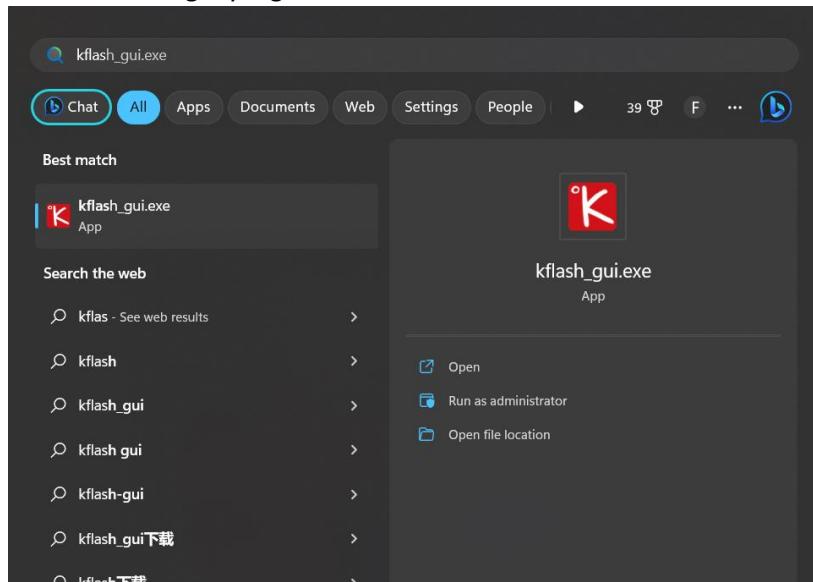


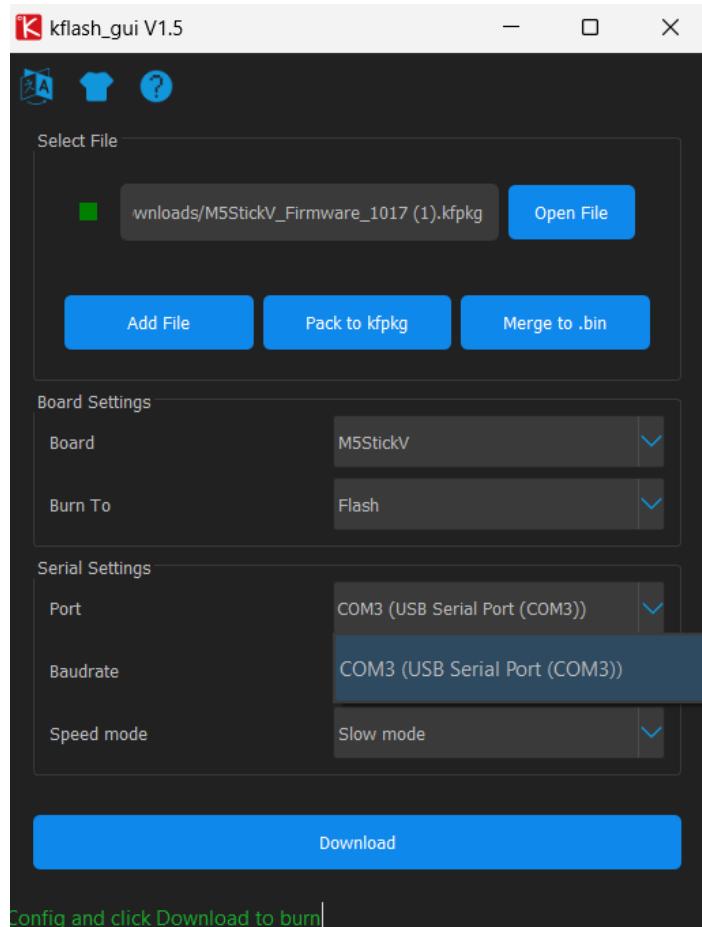
MANUAL BOOK IMAGE CLASSIFICATION PADA JENIS IKAN CHANNA MENGGUNAKAN MACHINE VISION

1. Requirement
 - a. Hardware
 - PC
 - M5StickV
 - USB Type-C
 - b. Software
 - KFlash GUI
 - Browser (Untuk menjalankan google colab)
 - Python 3
 - MaixPy IDE
 - thonny

2. Burning Firmware M5StickV

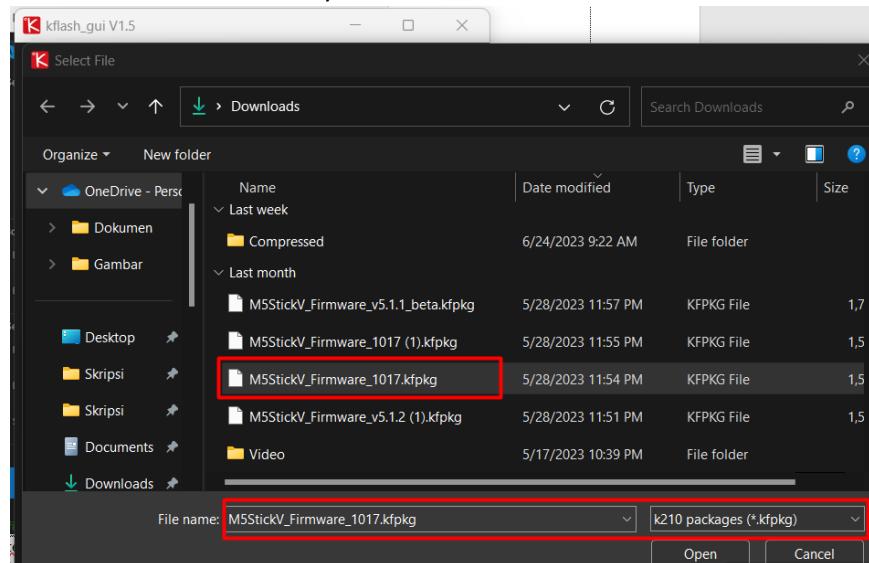
- 2.1 Download firmware untuk M5StickV disini [M5StickV Firmware](#)
- 2.2 Download Kflash gui pada [Kflash GUI](#) lalu install seperti biasa
- 2.3 Buka Kflashgui yang telah di install



