

Guideline setup project Suspicious Human Activity Detection

Guideline sẽ giới thiệu về việc cài đặt môi trường cần thiết cho project, chạy notebook để huấn luyện và khởi chạy ứng dụng web.

Project bao gồm hai môi trường anaconda là notebook và web_app. Tương ứng cho hai phần là training model và ứng dụng web.

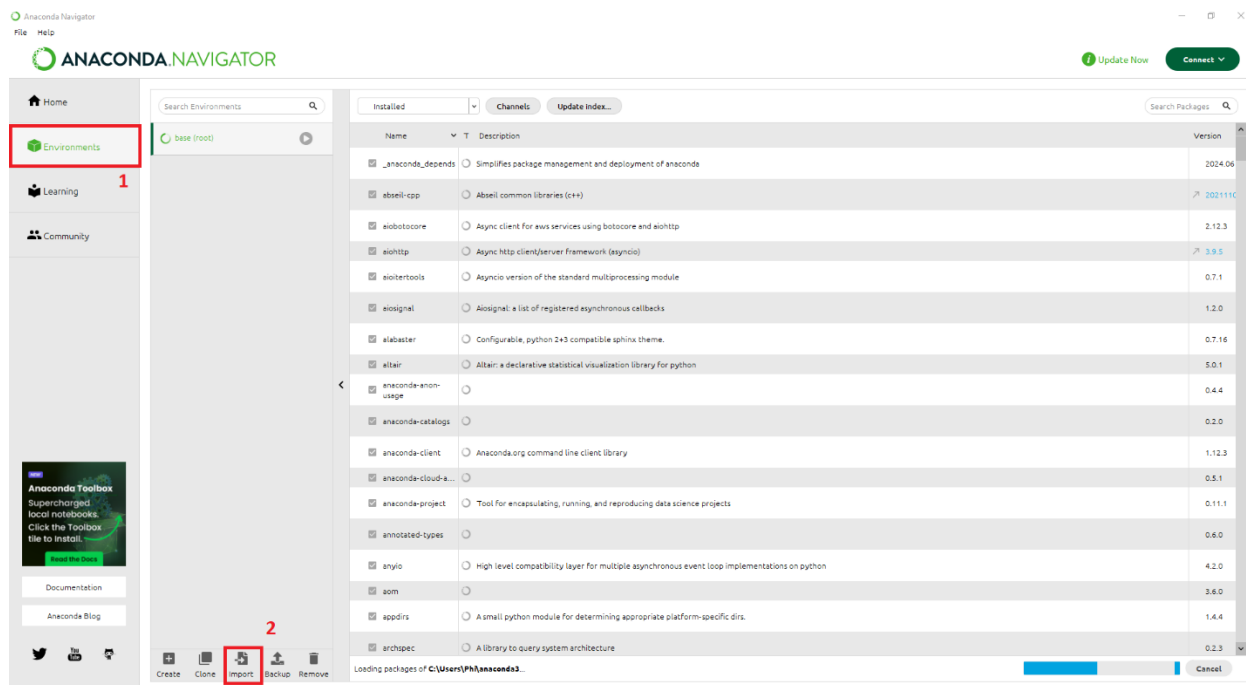
Prerequisite environment:

- Anaconda
- PyCharm Professional Edition

1. Cài đặt môi trường

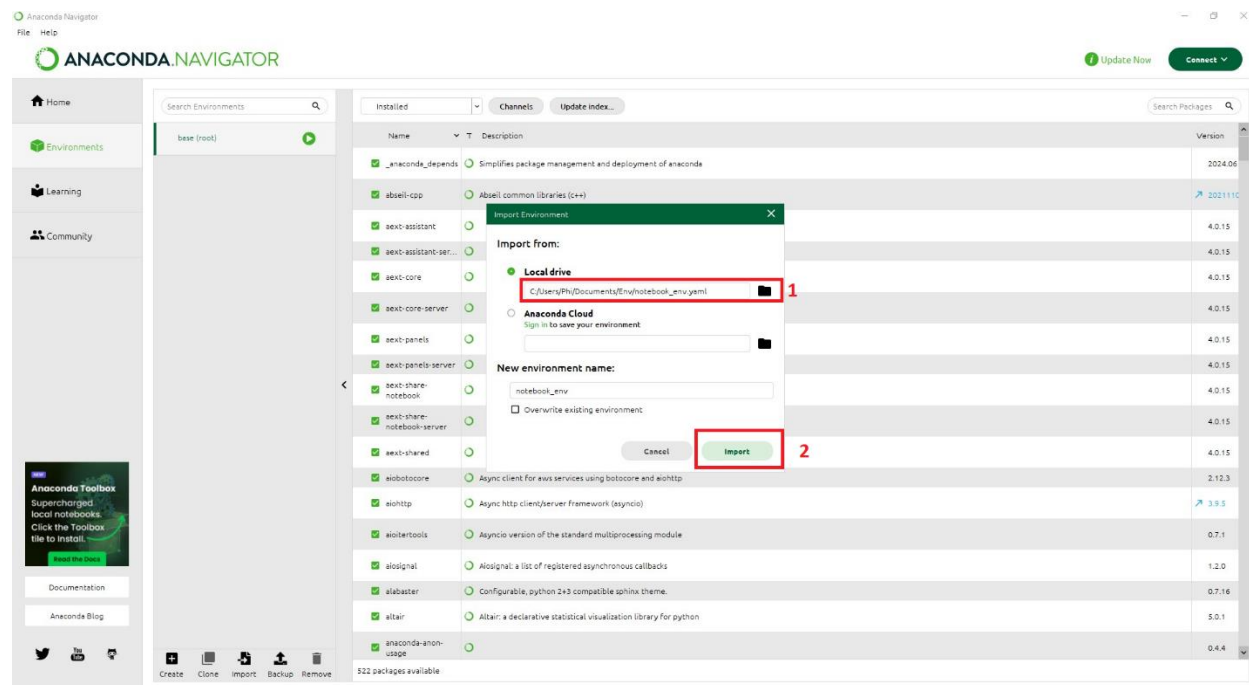
1.1. Import môi trường cho notebook

Vào Environments của Anaconda Navigator.



Chọn import file environment: **notebook_env.yaml**.

PC > Documents > Env					Search Env
Name	Date modified	Type	Size		
screenshots	07/09/2024 9:41 SA	File folder			
notebook_env.yaml	07/09/2024 8:59 SA	Yaml Source File	6 KB		
web_app.yaml	07/09/2024 8:59 SA	Yaml Source File	7 KB		



Nếu có xuất hiện lỗi như màn hình bên dưới, vui lòng tiếp tục, các thư viện bị lỗi đã khai báo trong các bước tiếp theo, đã đảm bảo dependencies đã đầy đủ.

Name	Description	Version
<input checked="" type="checkbox"/> anaconda_prompt	Opens a terminal instance with conda activated (requires menuinst 2.1.0 or greater).	1.0.0
<input checked="" type="checkbox"/> anyio	High level compatibility layer for multiple asynchronous event loop implementations on python	4.2.0
<input checked="" type="checkbox"/> argon2-cffi	The sec	21.3.0
<input checked="" type="checkbox"/> argon2-cffi-bindings	Low-level	21.2.0
<input checked="" type="checkbox"/> asttokens	The astt	2.0.5
<input checked="" type="checkbox"/> async-lru		2.0.4
<input checked="" type="checkbox"/> attrs	Attrs is th	23.1.0
<input checked="" type="checkbox"/> babel	Utilities t	2.11.0
<input checked="" type="checkbox"/> backcall	Specifica	0.2.0
<input checked="" type="checkbox"/> beautifulsoup4	Python li	4.12.2
<input checked="" type="checkbox"/> blas	Linear al	1.0
<input checked="" type="checkbox"/> bleach	Easy, whitelist-based html-sanitizing tool	4.1.0
<input checked="" type="checkbox"/> brotli	Brotli compression Format	1.0.9
<input checked="" type="checkbox"/> brotli-python	Brotli compression format	1.0.9
<input checked="" type="checkbox"/> ca-certificates	Certificates for use with other packages.	2024.7.2
<input checked="" type="checkbox"/> certifi	Python package for providing mozilla's ca bundle.	2024.8.3
<input checked="" type="checkbox"/> cffi	Foreign Function interface for python calling c code.	1.16.0
<input checked="" type="checkbox"/> charset-normalizer	The real first universal charset detector: open, modern and actively maintained alternative to chardet.	2.0.4

Conda process error

The following errors occurred:

CondaEnvException: Pip failed

Copy text

Learn more

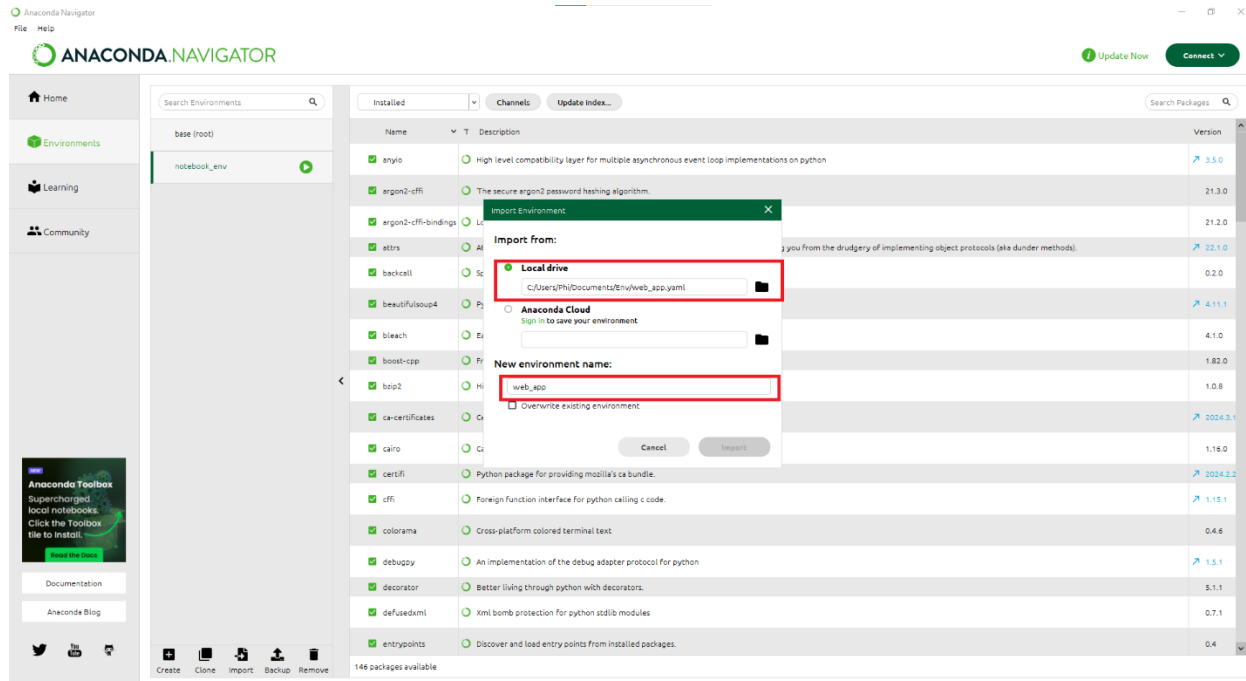
Ok

Importing environment C:\Users\Ph\anaconda3\envs\notebook_env1

Cancel

1.2. Import môi trường cho web app

Thực hiện tương tự với môi trường **web_app**.



