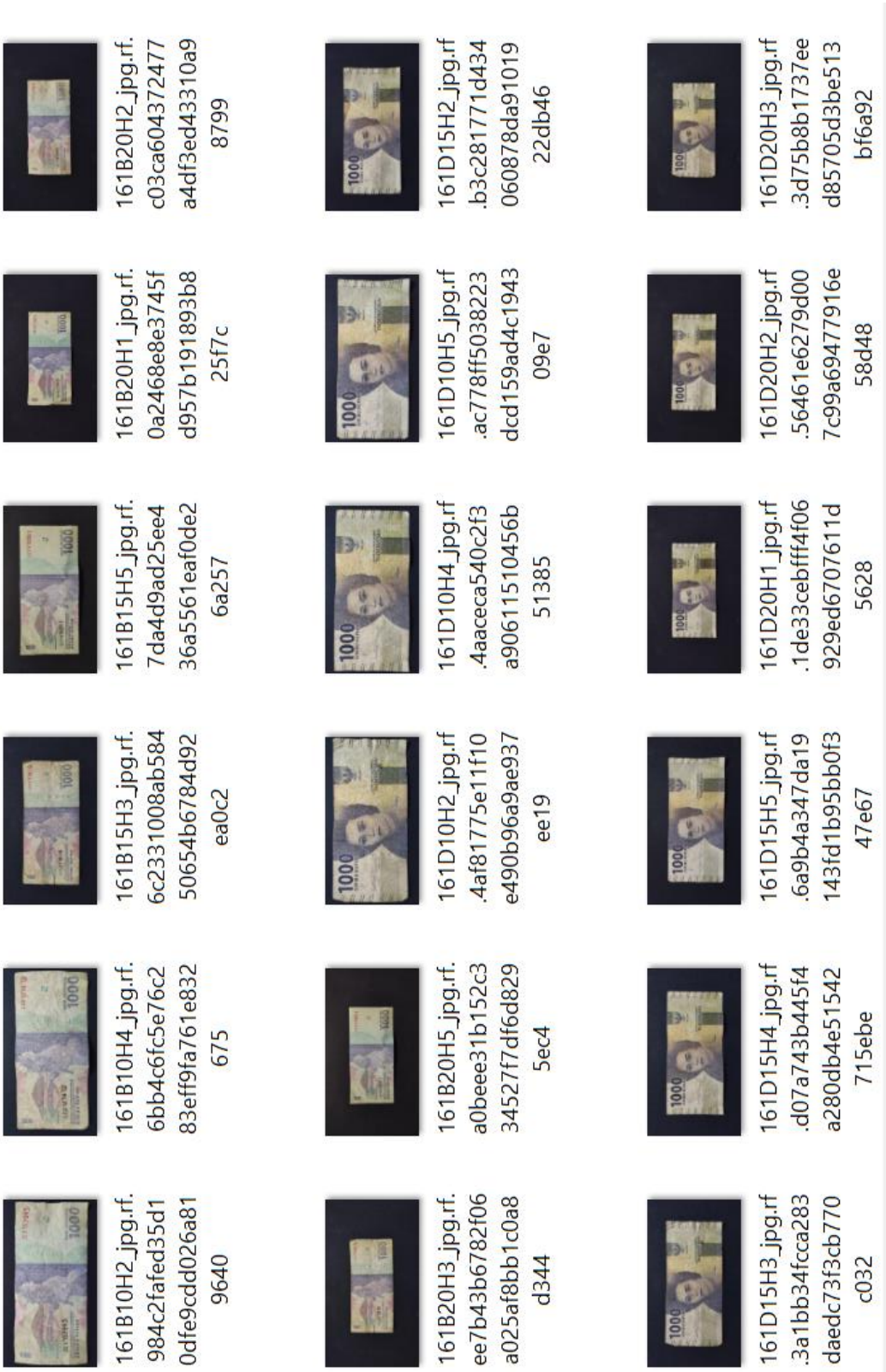
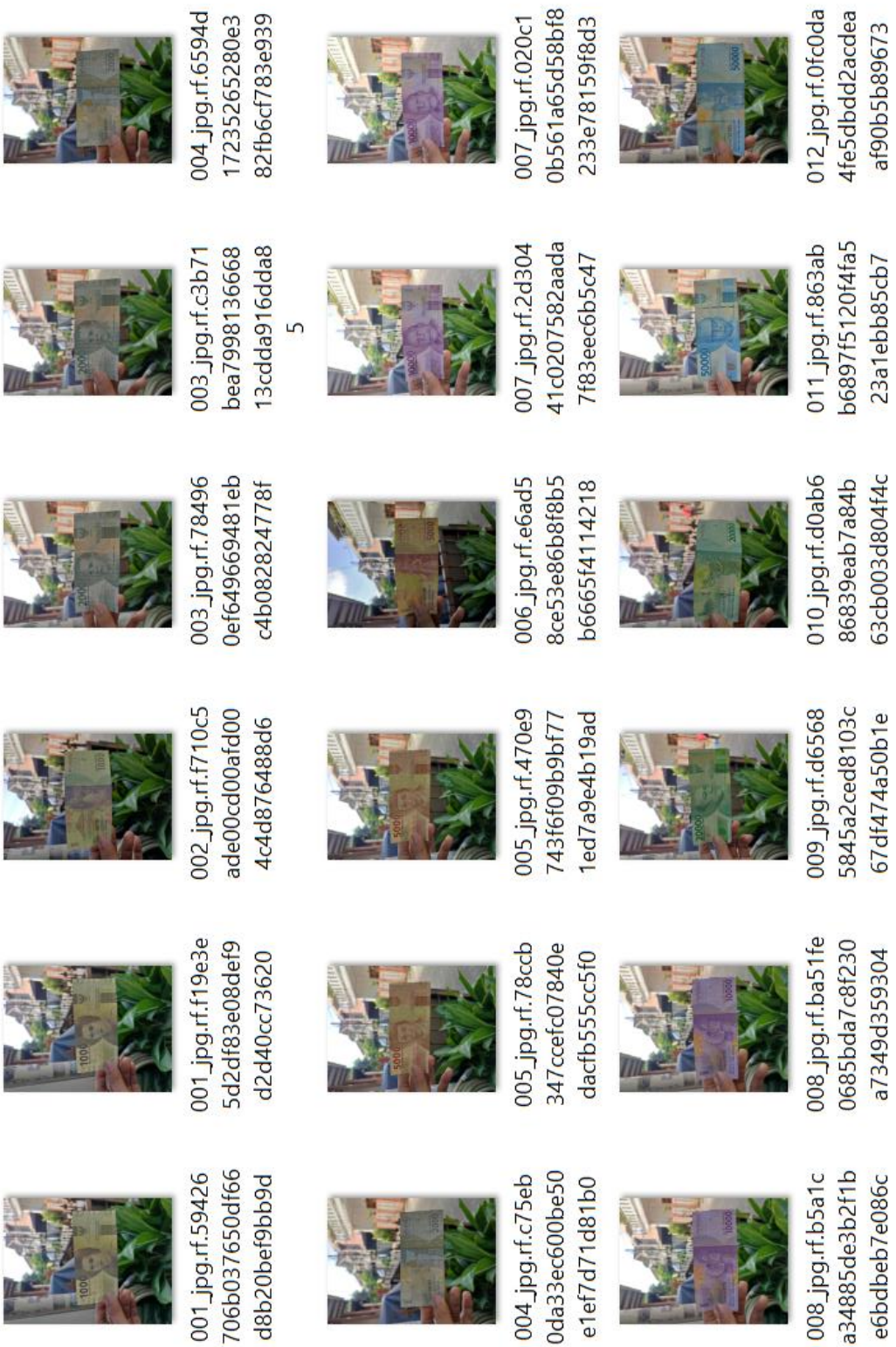
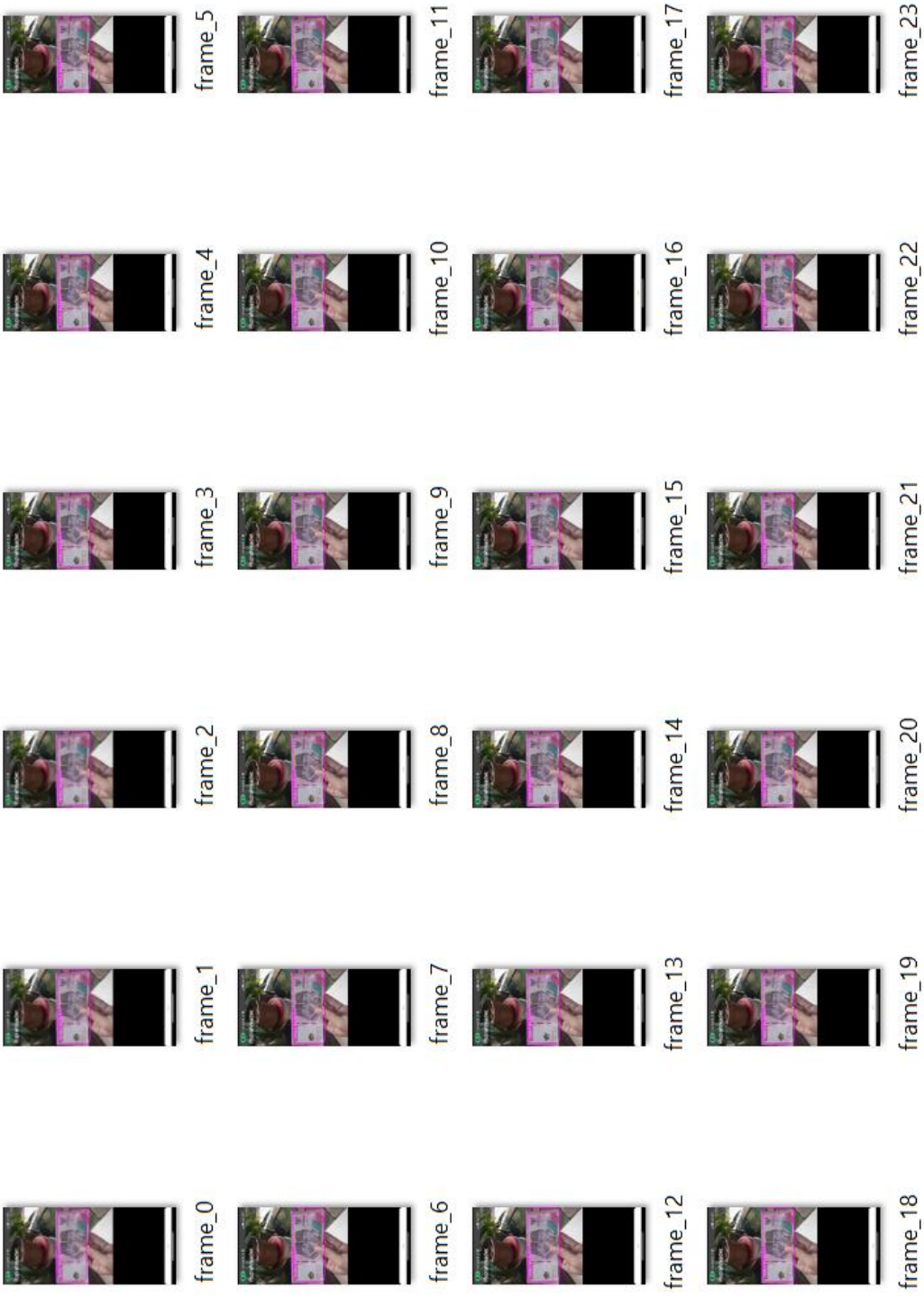
Lampiran 1 Contoh data primer



Lampiran 2 Contoh data sekunder



Lampiran 3 Contoh hasil pengujian



Lampiran 4 Program pelatihan model YOLOv5s

```
# clone YOLOv5 repository
!git clone https://github.com/ultralytics/yolov5  # clone repo
%cd yolov5
# install dependencies
!pip install -qr requirements.txt  # install dependencies (ignore errors)
import torch


from IPython.display import Image, clear_output  # to display images
from utils.downloads import attempt_download  # to download models/datasets


# clear_output()
print('Setup complete. Using torch %s %s' % (torch.__version__,
torch.cuda.get_device_properties(0) if torch.cuda.is_available() else 'CPU'))


#get data from Roboflow
!pip install roboflow


from roboflow import Roboflow
rf = Roboflow(api_key="dHQcLBFTcfdspz3DMQPw")