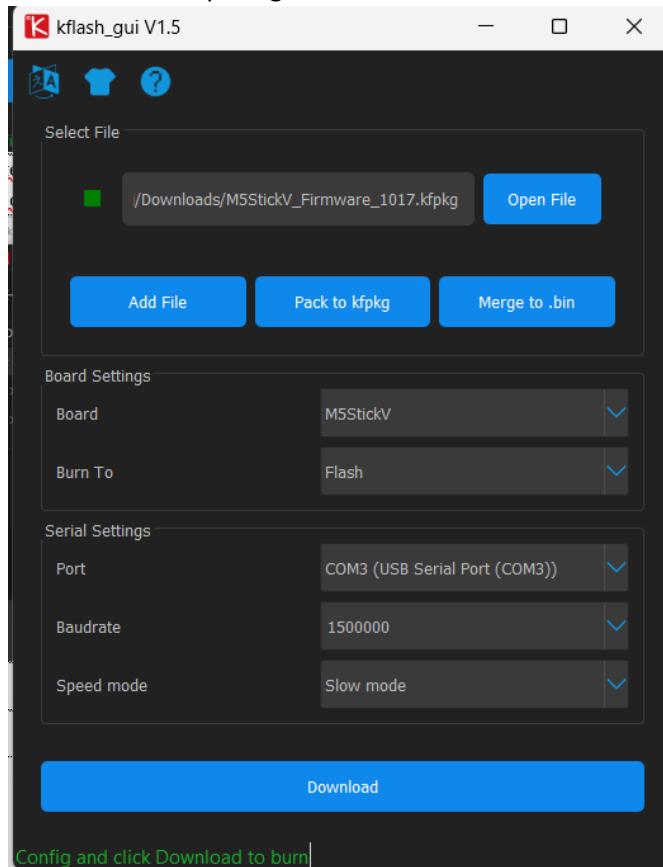


Config and click Download to burn

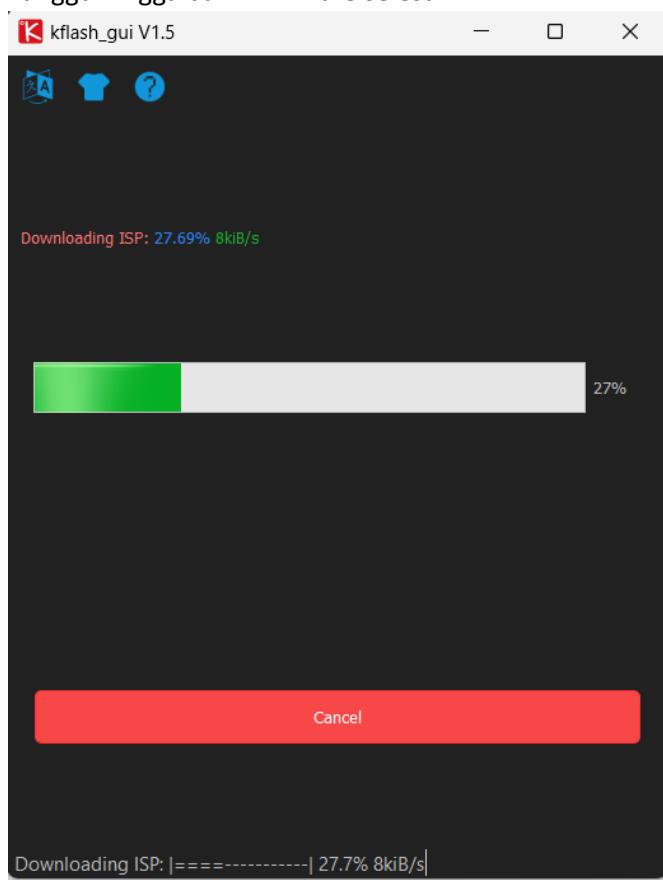
2.4 Setelah kflash gui terbuka maka pilih open file untuk memilih firmware yang telah didownload sebelumnya.