1.3. Phần mềm hỗ trợ

Cài đặt tool cmd convert video hỗ trợ là ffmpeg. Ta thực hiện cài đặt chocolatey là phần mềm quản lý cài đặt phần mềm và phần mềm ffmpeg.

Cài đặt chocolatey

Truy cập: <https://chocolatey.org/install>

Ta thực hiện bật Powershell bằng quyền administrator và chạy lệnh:

```
Set-ExecutionPolicy Bypass -Scope Process -Force;  
[System.Net.ServicePointManager]::SecurityProtocol =  
[System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object  
System.Net.WebClient).DownloadString('https://community.chocolatey.org/install.ps1'))
```

Cài đặt ffmpeg

Truy cập: <https://www.ffmpeg.org/download.html>

Ta thực hiện bật Powershell bằng quyền administrator và chạy lệnh:

```
choco install ffmpeg
```

Nhấn A hoặc Y để chấp nhận chạy script.

```
Administrator: Windows PowerShell
before you can use choco.
Restricting write permissions to Administrators.
We are setting up the Chocolatey package repository.
The packages themselves go to 'C:\ProgramData\chocolatey\lib'
(i.e. C:\ProgramData\chocolatey\lib\yourPackageName).
A shim file for the command line goes to 'C:\ProgramData\chocolatey\bin'
and points to an executable in 'C:\ProgramData\chocolatey\lib\yourPackageName'.

Creating Chocolatey CLI folders if they do not already exist.

chocolatey.nupkg file not installed in lib.
Attempting to locate it from bootstrapper.
PATH environment variable does not have C:\ProgramData\chocolatey\bin in it. Adding...
WARNING: Not setting tab completion: Profile file does not exist at
'C:\Users\Phi\Documents\WindowsPowerShell\Microsoft.PowerShell_profile.ps1'.
Chocolatey CLI (choco.exe) is now ready.
You can call choco from anywhere, command line or powershell by typing choco.
Run choco /? for a list of functions.
You may need to shut down and restart powershell and/or consoles
first prior to using choco.
Ensuring Chocolatey commands are on the path
Ensuring chocolatey.nupkg is in the lib folder
PS C:\Windows\system32> choco install ffmpeg
Chocolatey v2.3.0
Installing the following packages:
ffmpeg
By installing, you accept licenses for the packages.
Downloading package from source 'https://community.chocolatey.org/api/v2/'
Progress: Downloading ffmpeg 7.0.2... 100%

ffmpeg v7.0.2 [Approved]
ffmpeg package files install completed. Performing other installation steps.
The package ffmpeg wants to run 'chocolateyinstall.ps1'.
Note: If you don't run this script, the installation will fail.
Note: To confirm automatically next time, use '-y' or consider:
choco feature enable -n allowGlobalConfirmation
Do you want to run the script?([Y]es/[A]ll - yes to all/[N]o/[P]rint): A

Extracting 64-bit C:\ProgramData\chocolatey\lib\ffmpeg\tools\ffmpeg-release-essentials.7z to C:\ProgramData\chocolatey\lib\ffmpeg\tools...
C:\ProgramData\chocolatey\lib\ffmpeg\tools
Removing extracted archive.
Sleeping for 2 seconds to allow anti-viruses to finish scanning...
Renaming ffmpeg directory to common name (Try 1 / 3)
Successfully renamed directory.
ShimGen has successfully created a shim for ffmpeg.exe
ShimGen has successfully created a shim for ffplay.exe
ShimGen has successfully created a shim for ffprobe.exe
The install of ffmpeg was successful.
Deployed to 'C:\ProgramData\chocolatey\lib\ffmpeg\tools'

Chocolatey installed 1/1 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).
PS C:\Windows\system32>
```

Sau khi cài đặt thành công thực hiện chạy thử bằng cách bật cmd và gõ lệnh ffmpeg, ta sẽ nhận được kết quả:

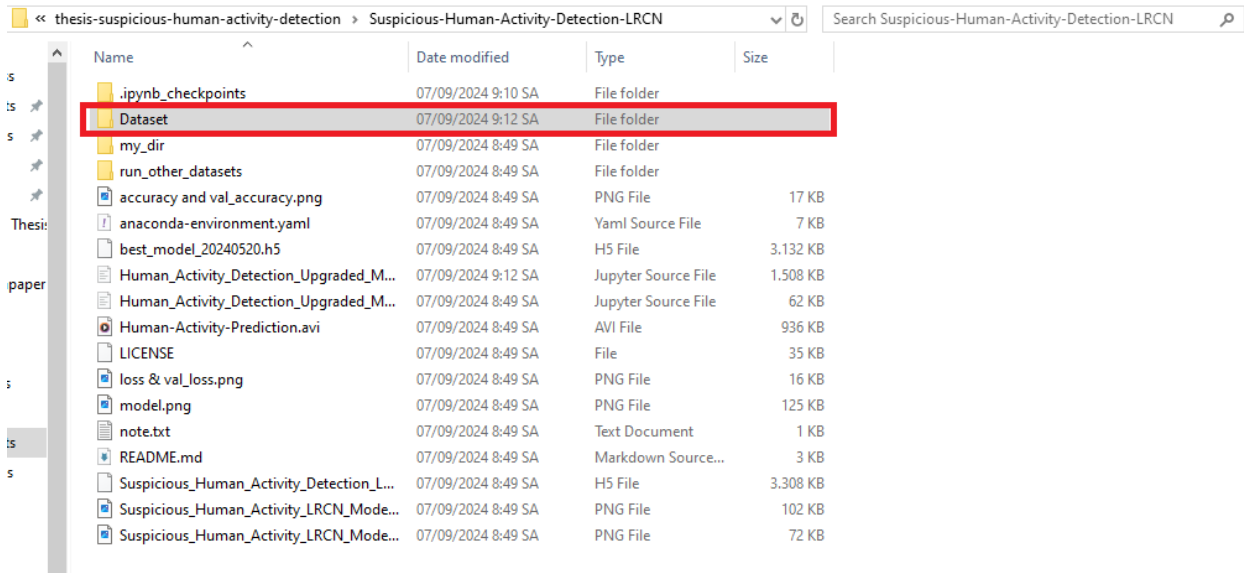
```
Command Prompt
C:\Users\Phi>ffmpeg
ffmpeg version 7.0.2-essentials_build-www.gyan.dev Copyright (c) 2000-2024 the Ffmpeg developers
built with gcc 13.2.0 (Rev5, Built by MSYS2 project)
configuration: --enable-gpl --enable-version3 --enable-static --disable-w32threads --disable-autodetect --enable-fontconfig --enable-iconv --enable-gnutls --enable-libxml2 --enable-gmp --en
e-lisrt --enable-libssh --enable-libzmq --enable-avisynth --enable-sdl2 --enable-libwebp --enable-libx264 --enable-libx265 --enable-libxvid --enable-libaom --enable-libopenjpeg --enable-lib
enable-libfreetype --enable-libfribidi --enable-libharfbuzz --enable-libvidstab --enable-libvmaf --enable-libzimg --enable-amf --enable-cuda-llvm --enable-cuid --enable-dxva2 --enable-d3d11
--enable-nvdec --enable-nvenc --enable-vaapi --enable-libgme --enable-libopenmpt --enable-libopencore-amrwb --enable-libmp3lame --enable-libtheora --enable-libvo-amrwbenc --enable-l
s --enable-libspeex --enable-libvorbis --enable-librubberband
libavutil 59. 8.100 / 59. 8.100
libavcodec 61. 3.100 / 61. 3.100
libavformat 61. 1.100 / 61. 1.100
libavdevice 61. 1.100 / 61. 1.100
libavfilter 10. 1.100 / 10. 1.100
libswscale 8. 1.100 / 8. 1.100
libswresample 5. 1.100 / 5. 1.100
libpostproc 58. 1.100 / 58. 1.100
Universal media converter
usage: ffmpeg [options] [[infile options] -i infile]... {[outfile options] outfile}...

Use -h to get full help or, even better, run 'man ffmpeg'

C:\Users\Phi>
```

