

AUTOMATION OF THE PROCESS OF IMPROVEMENT OF A MODEL FOR CNN USING JENKINS, DOCKER AND GIT

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UNDER THE GUIDANCE OF MR. VIMAL DAGA SIR

Tasks that have been performed here include:

- 1. Create container image that's has Python3 and Keras or numpy installed using dockerfile**
- 2. When we launch this image, it should automatically starts train the model in the container.**
- 3. Create a job chain of job1, job2, job3, job4 and job5 using build pipeline plugin in Jenkins**
- 4. Job1 : Pull the Github repo automatically when some developers push repo to Github.**
- 5. Job2 : By looking at the code or program file, Jenkins should automatically start the respective machine learning software installed interpreter install image container to deploy code and start training(eg. If code uses CNN, then Jenkins should start the container that has already installed all the softwares required for the cnn processing).**
- 6. Job3 : Train your model and predict accuracy or metrics.**
- 7. Job4 : if metrics accuracy is less than 80% , then tweak the machine learning model architecture.**
- 8. Job5: Retrain the model or notify that the best model is being created**
- 9. Create One extra job job6 for monitor : If container where app is running. fails due to any reason then this job should automatically start the container again from where the last trained model left**

All the required files have been attached in the github link provided here:

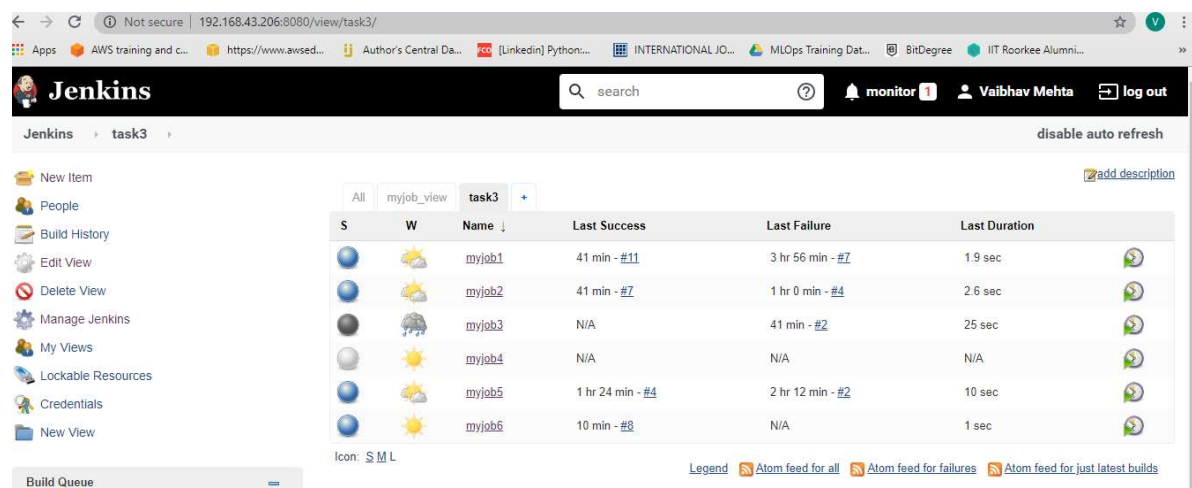
https://github.com/Vaibhav-Mehta-19/mlops_task3.git

All the user needs to do is to clone the given repo in the local repo and then perform the steps for setting up the Jenkins jobs to perform the complete automation of the process of manually add and removing layers in the process of creating a model for training a CNN.

The user also needs to run the Dockerfile provided in the repo for creating a new docker image using

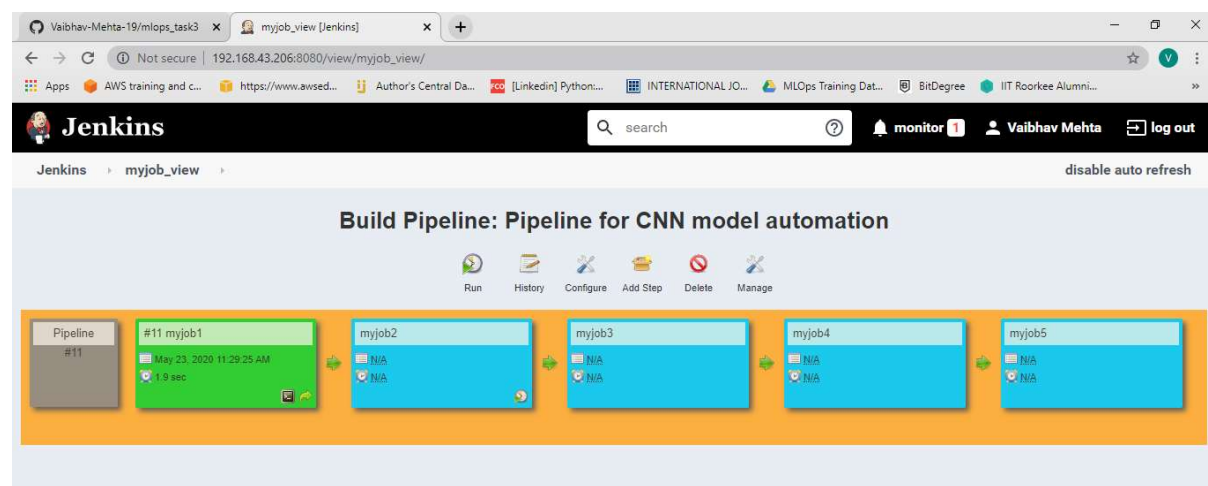
```
docker build --tag name:v1 .
```

in the same folder. Then all the processes will be automated using the Jenkins by following the jobs as created below.