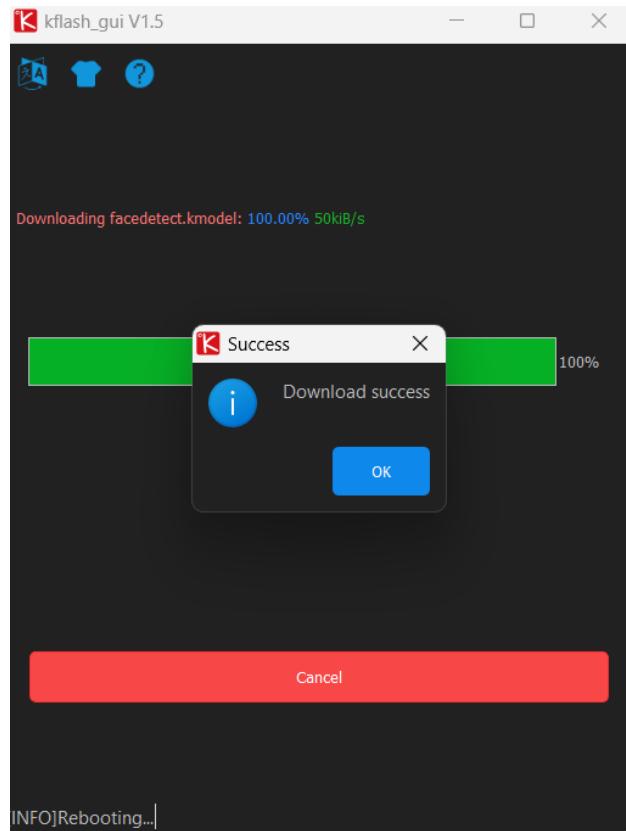
2.5 Sesuaikan seperti gambar dibawah lalu tekan download.



2.6 Tunggu hingga burn firmware selesai



2.7 Proses burn firmware telah selesai dan M5StickV siap digunakan



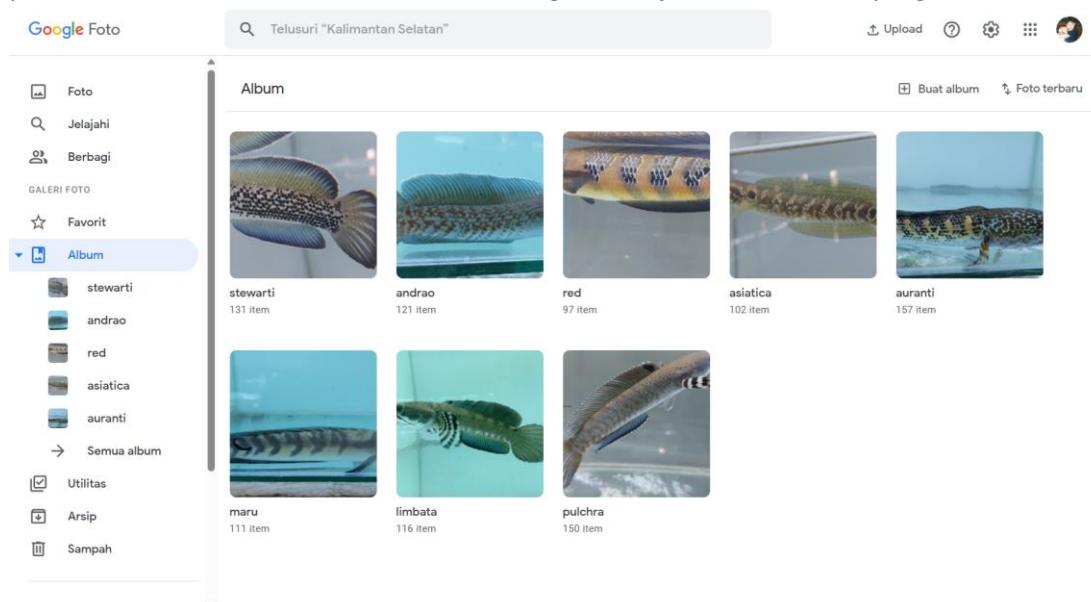
3 Proses Pembuatan dataset

3.4 Pengambilan Dataset

Pengambilan dataset dilakukan dengan menggunakan kamera smartphone dan disimpan pada aplikasi google photos.

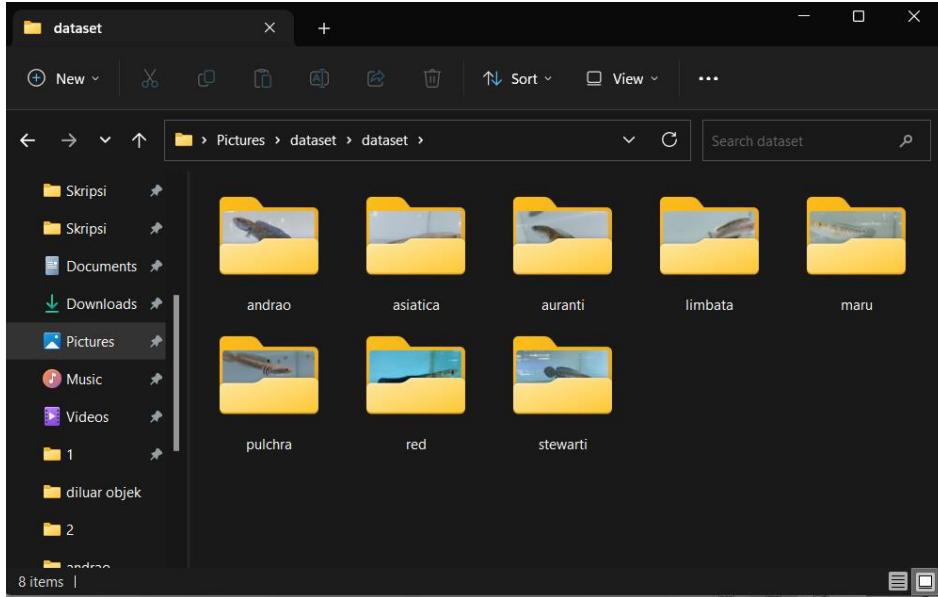
3.5 Pelabelan Dataset

Setelah gambar dari ikan channa terkumpul maka dilakukan pelabelan menggunakan google photos, dan dimasukkan ke album sesuai dengan label jenis ikan channa yang sesuai.