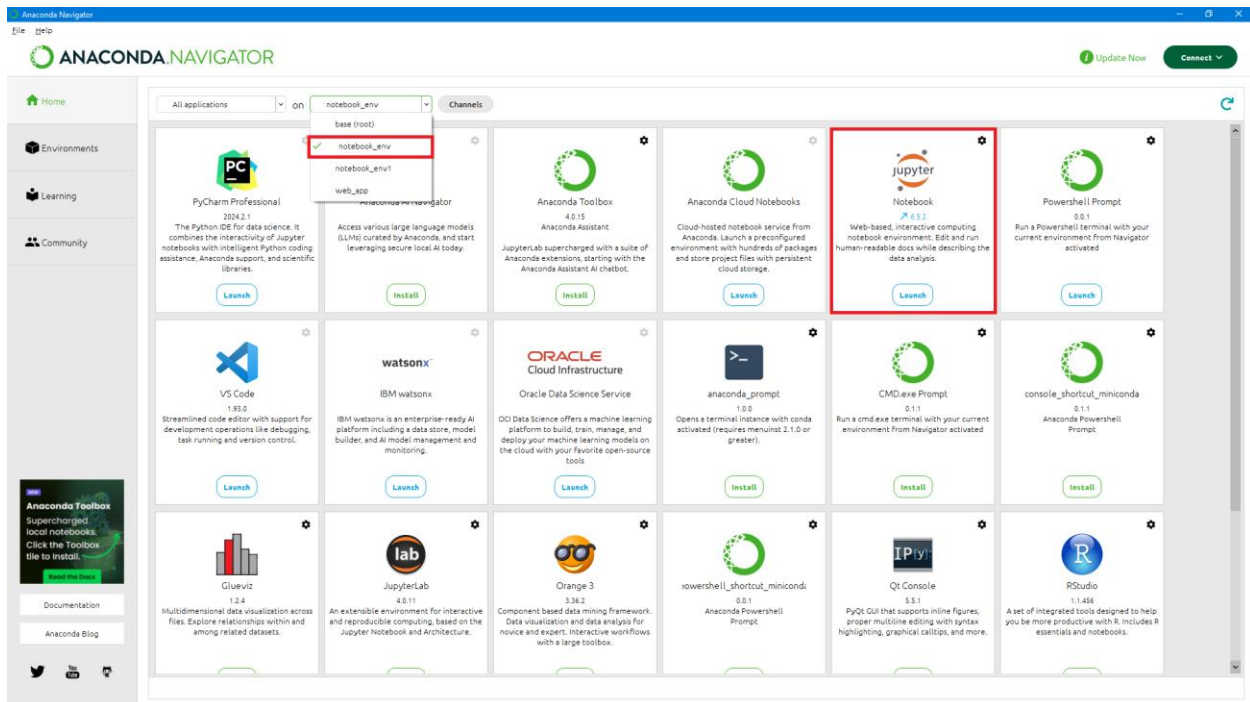
2. Notebook

Thực hiện chép dataset vào folder notebook là Suspicious-Human-Activity-Detection-LRCN, ta có kết quả như hình.

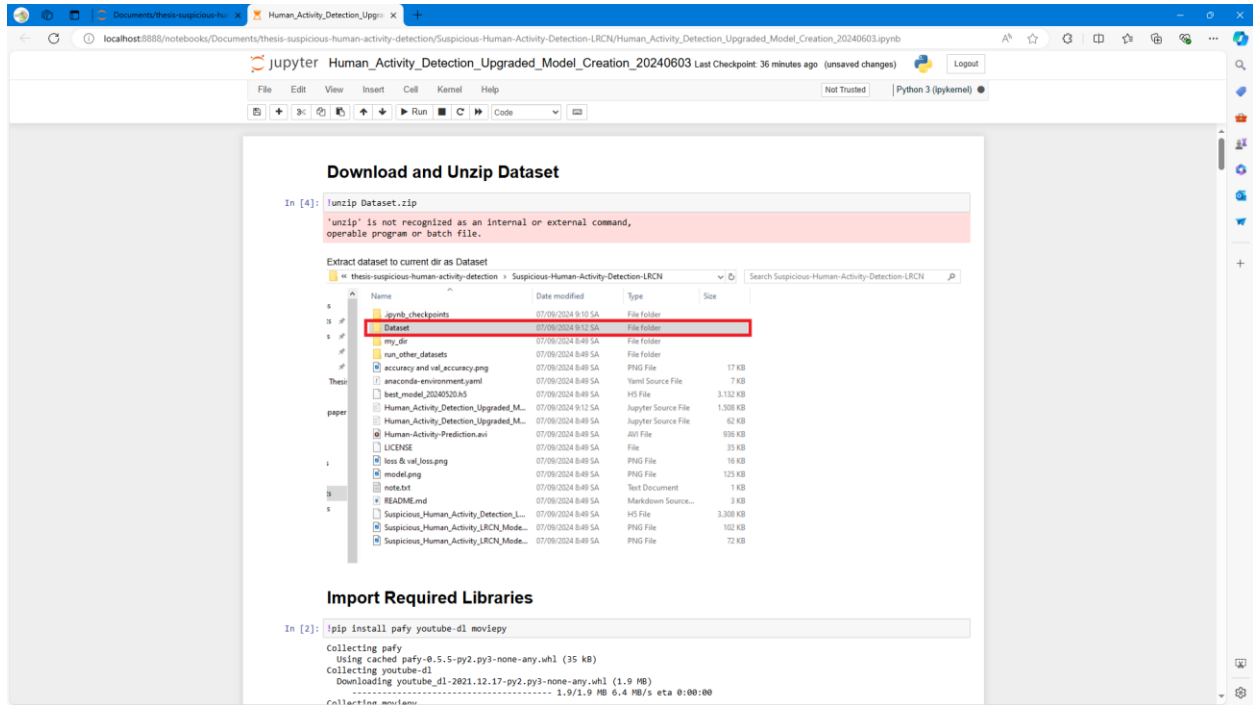


<< thesis-suspicious-human-activity-detection > Suspicious-Human-Activity-Detection-LRCN					Search Suspicious-Human-Activity-Detection-LRCN	
Name	Date modified	Type	Size			
.ipynb_checkpoints	07/09/2024 9:10 SA	File folder				
Dataset	07/09/2024 9:12 SA	File folder				
my_dir	07/09/2024 8:49 SA	File folder				
run_other_datasets	07/09/2024 8:49 SA	File folder				
accuracy and val_accuracy.png	07/09/2024 8:49 SA	PNG File	17 KB			
anaconda-environment.yaml	07/09/2024 8:49 SA	Yaml Source File	7 KB			
best_model_20240520.h5	07/09/2024 8:49 SA	H5 File	3.132 KB			
Human_Activity_Detection_Upgraded_M...	07/09/2024 9:12 SA	Jupyter Source File	1.508 KB			
Human_Activity_Detection_Upgraded_M...	07/09/2024 8:49 SA	Jupyter Source File	62 KB			
Human-Activity-Prediction.avi	07/09/2024 8:49 SA	AVI File	936 KB			
LICENSE	07/09/2024 8:49 SA	File	35 KB			
loss & val_loss.png	07/09/2024 8:49 SA	PNG File	16 KB			
model.png	07/09/2024 8:49 SA	PNG File	125 KB			
note.txt	07/09/2024 8:49 SA	Text Document	1 KB			
README.md	07/09/2024 8:49 SA	Markdown Source...	3 KB			
Suspicious_Human_Activity_Detection_L...	07/09/2024 8:49 SA	H5 File	3.308 KB			
Suspicious_Human_Activity_LRCN_Mode...	07/09/2024 8:49 SA	PNG File	102 KB			
Suspicious_Human_Activity_LRCN_Mode...	07/09/2024 8:49 SA	PNG File	72 KB			

Mở notebook từ Anaconda Navigator.



Ta thực hiện mở file notebook: *Suspicious-Human-Activity-Detection-LRCN/Human_Activity_Detection_Upgraded_Model_Creation_20240603.ipynb*.



Thực hiện chạy các cell trong notebook (bao gồm cả cài đặt các thư viện cần thiết).

Thực hiện lưu lại model đã huấn luyện.

Documents/thesis-suspicious-human-activity-detection/thesis-suspicious-human-activity-detection-LRCN/Human_Activity_Detection_Upgraded_Model_Creation_20240603.ipynb

Human_Activity_Detection_Upgraded_Model_Creation_20240603

Last Checkpoint: a few seconds ago (autosaved)

Logout

File Edit View Insert Cell Kernel Help

Checkpoint created: 10:17:25 | Not Trusted | Python 3 (pykernel)

0.8868
Epoch 91/100
66/66 [=====] - 26s 399ms/step - loss: 1.1182 - accuracy: 0.9732 - val_loss: 1.4816 - val_accuracy: 0.8868
Epoch 92/100
66/66 [=====] - 26s 388ms/step - loss: 1.0768 - accuracy: 0.9808 - val_loss: 1.4922 - val_accuracy: 0.8868
Epoch 93/100
66/66 [=====] - 25s 376ms/step - loss: 1.0805 - accuracy: 0.9885 - val_loss: 1.5677 - val_accuracy: 0.8182
Epoch 94/100
66/66 [=====] - 25s 380ms/step - loss: 1.0743 - accuracy: 0.9778 - val_loss: 1.4665 - val_accuracy: 0.8836

Save Model

In [33]: # Save your Model.
model.save("suspicious_Human_Activity_Detection_LRCN_Model_202409.h5")

Plot Loss and Accuracy Graphs while Training

In [34]: def plot_metric(model_training_history, metric_name_1, metric_name_2, plot_name):
...
This function will plot the metrics passed to it in a graph.
Args:
 model_training_history: A history object containing a record of training and validation loss values and metric values at successive epochs
 metric_name_1: The name of the first metric that needs to be plotted in the graph.
 metric_name_2: The name of the second metric that needs to be plotted in the graph.
 plot_name: The title of the graph.
...
 # Get metric values using metric names as identifiers.
 metric_value_1 = model_training_history.history[metric_name_1]
 metric_value_2 = model_training_history.history[metric_name_2]
 # Construct a range object which will be used as x-axis (horizontal plane) of the graph.
 epochs = range(len(metric_value_1))
 # Plot the Graph.
 plt.plot(epochs, metric_value_1, 'blue', label = metric_name_1)
 plt.plot(epochs, metric_value_2, 'red', label = metric_name_2)
 # Add title to the plot.
 plt.title(str(plot_name))
 # Add legend to the plot.
 plt.legend()

:-suspicious-human-activity-detection > Suspicious-Human-Activity-Detection-LRCN >

