

MLOPs Assignment 1

Group members:

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Workflows/Github Actions

Repository used: <https://github.com/Shawn1993/cnn-text-classification-pytorch>

Forked repository: <https://github.com/Razi202/cnn-text-classification-pytorch>

The github repository we chose consisted of python files. The work done was regarding text classification using CNN (Convolutional Neural Networks). It consists of four .py files:

- Datasets.py: to create the dataset and load it.
- Models.py: to initiate the CNN model for training.
- Train.py: to train the model on the dataset.
- Main.py: to combine all the code and run it altogether.

The files consisted of torch, torchtext, numpy, and datetime libraries.

Initially we forked the repository and created two branches (razi, zeeshan) for each team member. For each branch we create a .github/workflows folder with ql.yaml (for QL purposes) and tester.yaml (for checking code requirements). We created a missing requirement.txt which includes the relevant libraries. Tester.yaml runs these libraries along with the pylint for testing. Here are the two jobs running:

The image displays two screenshots of the GitHub Actions interface. The top screenshot shows the 'CodeQL' workflow with 5 runs. The bottom screenshot shows the 'My Workflow' with 15 runs.

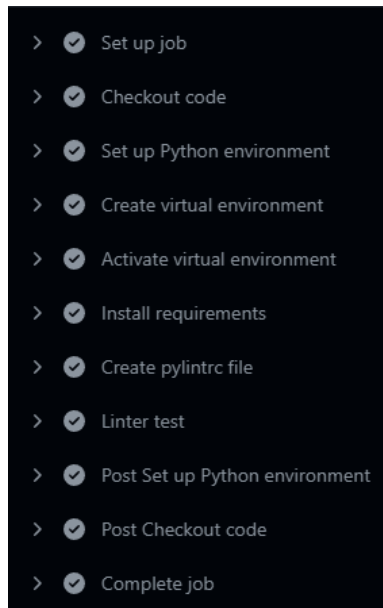
CodeQL Workflow Runs:

Job Name	Commit	Pushed by	Status	Time	Actor
Create tester.yaml	CodeQL #5: Commit 62f9ad5	zeeshan99	Success	41 minutes ago	zeeshan
Create ql.yaml	CodeQL #4: Commit 656210e	zeeshan99	Success	41 minutes ago	zeeshan
Update ql.yaml	CodeQL #3: Commit f3cbb90	Razi202	Success	15 hours ago	razi
Update ql.yaml	CodeQL #2: Commit 36339e0	Razi202	Success	15 hours ago	razi

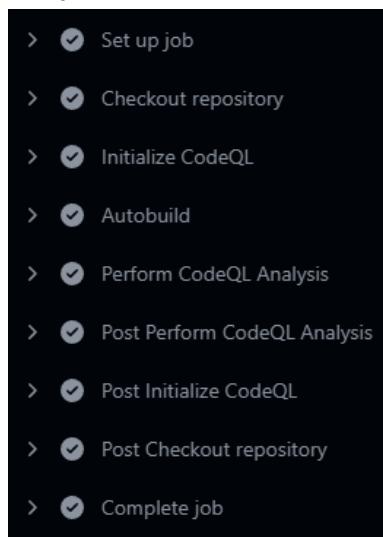
My Workflow Runs:

Job Name	Commit	Pushed by	Status	Time	Actor
Create tester.yaml	My Workflow #15: Commit 62f9ad5	zeeshan99	Success	42 minutes ago	zeeshan
Update ql.yaml	My Workflow #14: Commit f3cbb90	Razi202	Success	15 hours ago	razi
Update ql.yaml	My Workflow #13: Commit 36339e0	Razi202	Success	15 hours ago	razi
Create ql.yaml	My Workflow #12: Commit 83de9d1	Razi202	Success	15 hours ago	razi