3.6 Download dataset

Setelah gambar terkumpul lalu download satu persatu album yang berisi jenis jenis ikan channa.



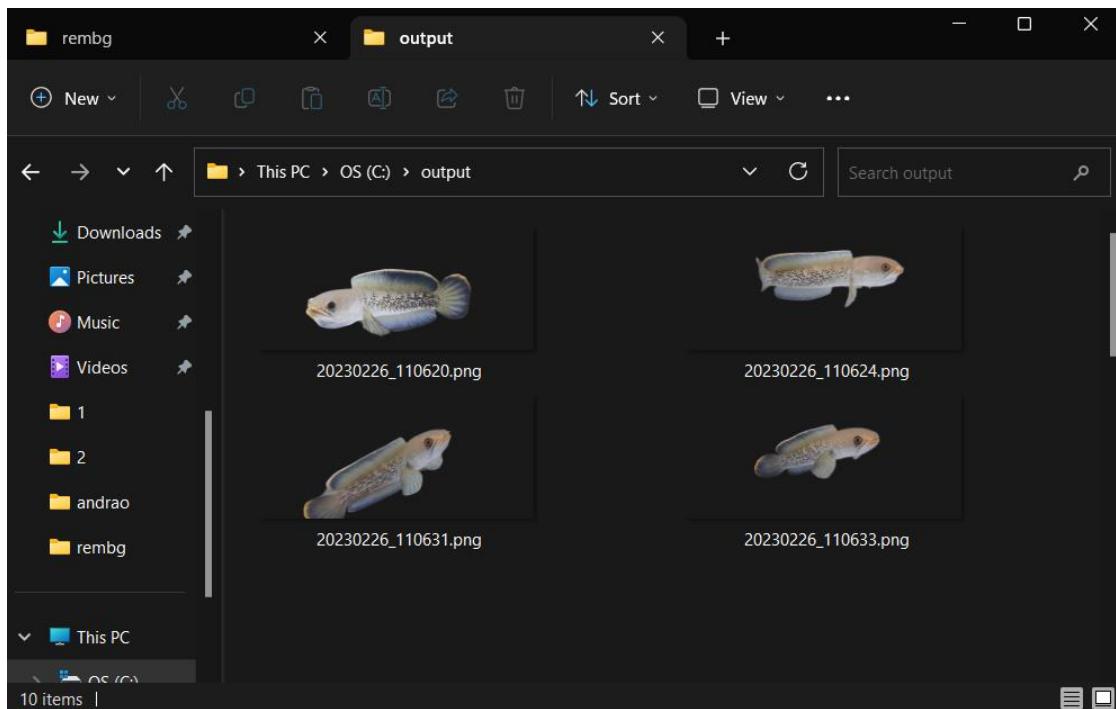
3.7 Remove Background

Pada proses remove background menggunakan [Remove BG](#) untuk menghilangkan background pada gambar agar mengurangi noise pada gambar itu sendiri. Pada input folder masukkan gambar ikan channa lalu run menggunakan thonny, dan tunggu hingga selesai.

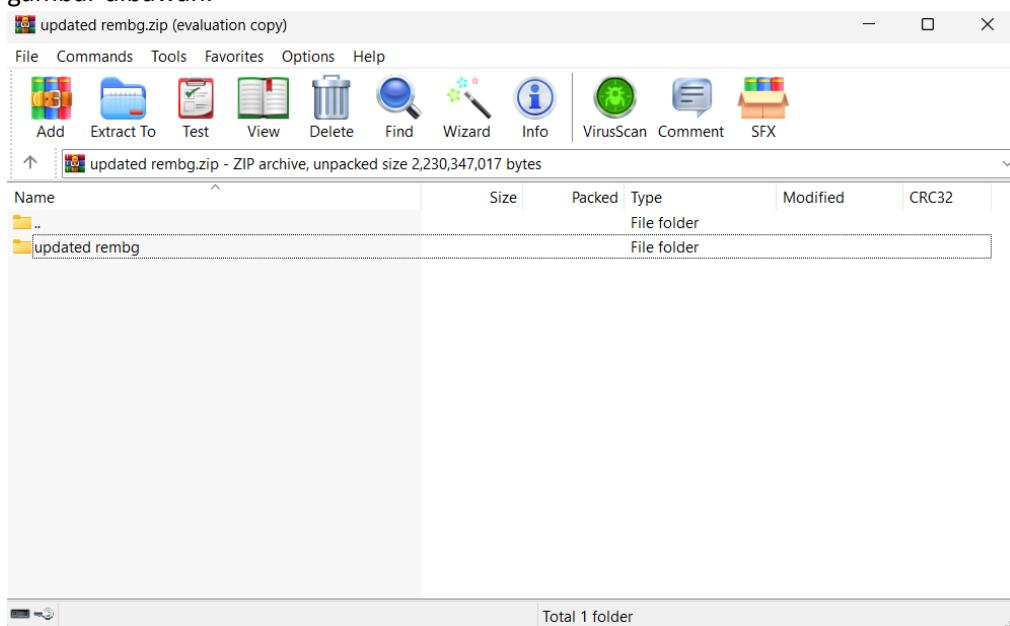
```
Thonny - C:\Users\manu\Desktop\rembg\removebg.py @ 16:29
File Edit View Run Tools Help
rembg.py
5
6 input_folder = 'C:\images'
7 output_folder = 'C:\output'
8
9 # Membuat folder output jika belum ada
10 if not os.path.exists(output_folder):
11     os.makedirs(output_folder)
12
13 # Melakukan loop pada semua file gambar dalam folder input
14 for img_path in glob.glob(os.path.join(input_folder, "*.jpg")):
15     print(f"Processing {img_path}...")
16     file_name = os.path.basename(img_path)
17     # Mendapatkan nama file tanpa ekstensi
18     file_name_no_ext = os.path.splitext(file_name)[0]
19
20     try:
21         # Membaca gambar menggunakan OpenCV
22         cv_img = cv2.imread(img_path)
23
24         # Menghapus latar belakang menggunakan rembg
25         output = removebg(cv_img)
26
27         # Menyimpan gambar dengan latar belakang yang dihapus
28         output_path = os.path.join(output_folder, file_name_no_ext + ".png")
29         cv2.imwrite(output_path, output)
30     except Exception as e:
31         print(f"Error processing image {file_name}: {e}")
32
33     print(f"Image {file_name} processed.")
34
```