Search Suspicious-Human-Activity-Detection-LRCN

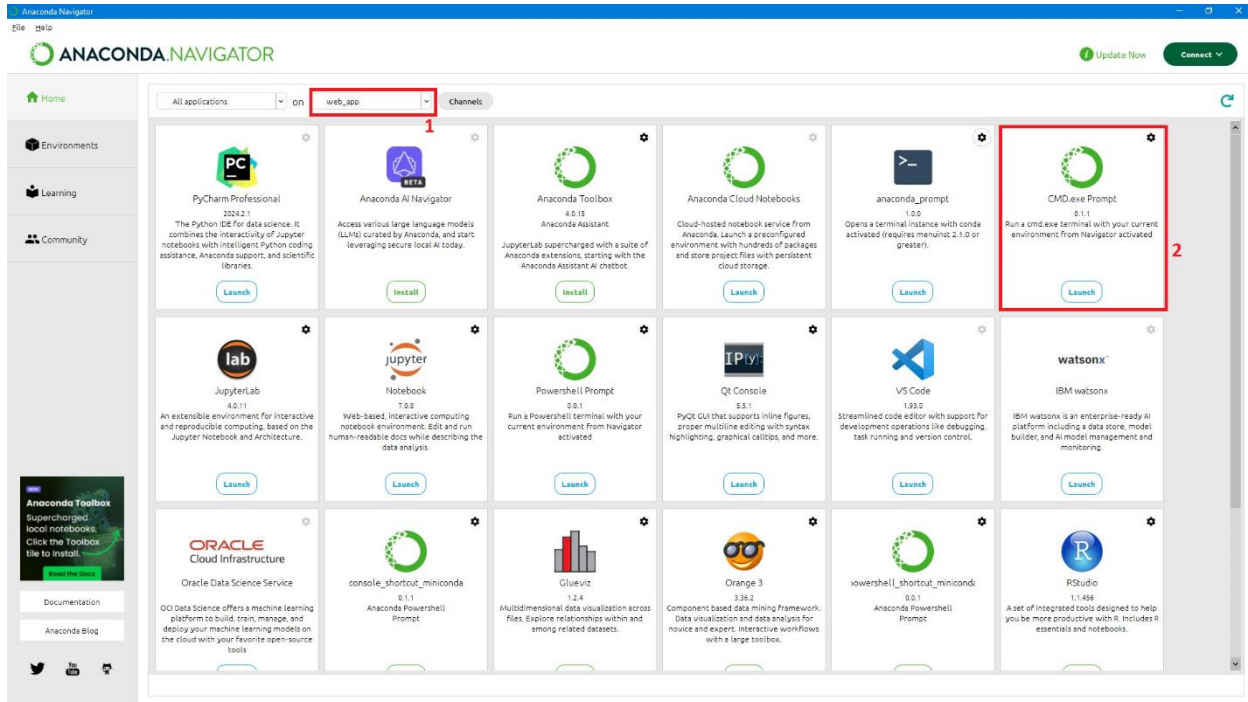
Name	Date modified	Type	Size
.ipynb_checkpoints	07/09/2024 9:10 SA	File folder	
Dataset	07/09/2024 9:18 SA	File folder	
my_dir	07/09/2024 8:49 SA	File folder	
run_other_datasets	07/09/2024 8:49 SA	File folder	
accuracy and val_accuracy.png	07/09/2024 8:49 SA	PNG File	17 KB
anaconda-environment.yaml	07/09/2024 8:49 SA	Yaml Source File	7 KB
best_model_20240520.h5	07/09/2024 8:49 SA	H5 File	3.132 KB
Human_Activity_Detection_Upgraded_Model_Creation_20240603.ipynb	07/09/2024 10:17 SA	Jupyter Source File	1.399 KB
Human_Activity_Detection_Upgraded_Model_Prediction-20240705.ipynb	07/09/2024 8:49 SA	Jupyter Source File	62 KB
Human-Activity-Prediction.avi	07/09/2024 8:49 SA	AVI File	936 KB
LICENSE	07/09/2024 8:49 SA	File	35 KB
loss & val_loss.png	07/09/2024 8:49 SA	PNG File	16 KB
model.png	07/09/2024 8:49 SA	PNG File	125 KB
note.txt	07/09/2024 8:49 SA	Text Document	1 KB
README.md	07/09/2024 8:49 SA	Markdown Source...	3 KB
Suspicious_Human_Activity_Detection_LRCN_Model_202409.h5	07/09/2024 10:16 SA	H5 File	3.307 KB
Suspicious_Human_Activity_Detection_LRCN_Model_20240603.h5	07/09/2024 8:49 SA	H5 File	3.308 KB
Suspicious_Human_Activity_LRCN_Model.png	07/09/2024 8:49 SA	PNG File	102 KB
Suspicious_Human_Activity_LRCN_Model_202405212328.png	07/09/2024 9:20 SA	PNG File	137 KB
Suspicious_Human_Activity_LRCN_Model_None.png	07/09/2024 8:49 SA	PNG File	72 KB

3. Web app

3.1. Cài đặt dependencies

Đầu tiên, ta thực hiện cài đặt dependencies cho web app.

Chuyển sang môi trường web_app trong conda:



Sau đó thực hiện bật CMD Prompt, kiểm tra môi trường đã chuyển sang web_app của anaconda.

Thực hiện đổi thư mục tới folder web_app trên máy và thực hiện cài đặt dependencies đã khai

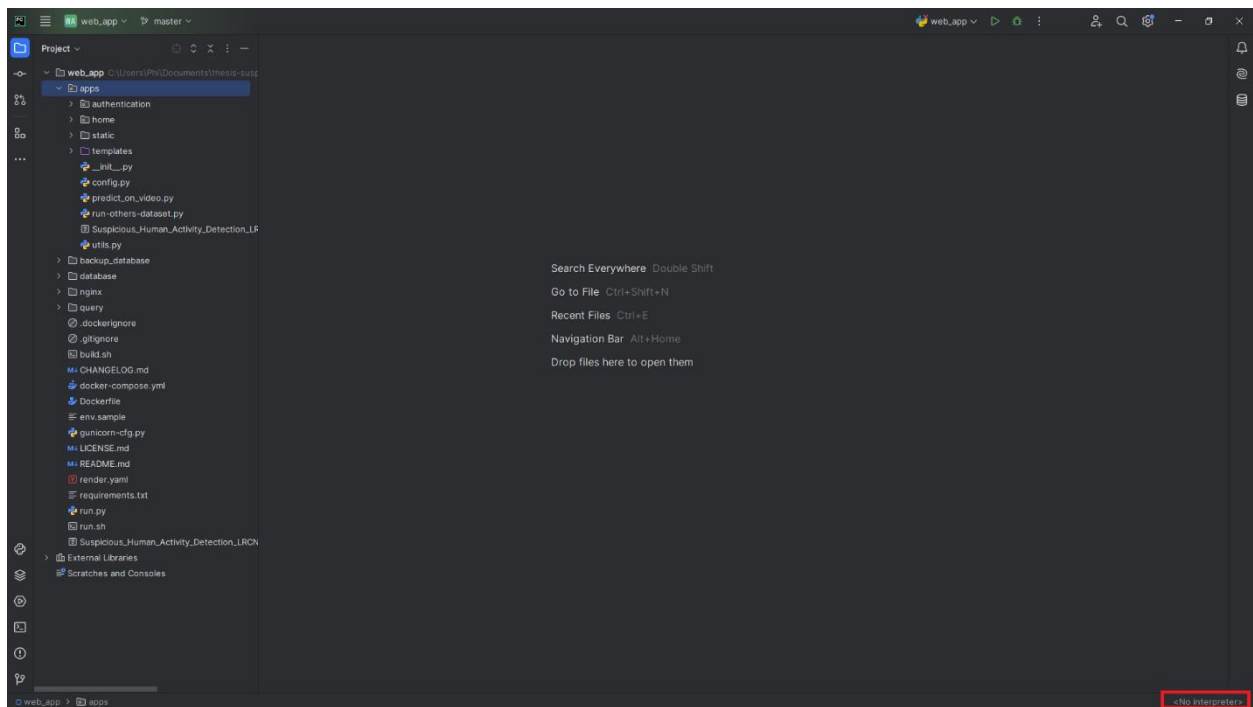
báo trong file requirement.txt bằng lệnh: **pip install -r requirements.txt**

```
C:\Windows\system32\cmd.exe - pip install -r requirements.txt
Microsoft Windows [Version 10.0.19045.4780]
C:\Users\Phl>cd C:\Users\Phl\Documents\thesis-suspicious-human-activity-detection\web_app
web_app C:\Users\Phl>cd C:\Users\Phl\Documents\thesis-suspicious-human-activity-detection\web_app
web_app C:\Users\Phl\Documents\thesis-suspicious-human-activity-detection\web_app>pip install -r requirements.txt
Collecting flask==2.2.5 (from -r requirements.txt (line 1))
  Using cached flask-2.2.5-py3-none-any.whl.metadata (3.9 kB)
Collecting Werkzeug==2.3.7 (from -r requirements.txt (line 2))
  Using cached Werkzeug-2.3.7-py3-none-any.whl.metadata (4.1 kB)
Collecting Jinja2==3.1.2 (from -r requirements.txt (line 3))
  Using cached Jinja2-3.1.2-py3-none-any.whl.metadata (3.5 kB)
Collecting flask_login==0.6.2 (from -r requirements.txt (line 4))
  Using cached flask_login-0.6.2-py3-none-any.whl.metadata (5.8 kB)
Collecting flask_migrate==4.0.4 (from -r requirements.txt (line 5))
  Using cached flask_migrate-4.0.4-py3-none-any.whl.metadata (3.1 kB)
Collecting WTForms==3.0.1 (from -r requirements.txt (line 6))
  Using cached WTForms-3.0.1-py3-none-any.whl.metadata (3.2 kB)
Collecting flask_wtf==1.2.1 (from -r requirements.txt (line 7))
  Using cached flask_wtf-1.2.1-py3-none-any.whl.metadata (3.4 kB)
Collecting flask_sqlalchemy==3.0.5 (from -r requirements.txt (line 8))
  Using cached flask_sqlalchemy-3.0.5-py3-none-any.whl.metadata (3.3 kB)
```