project = rf.workspace("agil-skripsi-3").project("fix-indonesia-rupiah-banknote-7-
cls")
dataset = project.version(2).download("yolov5")


#custom yaml
%%writetemplate /content/yolov5/models/custom_yolov5s.yaml


# parameters
nc: 7  # number of classes
depth_multiple: 0.33  # model depth multiple
width_multiple: 0.50  # layer channel multiple
```

```
# anchors
anchors:
  - [10,13, 16,30, 33,23]  # P3/8
  - [30,61, 62,45, 59,119]  # P4/16
  - [116,90, 156,198, 373,326]  # P5/32

# YOLOv5 backbone
backbone:
  # [from, number, module, args]
  [[-1, 1, Focus, [64, 3]],  # 0-P1/2
   [-1, 1, Conv, [128, 3, 2]],  # 1-P2/4
   [-1, 3, BottleneckCSP, [128]],
   [-1, 1, Conv, [256, 3, 2]],  # 3-P3/8
   [-1, 9, BottleneckCSP, [256]],
   [-1, 1, Conv, [512, 3, 2]],  # 5-P4/16
   [-1, 9, BottleneckCSP, [512]],
   [-1, 1, Conv, [1024, 3, 2]],  # 7-P5/32
   [-1, 1, SPP, [1024, [5, 9, 13]]],
   [-1, 3, BottleneckCSP, [1024, False]],  # 9
  ]

# YOLOv5 head
head:
  [[-1, 1, Conv, [512, 1, 1]],
   [-1, 1, nn.Upsample, [None, 2, 'nearest']],
   [[-1, 6], 1, Concat, [1]],  # cat backbone P4
   [-1, 3, BottleneckCSP, [512, False]],  # 13

   [-1, 1, Conv, [256, 1, 1]],
   [-1, 1, nn.Upsample, [None, 2, 'nearest']],
   [[-1, 4], 1, Concat, [1]],  # cat backbone P3
   [-1, 3, BottleneckCSP, [256, False]],  # 17 (P3/8-small)
```

```
   [-1, 1, Conv, [256, 3, 2]],
   [[-1, 14], 1, Concat, [1]],  # cat head P4
   [-1, 3, BottleneckCSP, [512, False]],  # 20 (P4/16-medium)

   [-1, 1, Conv, [512, 3, 2]],
   [[-1, 10], 1, Concat, [1]],  # cat head P5
   [-1, 3, BottleneckCSP, [1024, False]],  # 23 (P5/32-large)

   [[17, 20, 23], 1, Detect, [nc, anchors]],  # Detect(P3, P4, P5)
  ]


#train model YOLOv5s
%%time
%cd /content/yolov5/
!python train.py --img 640 --batch 16 --epochs 50 --data
{dataset.location}/data.yaml --cfg ./models/custom_yolov5s.yaml --weights " --
name 1_data  --cache


#show evaluation
from utils.plots import plot_results  # plot results.txt as results.png
Image(filename='/content/yolov5/runs/train/1_data/results.png', width=1000)  #
view results.png
```

Lampiran 5 Program aplikasi sistem deteksi

Program aplikasi sistem deteksi dapat dicek pada laman :
https://github.com/agiltandiera/rupiahreader.git

Lampiran 6 Program untuk ekstrak video menjadi frame

```
import cv2
import os

video_filename = "seratus.mp4"

# save frame
output_folder = "seratus"

# frame limit
desired_frame_count = 25

# make dir if necessary
if not os.path.exists(output_folder):
    os.makedirs(output_folder)

# read video
cap = cv2.VideoCapture(video_filename)

# extract frame and save
count = 0
while cap.isOpened() and count < desired_frame_count:
    ret, frame = cap.read()
    if not ret:
        break
    cv2.imwrite(os.path.join(output_folder, f"frame_{count}.jpg"), frame)
    count += 1

cap.release()
cv2.destroyAllWindows()
```