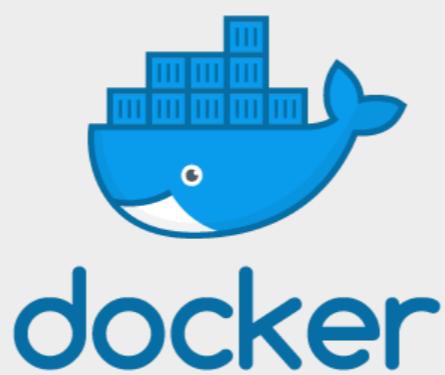




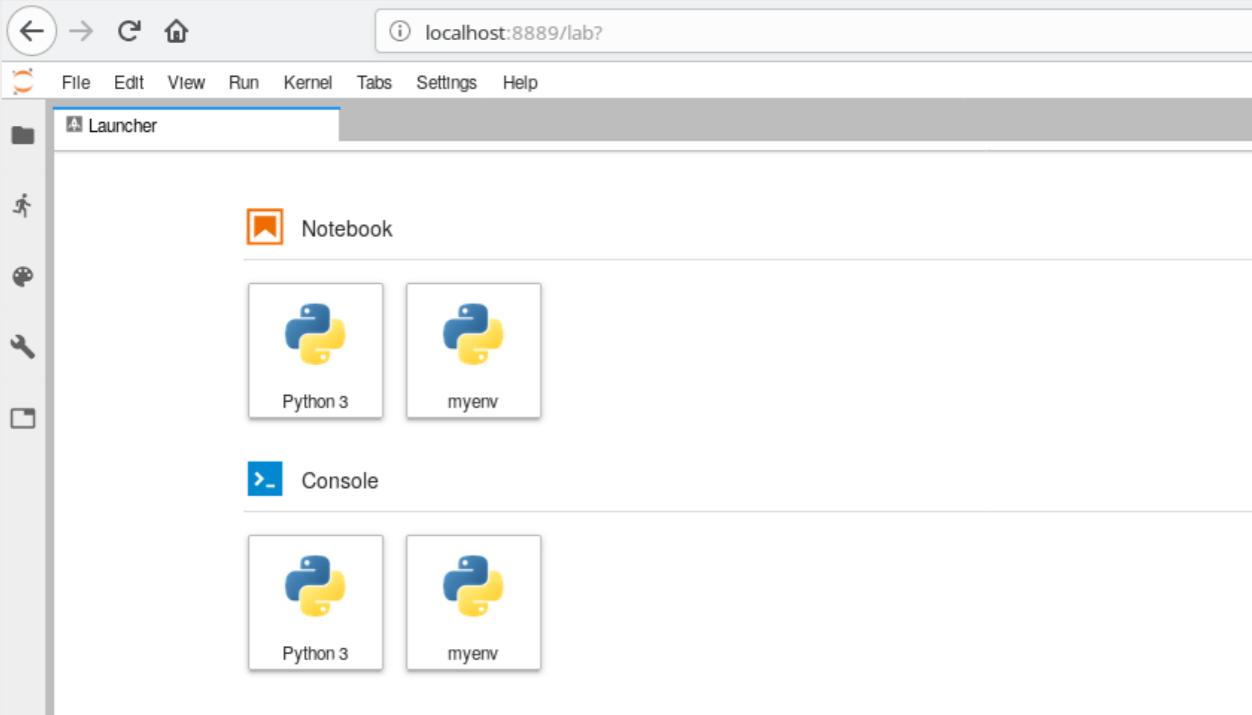
A brief introduction to virtual environments