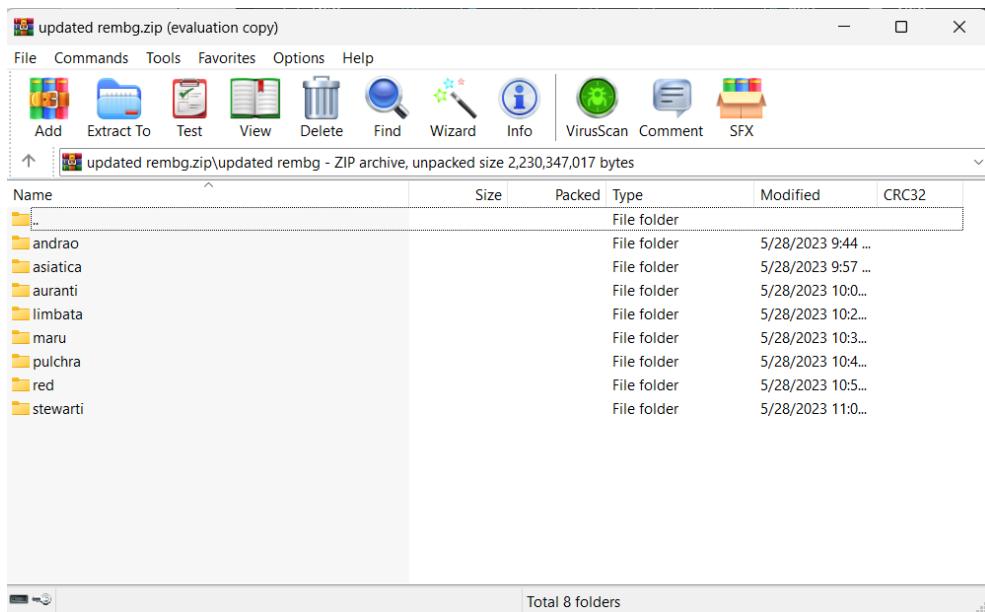
Shell:

```
>>> python removebg.py
Image 20230226_110620.jpg processed.
```



- 3.8 Gabungkan dalam satu folder yang berisi 8 folder gambar ikan channa yang telah dilakukan remove background lalu jadikan menjadi file .zip. Untuk struktur foldernya bisa dilihat pada gambar dibawah.



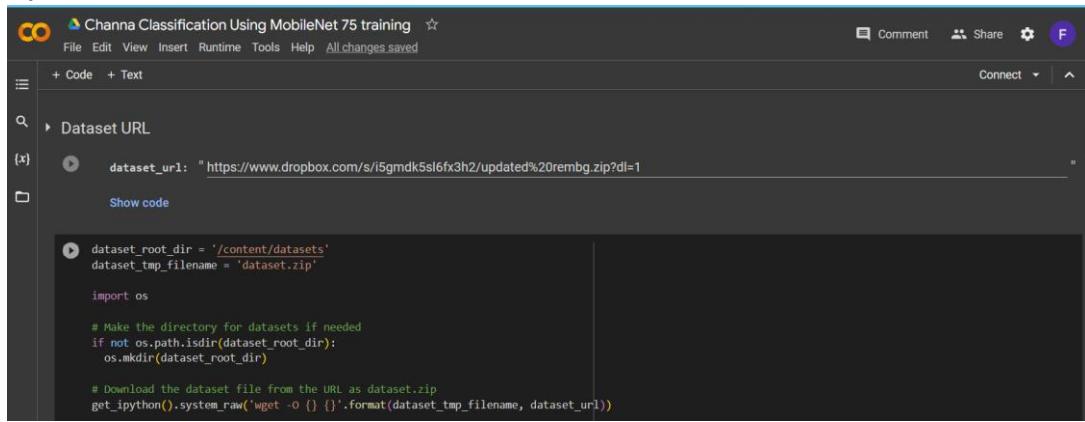


3.9 Setelah file zip yang berisi dataset ikan channa siap, upload pada dropbox agar dapat digunakan pada proses training.