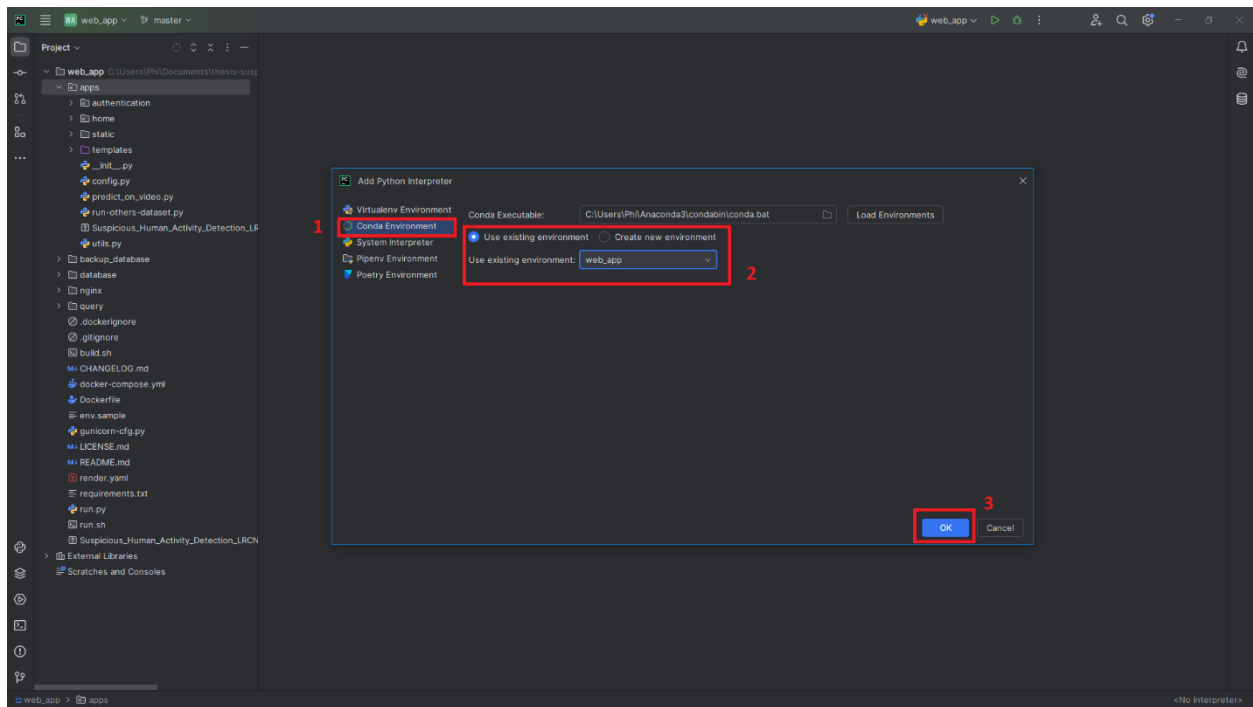
Thực hiện cài đặt các dependencies thành công:

```
C:\Windows\system32\cmd.exe
Downloading xxhash-3.5.0-cp38-cp38-win_amd64.whl (30 kB)
Downloading google_auth-2.34.0-py2.py3-none-any.whl (200 kB)
Downloading google_auth_oauthlib-1.0.0-py2.py3-none-any.whl (18 kB)
Downloading MarkDown-3.7-py3-none-any.whl (106 kB)
Downloading pillow-10.4.0-cp38-cp38-win_amd64.whl (2.6 MB)
Downloading tensorflow_data_server-0.7.2-py3-none-any.whl (2.4 kB)
Downloading Mako-1.3.5-py3-none-any.whl (70 kB)
Downloading cachetools-5.5.0-py3-none-any.whl (0.5 kB)
Downloading pyasn1_modules-0.4.0-py3-none-any.whl (181 kB)
Downloading rsa-4.9-py3-none-any.whl (34 kB)
Downloading pyasn1-0.6.0-py2.py3-none-any.whl (85 kB)
Building wheels for collected packages: moviepy, ffmpeg, htmlmin, jsmin, rcssmin, urlobject
Building wheel for moviepy (setup.py) ... done
Created wheel for moviepy: filename=moviepy-1.0.3-py3-none-any.whl size=118766 sha256=f2fcb58a8b0bfb0b0240dd662d2706b7f7cdd47abc08b9db0c4070b0ec7f31a
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\4e\4a\4b\0380d3a0403da662e13926594b3a8cf1aa4ffee570cfac1
Building wheel for ffmpeg (setup.py) ... done
Created wheel for ffmpeg: filename=ffmpeg-1.4-py3-none-any.whl size=6809 sha256=6806db389f8944e2327d5d8342c180ad85adff8e2f5428d8064806c7280b9c0d
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\30\33\46\5ab7eca55b9490ddbf73441c68a29535996270ef1ce8b0b6d7
Building wheel for htmlmin (setup.py) ... done
Created wheel for htmlmin: filename=htmlmin-0.1.12-py3-none-any.whl size=27092 sha256=276addf7700052a48c40c280a842aa89b625408a7c5d4a3b5affac8c7f706
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\23\14\6e\4be5bfeeb027f4939a01764b48edd5996acf574b0013fe5243
Building wheel for jsmin (setup.py) ... done
Created wheel for jsmin: filename=jsmin-3.0.1-py3-none-any.whl size=13801 sha256=904c84d6ab74004f01d085970fe96ee70d2e273c5d0e52b31c3c1dc1b414
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\8d\2d\8f\2132d05239c9da42da842b442c2580ad2ab0ec6f08b0e2cf3
Building wheel for rcssmin (setup.py) ... done
Created wheel for rcssmin: filename=rcssmin-1.1.2-py3-none-any.whl size=11542 sha256=0bca4de2508c4b1c5ca204786601c0bf8b1187b4740e78bc240bc1e4c48e4
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\de\e2\11\4559a8023d4e213691b909723261beb3bac38ca5bf7020b6d
Building wheel for urlobject (setup.py) ... done
Created wheel for urlobject: filename=urlobject-2.4.3-py3-none-any.whl size=14520 sha256=9d74680cabe1b176d8cd7df4cf4301c0d4a71a632da2b6081f54a859f556920
Stored in directory: C:\Users\Phl\AppData\Local\pip\Cache\wheels\6d\9f\65\70e41e2ac3e3f726f12d3952e3ba624629b1856d5fc76401
Successfully built moviepy ffmpeg htmlmin jsmin rcssmin urlobject
Installing collected packages: urlobject, tensorflow-estimator, rcssmin, jsmin, htmlmin, ffmpeg, aniso8601, xxhash, WTForms, wrapt, Werkzeug, tqdm, termcolor, tensorflow-data-server, python-dotenv, pyasn1, pycpg2-binary, protobuf, pillow, numpy, mySQLclient, Mako, lesscpy, Jinja2, itsdangerous, imageio-ffmpeg, gunicorn, grpcio, greenlet, google-pasta, gast, dmspython, decorator, click, cachetools, blinker, astunparse, absl-py, sqlalchemy, scipy, rsa, requests-oauthlib, pyasn1-modules, proglog, pandas, opt-einsum, opencv-python, markdown, keras-preprocessing, imageio, h5py, flask, email_validator, moviepy, keras, google-auth, flask_wtf, flask-sqlalchemy, flask_mysqldb, flask_minify, flask-login, flask-dance, alembic, google-auth-oauthlib, flask-restx, flask_migrate, tensorboard, tensorflow
Attempting uninstall: numpy
  Found existing installation: numpy 1.19.2
  Uninstalling numpy-1.19.2:
    Successfully uninstalled numpy-1.19.2
Attempting uninstall: Jinja2
  Found existing installation: Jinja2 3.1.4
  Uninstalling Jinja2-3.1.4:
    Successfully uninstalled Jinja2-3.1.4
Attempting uninstall: decorator
  Found existing installation: decorator 5.1.1
  Uninstalling decorator-5.1.1:
    Successfully uninstalled decorator-5.1.1
Successfully installed Flask-Minify-0.37 Mako-1.3.5 WTForms-3.0.1 Werkzeug-2.3.7 xhash-3.5.0 aniso8601-8.0.1 astunparse-1.6.3 blinker-1.6.2 cachetools-5.5.0 click-8.1.7 decorator-4.4.2 dmspython-2.6.1 email_validator-2.0.0 ffmpeg-1.4 flask-2.2.5 flask-dance-7.0.0 flask_login-0.6.2 flask-restx-1.1.0 flask-sqlalchemy-3.0.5 flask_wtf-4.0.4 flask_mysqldb-2.0.0 flask_wtf-1.2.1 gast-0.3.3 google-auth-2.34.0 google-auth-oauthlib-1.0.0 google-pasta-0.2.8 grpcio-1.66.1 imageio-2.0.1 imageio-ffmpeg-0.5.1 itsdangerous-2.2.0 Jinja2-3.1.2 jsmin-3.0.1 keras-2.4.3 keras-preprocessing-1.1.2 lesscpy-0.15.1 markdown-3.7 moviepy-1.0.3 mySQLclient-2.2.4 numpy-1.18.5 oauthlib-2.2.2 opencv-python-4.10.0 opt-einsum-1.4.4 pillow-10.4.0 proglog-0.1.10 protobuf-3.20.3 pycpg2-binary-2.9.9 pyasn1-0.6.0 pyasn1-modules-0.4.0 python-dotenv-0.19.2 rcssmin-1.1.2 requests-oauthlib-2.0.0 rsa-4.9.0 scipy-1.4.1 sqlalchemy-3.0.5 tensorflow-2.14.0 tensorflow-data-server-0.7.2 tensorflow-2.13.0 tensorflow-estimator-2.3.0 termcolor-2.4.0 tqdm-4.66.3 urlobject-2.4.3 wrapt-1.16.0 xxhash-3.5.0
```

Mở project web_app với Pycharm, nhấn vào mục configure interpreter.

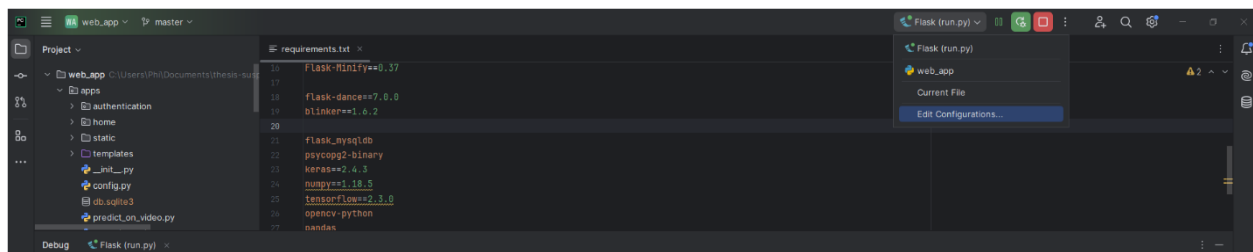


Thực hiện chọn môi trường conda là web_app.