Bora Ozaltun

CONDA

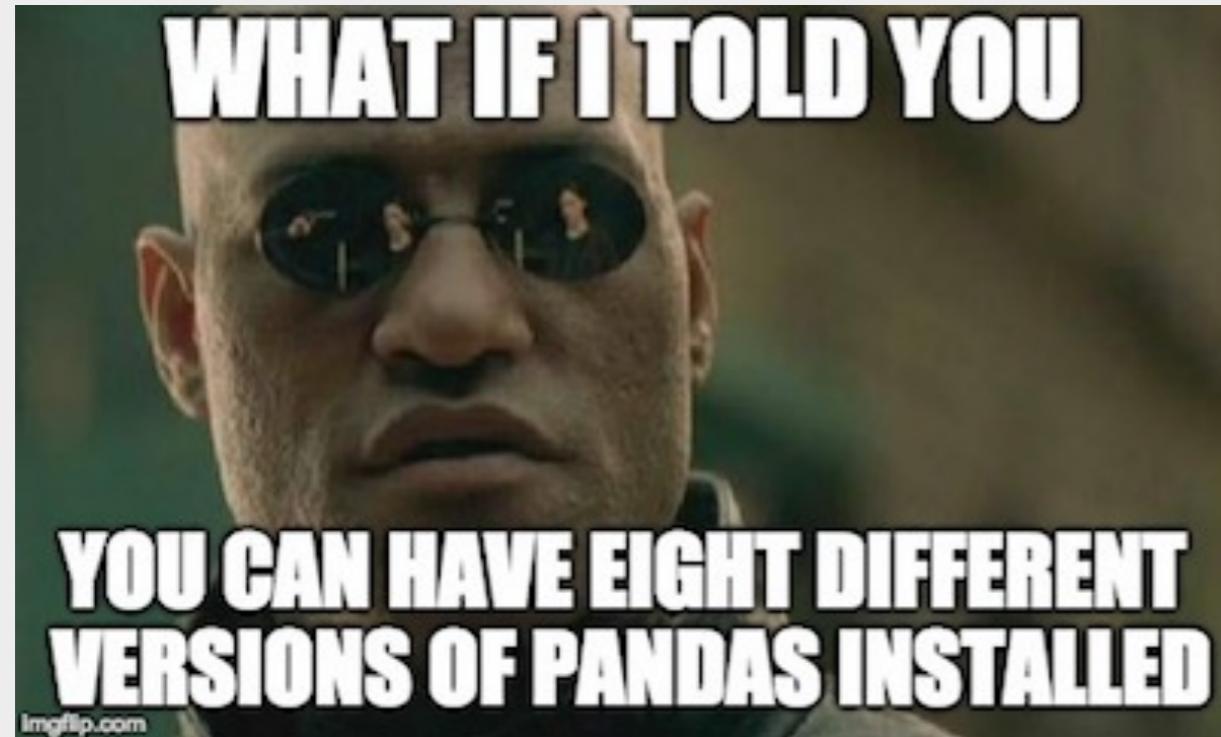


Application 1: Adding it to Jupyter Notebook



- Virtual environments can let you have multiple environments for launching a jupyter notebook:
 1. Python 2 and Python 3
 2. TensorFlow, PyTorch, Keras
- Tutorial:
 - <https://janakiev.com/til/jupyter-virtual-envs/>

Application 2: Keeping many versions of a package

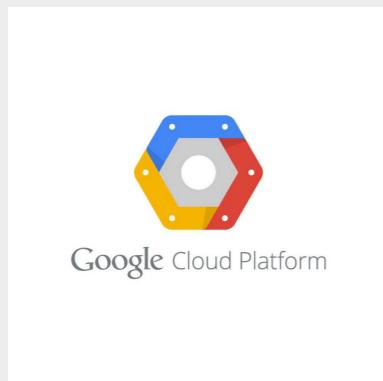


- Install different versions of the same package in different environments!!
- Crush all future bugs that are due to version update

Application 3: Remote servers or Cloud computation



- Any application that you would like to deploy on some cloud application or cluster or servers that aren't local will benefit from using some type of virtual environment



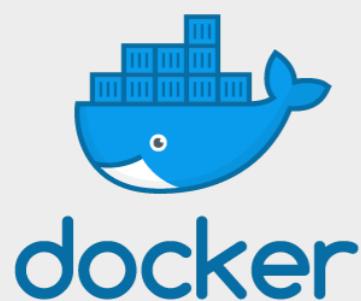
What is a virtual environment?