The screenshot shows the Dropbox web interface. At the top, there are buttons for Upload, Create, Organize, and three dots. A message says 'Only you have acc...'. Below that, a section titled 'Suggested from your activity' shows a PDF file 'Get Started with Dropbox.pdf'. A dashed box allows dropping files, with the placeholder 'Drop files here to upload, or click Upload ▾'. Below this, there are 'Recents' and 'Starred' buttons. The main list shows the uploaded file 'updated rembg.zip' with details: Who can access (Only you), Modified (15/10/2017 4:33 pm). There are 'Copy link', 'Upload', and three dots buttons for this item. At the bottom, there's a 'Create suggested folders' section and a note 'Uploaded from Google Drive' with an 'Upload' button.

4 Proses pembuatan model

4.4 Jalankan source code pada google colab [source code data training](#). Ubah lokasi dataset dengan file dataset zip yang telah diupload tadi. Dan tunggu hingga seluruh kode berhasil dijalankan.



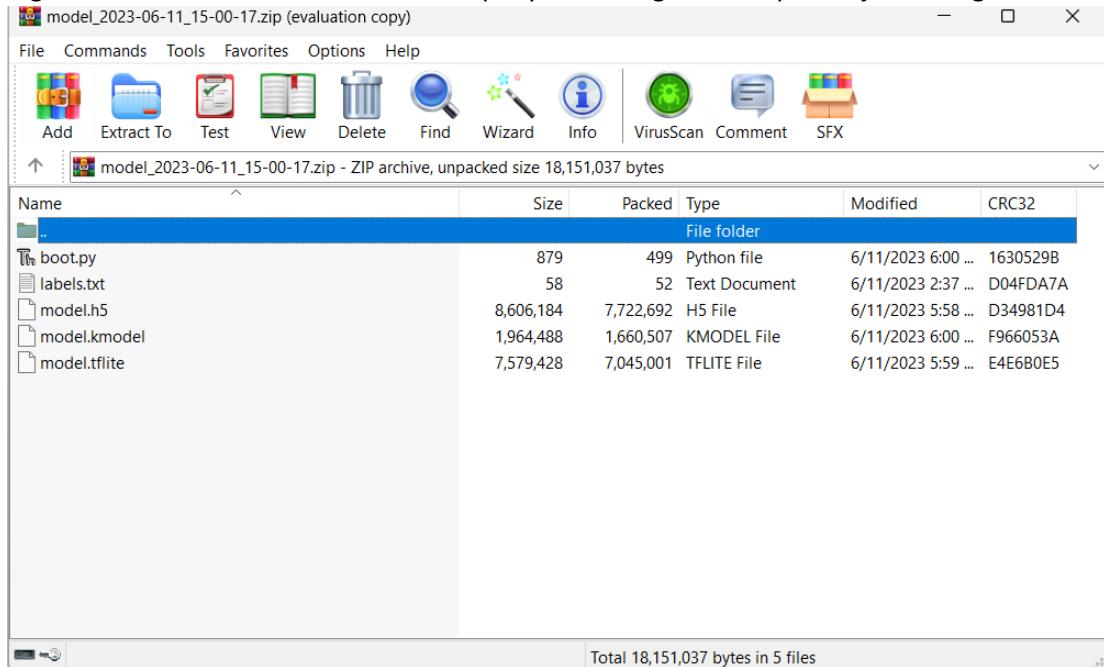
```
Channa Classification Using MobileNet 75 training ☆
File Edit View Insert Runtime Tools Help All changes saved
Comment Share F
+ Code + Text
Dataset URL
dataset_url: "https://www.dropbox.com/s/i5gmdk5sl6fx3h2/updated%20rembg.zip?dl=1
Show code
dataset_root_dir = '/content/datasets'
dataset_tmp_filename = 'dataset.zip'

import os

# Make the directory for datasets if needed
if not os.path.isdir(dataset_root_dir):
    os.mkdir(dataset_root_dir)

# Download the dataset file from the URL as dataset.zip
get_ipython().system_raw('wget -O {} {}'.format(dataset_tmp_filename, dataset_url))
```

4.5 Setelah kode berhasil dijalankan maka akan otomatis terdownload file zip yang berisi kmodel, tflite, dan h5 seperti gambar dibawah. Terdapat pula file boot.py namun tidak dapat digunakan dikarenakan harus dilakukan penyesuaian agar alat dapat berjalan dengan normal.



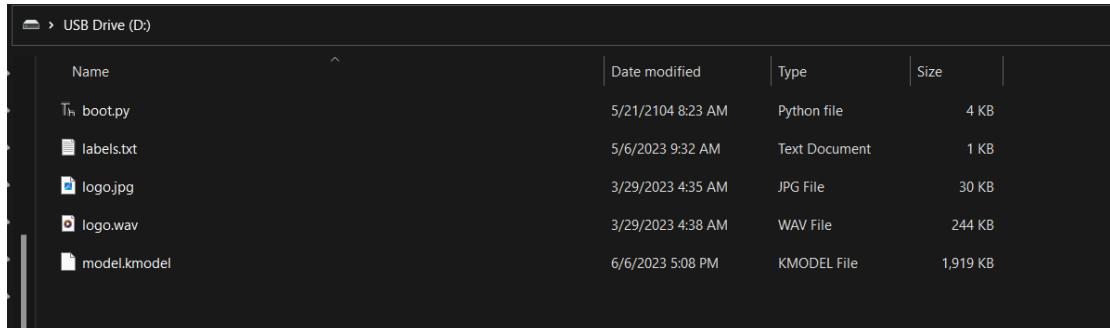
5 Running program pada alat M5StickV menggunakan model 8 jenis ikan channa.