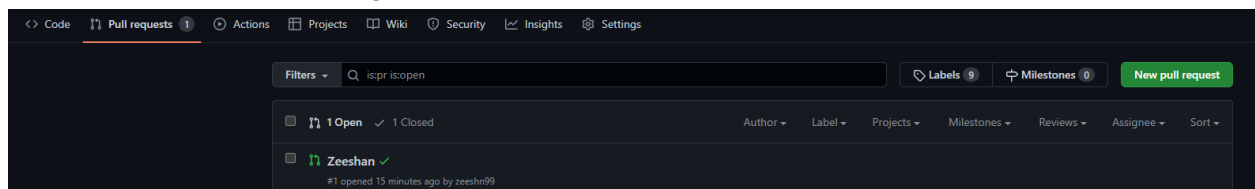
The jobs for My Workflow:



The jobs for CodeQL:



Pull requests were then merged with the main branch:



Jenkins

To set up Jenkins, we used the AWS EC2 machine. The OS we chose was Ubuntu. Afterwards, we configured the machine, such as, setting up security protocols and connection permissions.

```
zeeshan@MSI:/mnt/c/Users/m_ze/Desktop/mlops
zeeshan@MSI:/mnt/c/Users/m_ze/Desktop/mlops$ sudo ssh -i "mlops_ec2.pem" ubuntu@ec2-18-188-159-36.us-east-2.compute.amazonaws.com
[sudo] password for zeeshan:
[sudo] password for zeeshan:
The authenticity of host 'ec2-18-188-159-36.us-east-2.compute.amazonaws.com (18.188.159.36)' can't be established.
ED25519 key fingerprint is SHA256:j0ai27Kr8/W7jYnrtD6Ha53dVzc7aB7jDdZfgQ3A.
[This key is not known by any other names]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-18-188-159-36.us-east-2.compute.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Fri Feb 24 13:21:07 UTC 2023

System load: 0.02734375      Processes:           106
Usage of /:  19.8% of 7.5GB   Users logged in:     0
Memory usage: 19%           IPv4 address for eth0: 172.31.32.141
Swap usage:  0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

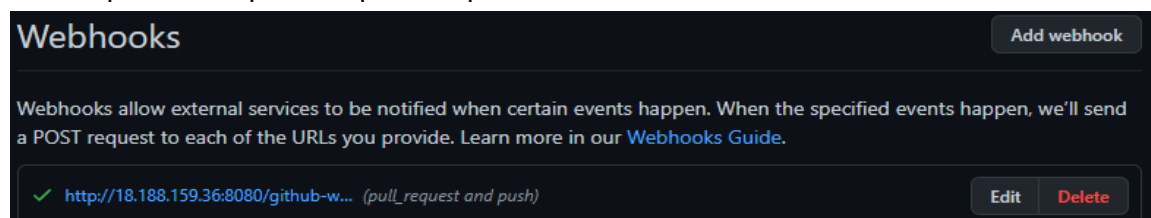
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-32-141:~$ curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee \
> /usr/share/keyrings/jenkins-keyring.asc & /dev/null
ubuntu@ip-172-31-32-141:~$ echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
> https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
> /etc/apt/sources.list.d/jenkins.list & /dev/null
ubuntu@ip-172-31-32-141:~$ sudo apt-get update
```

Using the command below we received the password for Jenkins which we used to login. It was after this step, Jenkins installed the requirements needed to run.

```
ubuntu@ip-172-31-32-141:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
5551-01-55510000007550-1-0-0
```

We set up the admin of Jenkins and in order to connect with Github, we created a hookup which was responsive to pull and push requests.



We created a new project on Jenkins and provided it with our github repository. Afterwards we built the github hook triggers. We used the execution shell to run the command to check the code. The following snippet shows the result.

Dashboard

mlops_A1

#2

Status

Changes

Console Output

Edit Build Information

Delete build "#2"

Polling Log

Git Build Data

Previous Build

Build #2 (Feb 24, 2023, 2:10:59 PM)

Keep this build forever

Started 21 sec ago

Took 4.5 sec

Changes

1. Update tester.yaml (details / githubweb)

Started by GitHub push by Razi202

Revision: 5c6f94d066d28fece0582dde4bea58436717e9d9

Repository: <https://github.com/Razi202/cnn-text-classification-pytorch.git>

refs/remotes/origin/master

REST API

Jenkins 2.375.3