The screenshot shows the Jenkins dashboard with the 'task3' view selected. The dashboard includes a sidebar with navigation options like 'New Item', 'People', 'Build History', etc. The main area displays a table of jobs with columns for status, name, last success, last failure, and last duration.

S	W	Name	Last Success	Last Failure	Last Duration
🌍	☀️	myjob1	41 min - #11	3 hr 56 min - #7	1.9 sec
🌍	☀️	myjob2	41 min - #7	1 hr 0 min - #4	2.6 sec
🌍	☀️	myjob3	N/A	41 min - #2	25 sec
🌍	☀️	myjob4	N/A	N/A	N/A
🌍	☀️	myjob5	1 hr 24 min - #4	2 hr 12 min - #2	10 sec
🌍	☀️	myjob6	10 min - #8	N/A	1 sec



The screenshot shows the Jenkins 'Build Pipeline: Pipeline for CNN model automation' view. It displays a sequence of jobs in a pipeline: Pipeline #11, myjob1, myjob2, myjob3, myjob4, and myjob5. Each job has a status icon and a duration. The pipeline is visualized as a sequence of steps connected by arrows.

JOB1:

Source Code Management

☐ None
☒ Git

Repositories

Repository URL

Credentials


Branches to build

Branch Specifier (blank for 'any')

Build Triggers

☐ Trigger builds remotely (e.g., from scripts)
☐ Build after other projects are built
☐ Build periodically
☐ GitHub hook trigger for GITScm polling
☒ Poll SCM

Schedule

 Do you really mean "every minute" when you say "*****"? Perhaps you meant "H * * * *" to poll once per hour
Would last have run at Saturday, May 23, 2020 12:13:13 PM EDT; would next run at Saturday, May 23, 2020 12:13:13 PM EDT.

Build


☒ Execute shell


Command

[See the list of available environment variables](#)

JOB2

Build Triggers

☐ Trigger builds remotely (e.g., from scripts) 


☒ Build after other projects are built 


Projects to watch


☒ Trigger only if build is stable

☐ Trigger even if the build is unstable



☐ Trigger even if the build fails

☐ Build periodically 

☐ GitHub hook trigger for GITScm polling 

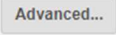
☐ Poll SCM 

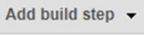
Build

 **Execute shell**  

Command


See [the list of available environment variables](#)






JOB3

Build Triggers

☐ Trigger builds remotely (e.g., from scripts) 


☒ Build after other projects are built 


Projects to watch


☒ Trigger only if build is stable

☐ Trigger even if the build is unstable

☐ Trigger even if the build fails

☐ Build periodically 

☐ GitHub hook trigger for GITScm polling 

☐ Poll SCM 

Build

Execute shell

Command

```
cd /cnn/ml_ops_task3
python create.py
sudo docker exec mydocker python3 /data/codefile.py
```

See [the list of available environment variables](#)

Advanced...

JOB4

Build Triggers

☐ Trigger builds remotely (e.g., from scripts)

☒ Build after other projects are built

Projects to watch

myjob3,

☒ Trigger only if build is stable

☐ Trigger even if the build is unstable

☐ Trigger even if the build fails

Build

Execute shell

Command

```
cd /cnn/ml_ops_task3
python update.py
```

See [the list of available environment variables](#)

Advanced...

Add build step

JOB5

Build Triggers

Build Triggers

☐ Trigger builds remotely (e.g., from scripts)

☒ Build after other projects are built

Projects to watch

myjob4,

☒ Trigger only if build is stable

☐ Trigger even if the build is unstable

☐ Trigger even if the build fails

☐ Build periodically

☐ GitHub hook trigger for GITScm polling

☐ Poll SCM

Post-build Actions

Post-build Actions

Editable Email Notification

Disable Extended Email Publisher ☐

Allows the user to disable the publisher, while maintaining the settings

Project From

Project Recipient List

mehta8292@gmail.com

Comma-separated list of email address that should receive notifications for this project.

Project Reply-To List

SDEFAULT_REPLYTO

Comma-separated list of email address that should be in the Reply-To header for this project.

Content Type

Plain Text (text/plain)

Default Subject

Completed

Default Content

Best model has been completed.

Console Output

```
Started by user Vaibhav Mehta  
Running as SYSTEM  
Building in workspace /var/lib/jenkins/workspace/myjob5  
No emails were triggered.  
[myjob5] $ /bin/sh -xe /tmp/jenkins2949283948815297433.sh  
+ sleep 10  
Email was triggered for: Success  
Sending email for trigger: Success  
Sending email to: mehta8292@gmail.com  
Finished: SUCCESS
```

JOB6

Build Triggers

- ☐ Trigger builds remotely (e.g., from scripts)
- ☐ Build after other projects are built
- ☒ Build periodically

Schedule

1 * * * *

 Spread load evenly by using 'H * * * *' rather than '1 * * * *'

Would last have run at Saturday, May 23, 2020 12:01:06 PM EDT; would next run at Saturday, May 23, 2020 1:01:06 PM EDT.

- ☐ GitHub hook trigger for GITScm polling

Build

Execute shell

Command

```
if sudo docker ps | grep mydocker  
then  
  echo "Docker is running no failure"  
else  
  echo "There is an error in the system"  
fi
```

See [the list of available environment variables](#)

Advanced...

Add build step ▾

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