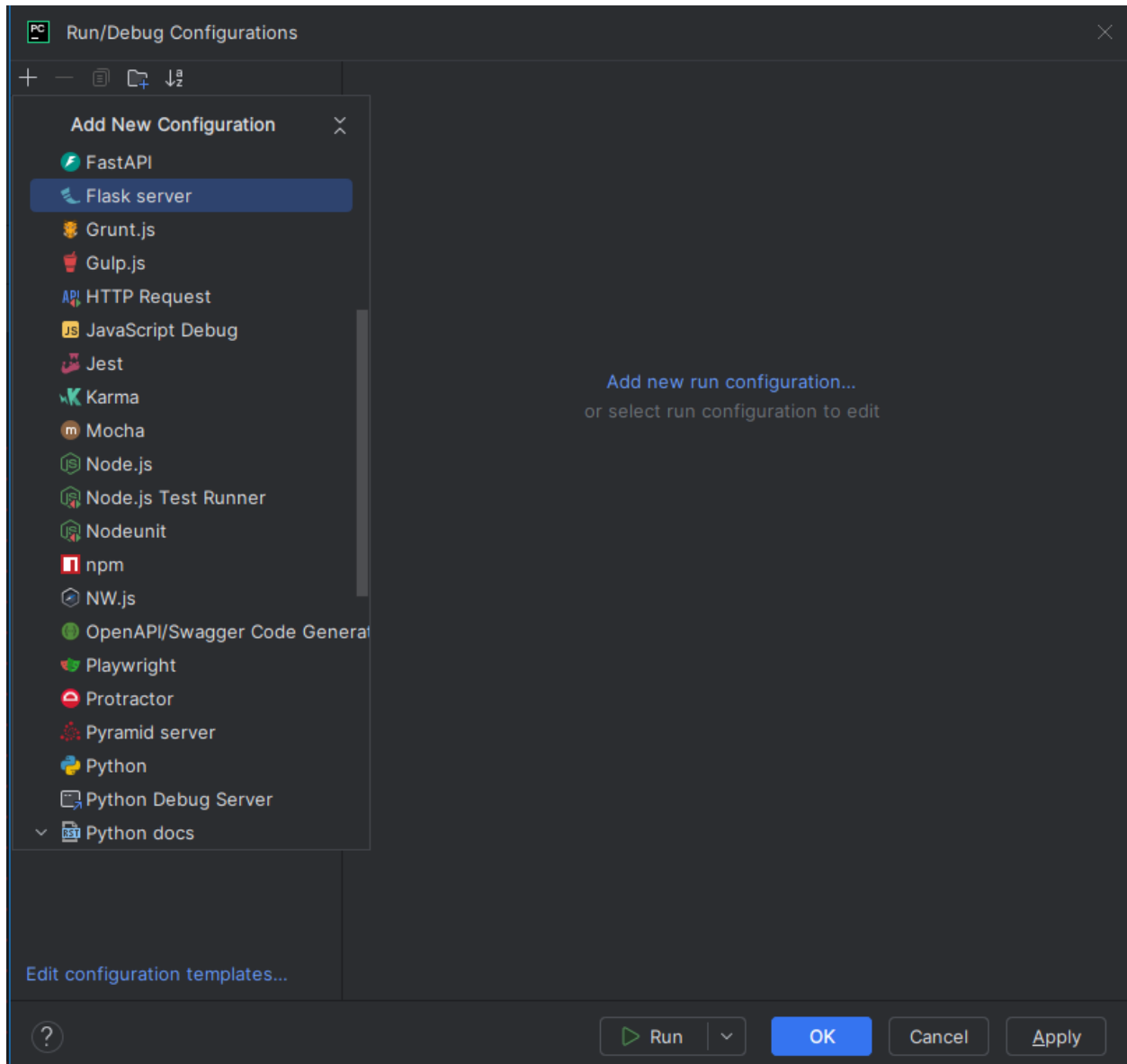


3.2. Chạy debug mode với Pycharm

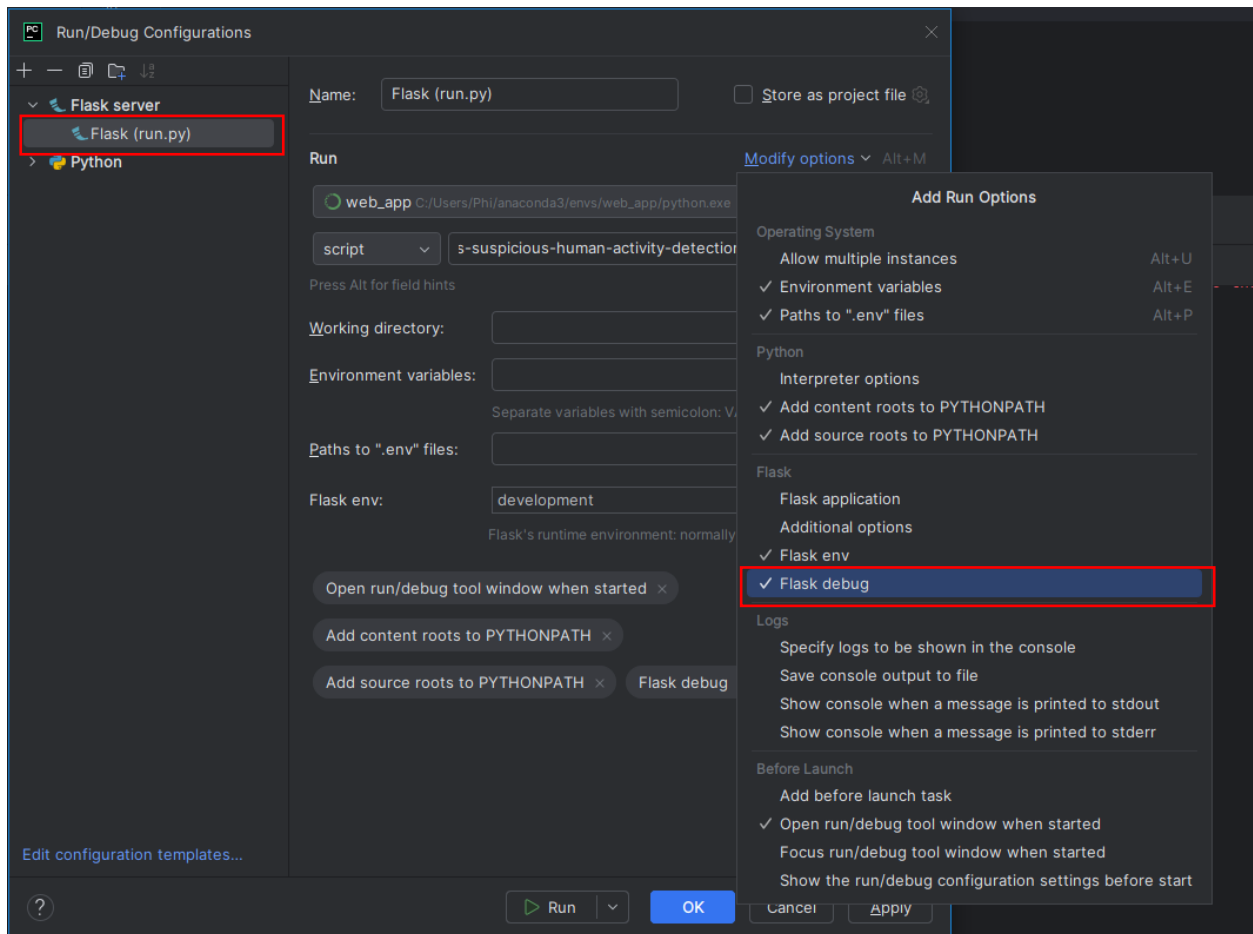
Thực hiện chọn run configuration trong Pycharm:

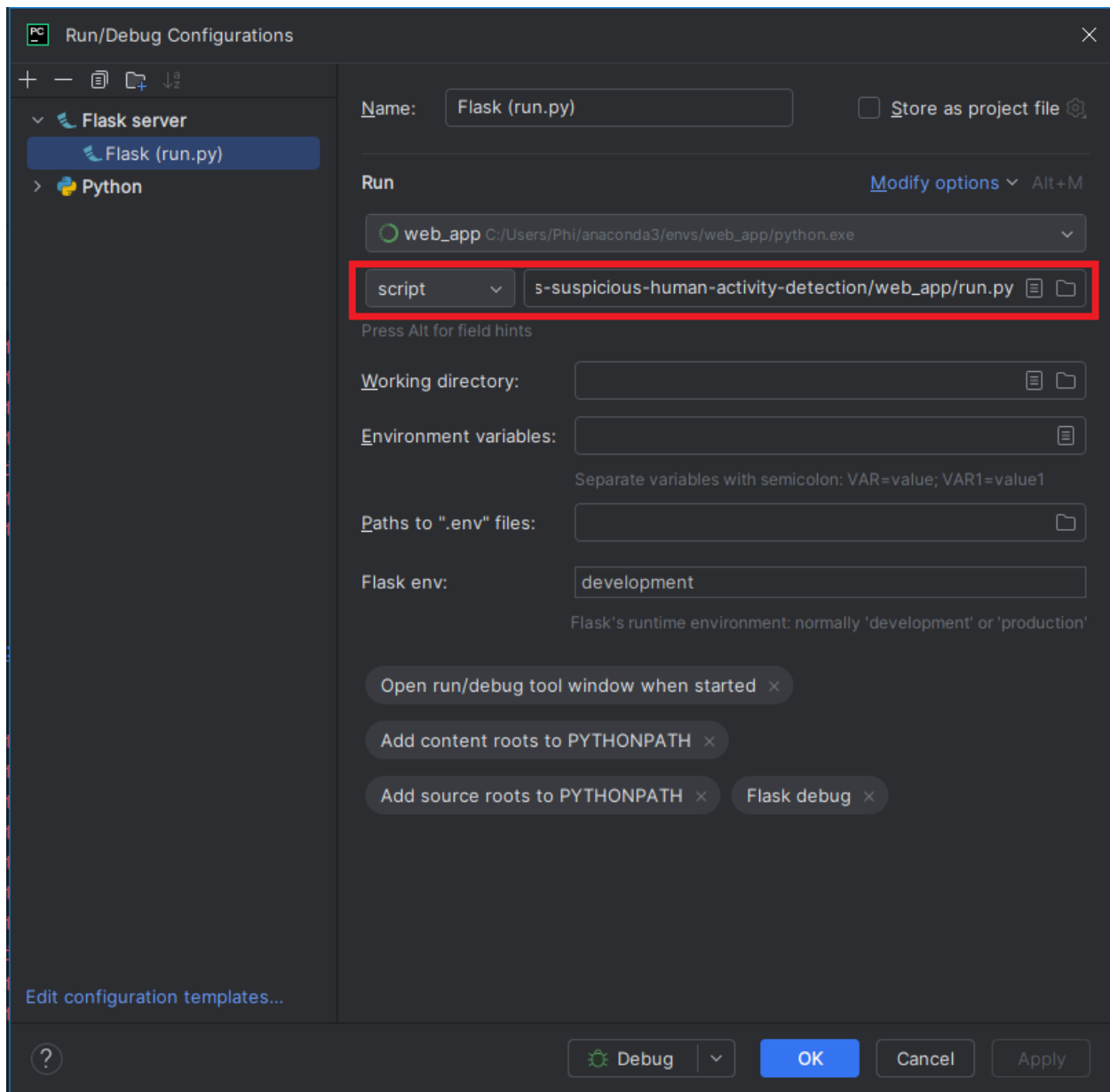


Nhấn vào dấu + và chọn Flask server:



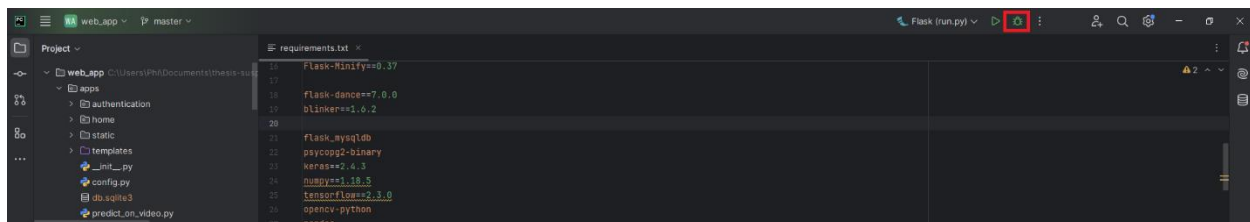
Chọn vào *Modify options* chọn Flask debug để bật cờ debug.



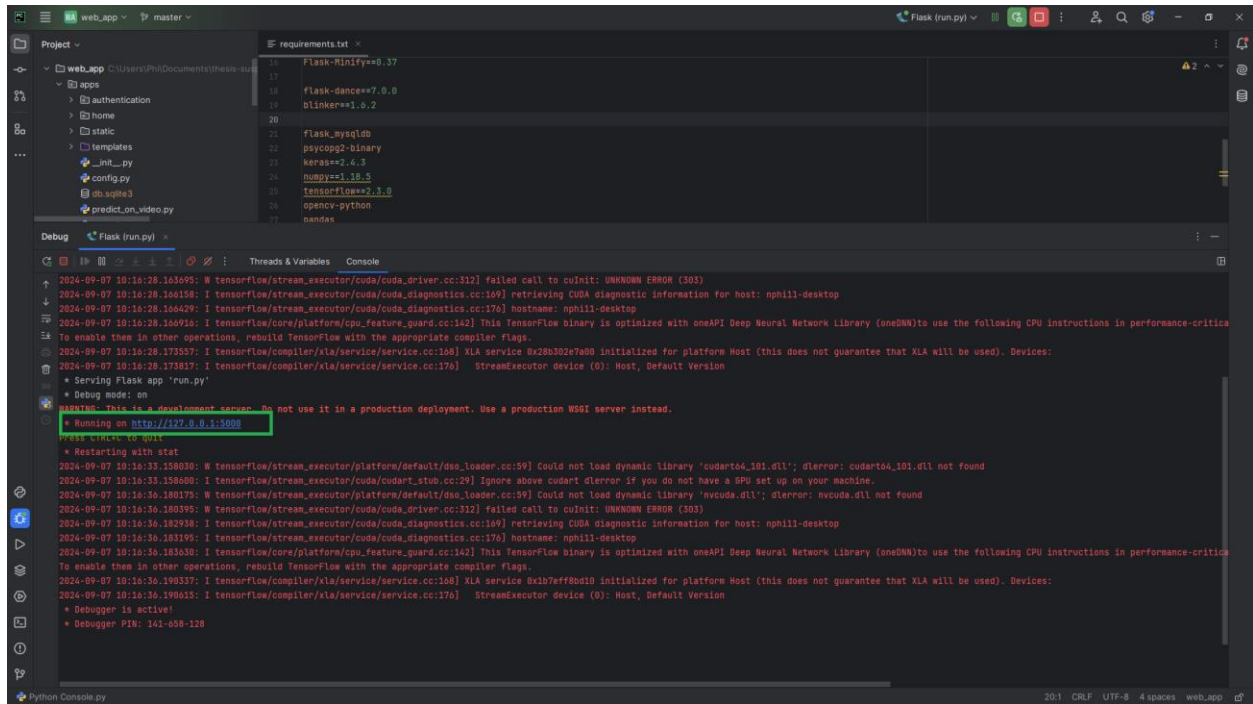


Chọn startup là script với file: *web_app/run.py*.

Nhấn vào nút debug.



Ứng dụng được chạy thành công.

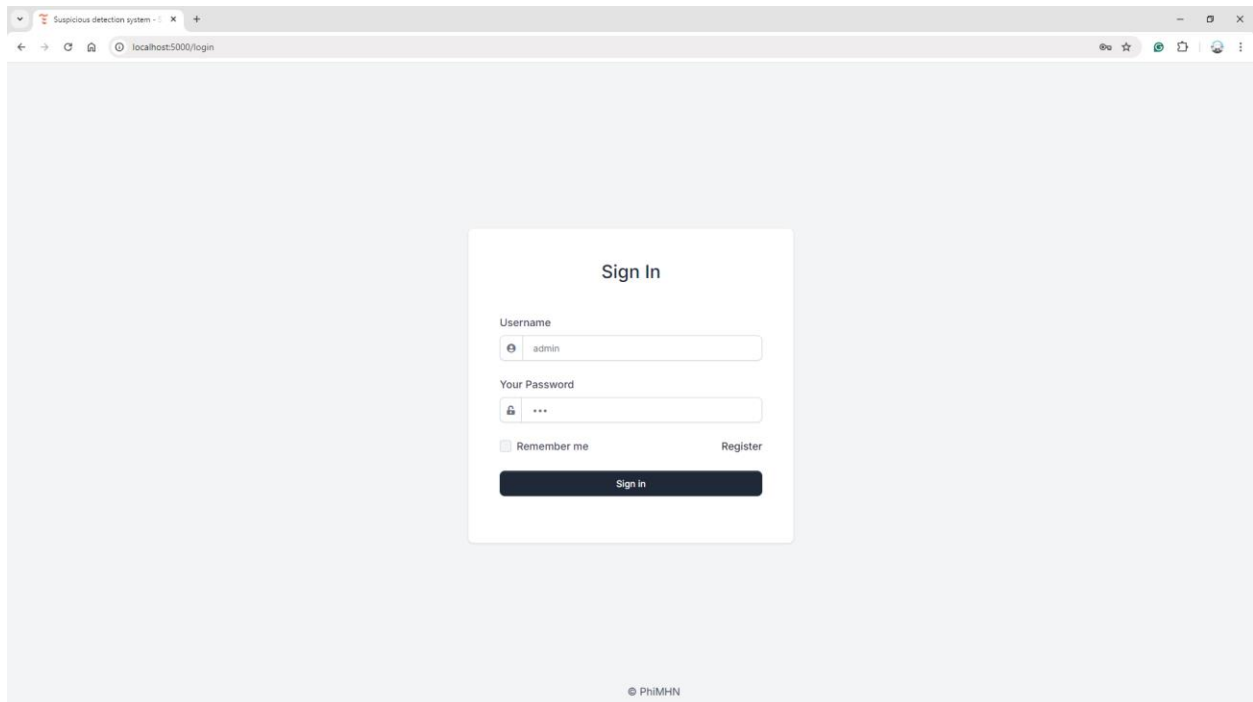


```
Project: web_app
  apps
  authentication
  home
  static
  templates
  __init__.py
  config.py
  db.sqla3
  predict_on_video.py

requirements.txt
16 Flask-Rainify==0.37
17
18 flask-dance==7.0.0
19 blinker==1.0.2
20
21 flask-mysqldb
22 psycopg2-binary
23 keras==2.4.3
24 numpy==1.18.5
25 tensorflow==2.3.0
26 opencv-python
27 pandas

Debug: Flask (run.py)
2024-09-07 10:16:28.163695: W tensorflow/stream_executor/cuda/cuda_driver.cc:312] failed call to cuInit: UNKNOWN ERROR (303)
2024-09-07 10:16:28.164181: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:149] retrieving CUDA diagnostic information for host: nphill-desktop
2024-09-07 10:16:28.164429: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: nphill-desktop
2024-09-07 10:16:28.164916: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations:
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
2024-09-07 10:16:28.173557: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x28b302e7a00 initialized for platform Host (this does not guarantee that XLA will be used). Devices:
2024-09-07 10:16:28.173817: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
+ Serving Flask app 'run.py'
+ Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
+ Running on http://127.0.0.1:5000
Press Ctrl-C to quit
+ Restarting with stat
2024-09-07 10:16:33.158030: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'cudart64_101.dll'; dlerror: cudart64_101.dll not found
2024-09-07 10:16:33.158400: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2024-09-07 10:16:36.180175: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'nvcuda.dll'; dlerror: nvcuda.dll not found
2024-09-07 10:16:36.182935: W tensorflow/stream_executor/cuda/cuda_driver.cc:312] failed call to cuInit: UNKNOWN ERROR (303)
2024-09-07 10:16:36.182938: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:149] retrieving CUDA diagnostic information for host: nphill-desktop
2024-09-07 10:16:36.183193: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: nphill-desktop
2024-09-07 10:16:36.183630: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations:
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
2024-09-07 10:16:36.193537: I tensorflow/compiler/xla/service/service.cc:168] XLA service 81b7eff80d10 initialized for platform Host (this does not guarantee that XLA will be used). Devices:
2024-09-07 10:16:36.193615: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
+ Debugger is active!
+ Debugger PIN: 141-658-128
```