5.4 Download maixpy IDE sebagai text editor dan running program pada alat M5StickV, lalu install seperti biasa. Dapat di unduh pada link [MaixpyIDE](#)

The screenshot shows a web browser displaying the MaixPy IDE download page. At the top, there is a logo for 'Sipeed' and a search bar. Below the header, the URL 'http://dl.sipeed.com/MAIX/MaixPy/release/v0.2.5' is shown. A note at the top says 'Firmware MUST >= 0.4.0_44 !!!!'. Below this, there is a section titled 'Download firmware from here:' with two links: 'http://dl.sipeed.com/MAIX/MaixPy/release/' and 'http://dl.sipeed.com/MAIX/MaixPy/release/master (auto build from master branch (development commits, may not stable))'. A table below lists six files for download, including 'readme.txt', 'maixpy-ide-mac-0.2.5_2.dmg', 'maixpy-ide-windows-0.2.5.exe', 'maixpy-ide-windows-0.2.5-installer-archive.7z', 'maixpy-ide-linux-x86_64-0.2.5.run', and 'maixpy-ide-linux-x86_64-0.2.5-installer-archive.7z'. The table has columns for Num, Name, Size, and Last Update.

Num	Name	Size	Last Update
1	readme.txt	1.91 KB	2022-04-26 17:52:34
2	maixpy-ide-mac-0.2.5_2.dmg	102.94 MB	2020-07-30 15:08:54
3	maixpy-ide-windows-0.2.5.exe	85.50 MB	2020-07-30 15:03:13
4	maixpy-ide-windows-0.2.5-installer-archive.7z	64.90 MB	2020-07-30 15:03:10
5	maixpy-ide-linux-x86_64-0.2.5.run	81.12 MB	2020-07-30 15:03:07
6	maixpy-ide-linux-x86_64-0.2.5-installer-archive.7z	56.45 MB	2020-07-30 15:03:04

5.5 Setelah MaixPy IDE terinstall lalu buka aplikasi MaixPy IDE. Lalu unduh file boot.py, logo.jpg, model.kmodel, dan logo.wav di [File unduhan booting m5](#). Lalu letakkan file tersebut pada sdcard, seperti gambar dibawah.



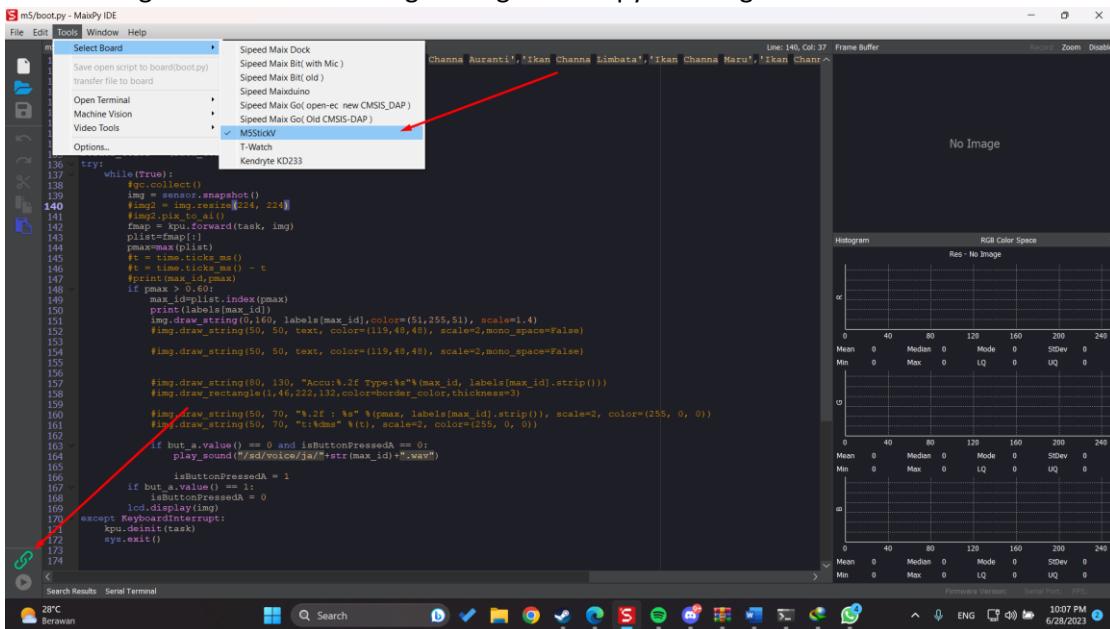
5.6 Masukkan sdcard pada M5StickV



5.7 Tancapkan usb typec pada m5Stickv



5.8 Buka aplikasi MaixPyIDE pada toolbar pilih tools lalu select board, dan pilih M5StickV. Setelah itu tekan logo connect untuk menghubungkan maixpy ide dengan m5stickv