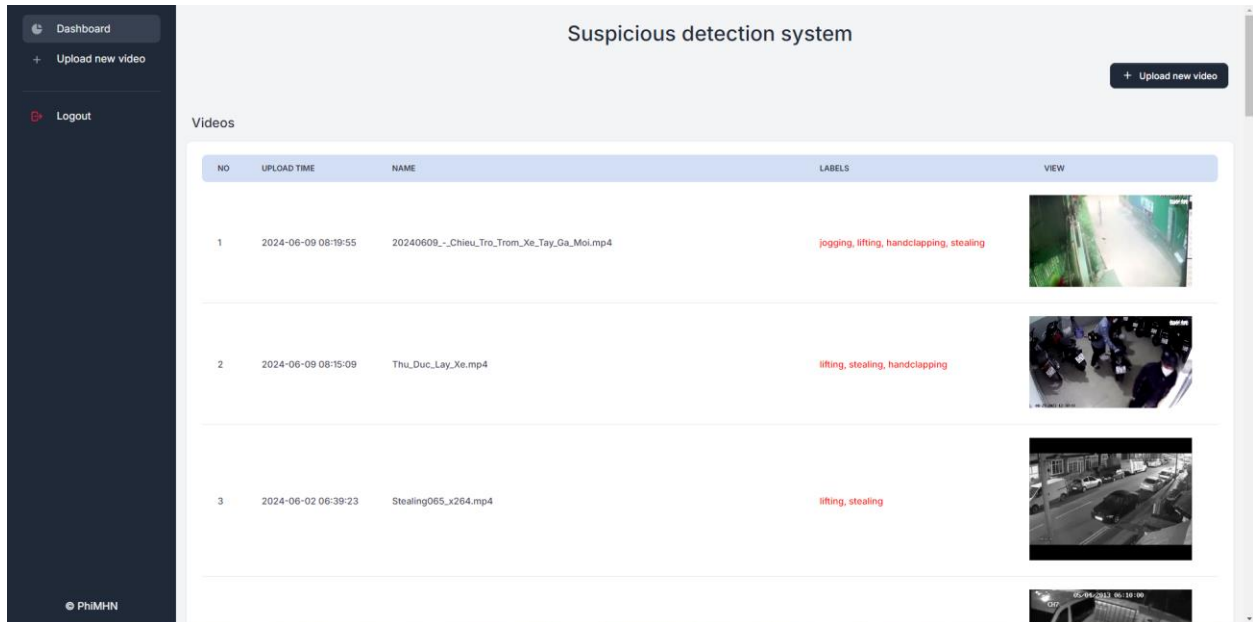
Màn hình ứng dụng.



Default user:

Username: admin; Password: 123

Màn hình sau khi đăng nhập.



3.3. Chạy ứng dụng bằng command line

Bật CMD prompt như bước 3.1.

Mở folder web_app chứa ứng dụng, chạy command: **run.bat**.

Nội dung file run.bat:

```
1 set FLASK_APP=.\run.py
2 set FLASK_ENV=development
3 set FLASK_DEBUG=1
4 flask run
```

Ứng dụng sẽ được chạy từ command line:


```
C:\Windows\system32\cmd.exe - run.bat
(web_app) C:\Users\Phi\Documents\thesis-suspicious-human-activity-detection\web_app>run.bat

(web_app) C:\Users\Phi\Documents\thesis-suspicious-human-activity-detection\web_app>set FLASK_APP=.\\run.py

(web_app) C:\Users\Phi\Documents\thesis-suspicious-human-activity-detection\web_app>set FLASK_ENV=development

(web_app) C:\Users\Phi\Documents\thesis-suspicious-human-activity-detection\web_app>set FLASK_DEBUG=1

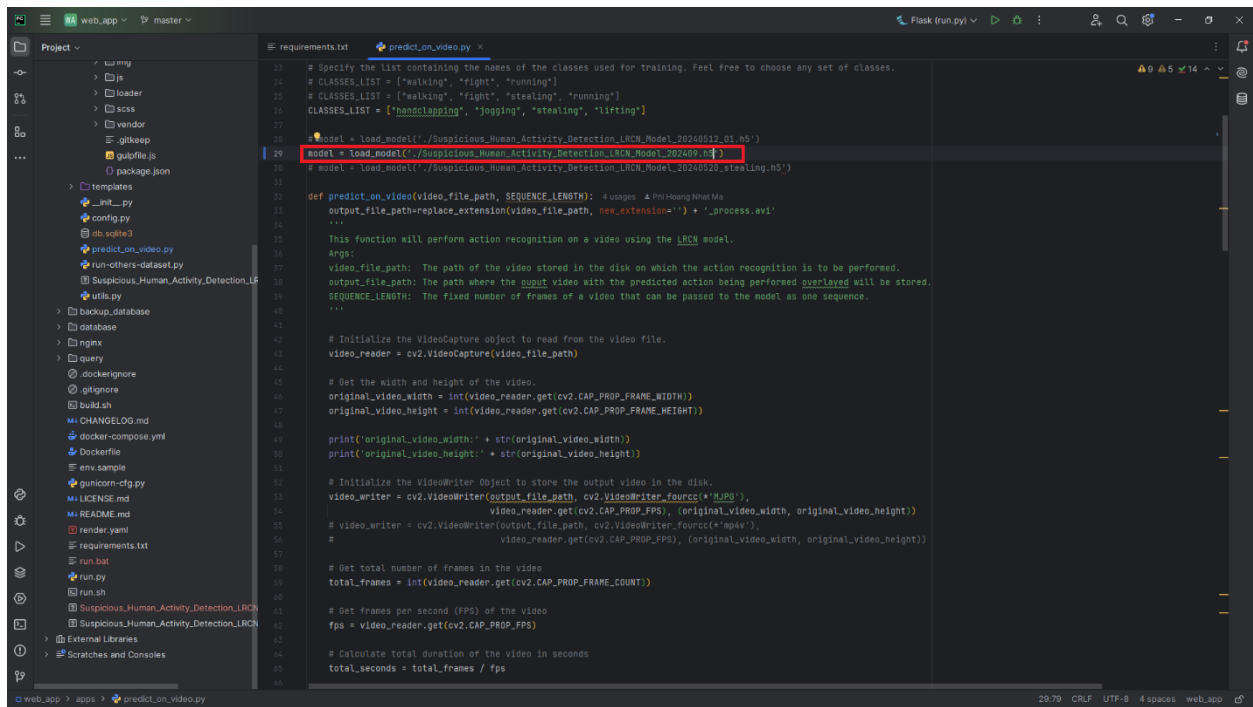
(web_app) C:\Users\Phi\Documents\thesis-suspicious-human-activity-detection\web_app>flask run
2024-09-07 10:33:58.843058: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'cudart64_101.dll'; dlerror: cudart64_101.dll not found
2024-09-07 10:33:58.843134: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2024-09-07 10:34:01.513720: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'nvcuda.dll'; dlerror: nvcuda.dll not found
2024-09-07 10:34:01.513838: W tensorflow/stream_executor/cuda/cuda_driver.cc:312] failed call to cuInit: UNKNOWN ERROR (303)
2024-09-07 10:34:01.516697: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host: nph111-desktop
2024-09-07 10:34:01.516823: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: nph111-desktop
2024-09-07 10:34:01.517351: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU
: AVX2
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
2024-09-07 10:34:01.524076: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x16bd77b1ee0 initialized for platform Host (this does not guarantee that XLA will be used). Devices
2024-09-07 10:34:01.524159: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
* Serving Flask app '.\\run.py'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
2024-09-07 10:34:03.522724: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'cudart64_101.dll'; dlerror: cudart64_101.dll not found
2024-09-07 10:34:03.522866: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2024-09-07 10:34:05.775676: W tensorflow/stream_executor/platform/default/dso_loader.cc:59] Could not load dynamic library 'nvcuda.dll'; dlerror: nvcuda.dll not found
2024-09-07 10:34:05.775788: W tensorflow/stream_executor/cuda/cuda_driver.cc:312] failed call to cuInit: UNKNOWN ERROR (303)
2024-09-07 10:34:05.778586: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host: nph111-desktop
2024-09-07 10:34:05.778729: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: nph111-desktop
2024-09-07 10:34:05.779029: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU
: AVX2
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
2024-09-07 10:34:05.785433: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x210b93285ce initialized for platform Host (this does not guarantee that XLA will be used). Devices
2024-09-07 10:34:05.785603: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
* Debugger is active!
* Debugger PIN: 141-658-128
```

3.4. Appendix: Đổi model huấn luyện cho ứng dụng

Chép mô hình đã training mới vào folder root của web_app như hình bên dưới.

View				
PC > Documents > thesis-suspicious-human-activity-detection > web_app				
Search web_app				
Name	Date modified	Type	Size	
.idea	07/09/2024 10:37 SA	File folder		
__pycache__	07/09/2024 9:40 SA	File folder		
apps	07/09/2024 9:40 SA	File folder		
backup_database	07/09/2024 8:49 SA	File folder		
database	07/09/2024 8:49 SA	File folder		
nginx	07/09/2024 8:49 SA	File folder		
query	07/09/2024 8:49 SA	File folder		
.dockerignore	07/09/2024 8:49 SA	DOCKERIGNORE F...	1 KB	
.gitignore	07/09/2024 8:49 SA	Text Document	1 KB	
build.sh	07/09/2024 8:49 SA	Shell Script	1 KB	
CHANGELOG.md	07/09/2024 8:49 SA	Markdown Source...	4 KB	
docker-compose.yml	07/09/2024 8:49 SA	Yaml Source File	2 KB	
Dockerfile	07/09/2024 8:49 SA	File	1 KB	
env.sample	07/09/2024 8:49 SA	SAMPLE File	1 KB	
unicorn-cfg.py	07/09/2024 8:49 SA	Python Source File	1 KB	
LICENSE.md	07/09/2024 8:49 SA	Markdown Source...	1 KB	
README.md	07/09/2024 8:49 SA	Markdown Source...	1 KB	
render.yaml	07/09/2024 8:49 SA	Yaml Source File	1 KB	
requirements.txt	07/09/2024 8:49 SA	Text Document	1 KB	
run.bat	07/09/2024 10:33 SA	Windows Batch File	1 KB	
run.py	07/09/2024 8:49 SA	Python Source File	2 KB	
run.sh	07/09/2024 8:49 SA	Shell Script	1 KB	
Suspicious_Human_Activity_Detection_LRCN_Model_202409.h5	07/09/2024 10:16 SA	H5 File	3.307 KB	
Suspicious_Human_Activity_Detection_LRCN_Model_20240603.h5	07/09/2024 8:49 SA	H5 File	3.308 KB	

Đổi tên mô hình mới trong file: *web_app/apps/predict_on_video.py*



Thực hiện chạy lại ứng dụng sau khi thay đổi mô hình.