5.9 Lalu untuk menjalankan program open file booting yang didownload tadi .

```
m5/boot.py - MaixPy IDE
File Edit Tools Window Help
New File... Ctrl+N
Open File... Ctrl+O
Documents Folder Examples More examples Recent Files
Save "m5/boot.py" Ctrl+S Save "m5/boot.py" As...
Close "m5/boot.py" Ctrl+W Print... Ctrl+P Exit Ctrl+Q
142     fmap = kpu.forward(task, img)
143     plist=map[:] pmax=max(plist)
144     #time.sleep_ms(10)
145     #t = time.ticks_ms() - t
146     #print(max_id,pmax)
147     if pmax > 0.60:
148         max_id=plist.index(pmax)
149         print(labels[max_id])
150         img.draw_string(0,160, labels[max_id], color=(51,255,51), scale=1.4)
151         #img.draw_string(50, 50, text, color=(119,48,48), scale=2,mono_space=False)
152
153         #img.draw_string(50, 50, text, color=(119,48,48), scale=2,mono_space=False)
154
155         #img.draw_string(80, 130, "Accu%.2f Type%s"%(max_id, labels[max_id].strip()))
156         #img.draw_rectangle(1,46,222,132,color=borders_color,thickness=3)
157
158         #img.draw_string(80, 70, "%s,%s "%(max, labels[max_id].strip()), scale=2, color=(255, 0, 0))
159         #img.draw_string(80, 70, "%s,%s "%(t,ticks_ms()), scale=2, color=(255, 0, 0))
160
161         if but_a.value() == 0 and isButtonPressedA == 0:
162             play_sound("sd/voice/ja"+str(max_id)+".wav")
163
164         if but_a.value() == 1:
165             isButtonPressedA = 1
166         else:
167             isButtonPressedA = 0
168
169         lcd.display(img)
170     except KeyboardInterrupt:
171         kpu.deinit(task)
172         sys.exit()
173
174
28°C Berawan
Search Results Serial Terminal
28°C Berawan
File Edit Tools Window Help
Line: 146, Col: 37 Frame Buffer
Record Zoom Disable
Histogram RGB Color Space
Res - No Image
0 40 80 120 160 200 240
Mean 0 Median 0 Mode 0 StdDev 0
Min 0 Max 0 LQ 0 UQ 0
0 40 80 120 160 200 240
Mean 0 Median 0 Mode 0 StdDev 0
Min 0 Max 0 LQ 0 UQ 0
0 40 80 120 160 200 240
Mean 0 Median 0 Mode 0 StdDev 0
Min 0 Max 0 LQ 0 UQ 0
Firmware Version: 0.4.0 Serial Port: COM3 FPS: 0
10:11 PM 6/28/2023
```

5.10 Jika sudah maka tekan logo start dibawah logo connect untuk menjalankan program.

```
m5/boot.py - MaixPy IDE
File Edit Tools Window Help
122     print("Info!& Exit by user operation!")
123     sys.exit()
124
125     initialize_camera()
126
127     labels = ["Channa Andrea", "Ikan Channa Asiatica", "ikan Channa Auranti", "ikan Channa Limbat", "ikan Channa Maru", "ikan Channa"]
128     task = kpu.load("/sd/model.kmodel")
129
130     print("Info!& Started.")
131     now = time.time()
132     isButtonPressedA = 0
133
134     fore_color = rgb888_to_rgb565((119,48,48))
135     back_color = rgb888_to_rgb565((255,205,137))
136     border_color = (back_color >> 8) | (back_color & 0xff)<<8
137
138     while(True):
139         #uicollect()
140         img = sensor.snapshot()
141         fmap = img.resize(224, 224)
142         fmap = kpu.forward(task, fmap)
143         plist=map[:]
144         pmax=max(plist)
145         #time.sleep_ms(10)
146         #t = time.ticks_ms() - t
147         #print(max_id,pmax)
148         if pmax > 0.60:
149             max_id=plist.index(pmax)
150             print(labels[max_id])
151             img.draw_string(0,160, labels[max_id], color=(51,255,51), scale=1.4)
152             #img.draw_string(50, 50, text, color=(119,48,48), scale=2,mono_space=False)
153
154             #img.draw_string(50, 50, text, color=(119,48,48), scale=2,mono_space=False)
155
156             #img.draw_string(80, 130, "Accu%.2f Type%s"%(max_id, labels[max_id].strip()))
157             #img.draw_rectangle(1,46,222,132,color=borders_color,thickness=3)
158
159             #img.draw_string(80, 70, "%s,%s "%(max, labels[max_id].strip()), scale=2, color=(255, 0, 0))
160             #img.draw_string(80, 70, "%s,%s "%(t,ticks_ms()), scale=2, color=(255, 0, 0))
161
162             if but_a.value() == 0 and isButtonPressedA == 0:
163                 play_sound("sd/voice/ja"+str(max_id)+".wav")
164
165             if but_a.value() == 1:
166                 isButtonPressedA = 1
167             else:
168                 isButtonPressedA = 0
169
170     except KeyboardInterrupt:
171         sys.exit()
172
173
28°C Berawan
Search Results Serial Terminal
28°C Berawan
File Edit Tools Window Help
Line: 163, Col: 22 Frame Buffer
Record Zoom Disable
Histogram RGB Color Space
Res (w:224,h:224)
0 40 80 120 160 200 240
Mean 100 Median 115 Mode 120 StdDev 39
Min 0 Max 181 IQR 90 UQ 123
0 40 80 120 160 200 240
Mean 107 Median 125 Mode 130 StdDev 39
Min 0 Max 206 IQR 99 UQ 130
0 40 80 120 160 200 240
Mean 102 Median 123 Mode 132 StdDev 42
Min 0 Max 181 IQR 74 UQ 132
Firmware Version: 0.4.0 Serial Port: COM3 FPS: 0
10:11 PM 6/28/2023
```

5.11 Arahkan kamera pada objek ikan channa dan tunggu hingga sekitar 2-4 detik untuk mendapatkan hasil



Source Code Booting.py