- Virtual environment framework for python

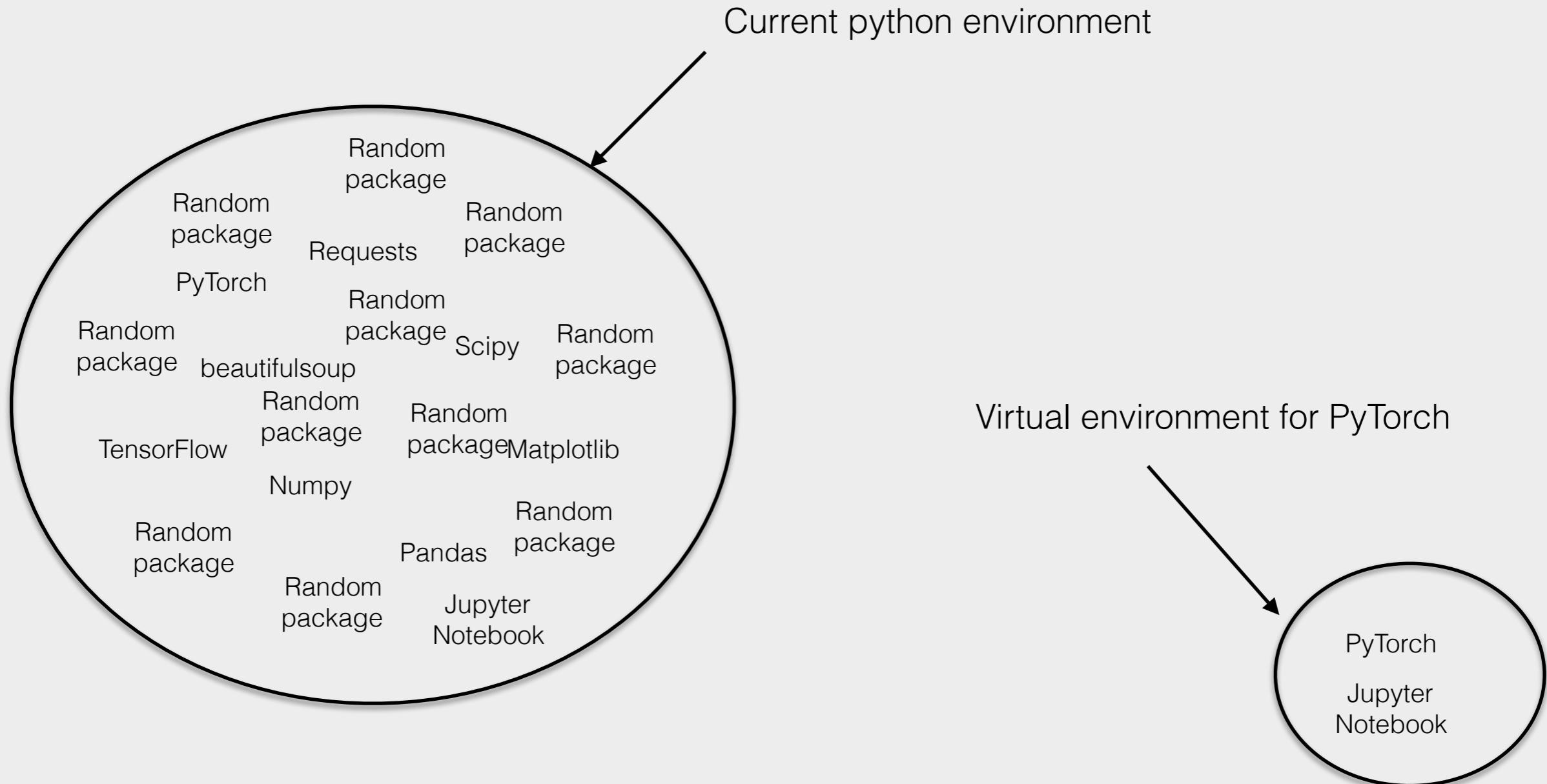


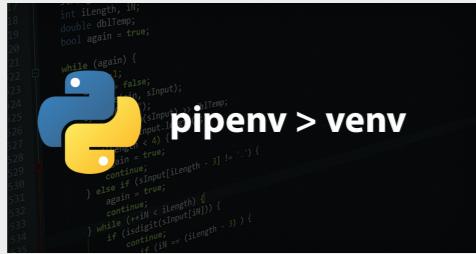
- Virtual environment framework for conda



- Virtual environment on a OS level

What is a virtual environment?





>> pip install virtualenv

- Very useful when starting a new project. If you want a project to be scalable, re-usable, and sustainable: SOME KIND OF VENV IS NECESSARY
- How to create a venv in a project folder?

>> cd new_project

>> virtualenv venv OR python3 -m venv env

- Now that it has been created, you must enter the “virtual” env:

>> source venv/bin/activate

- Pip is pre-installed!!! Go crazy and install all the packages you want.
- To exit environment:

>> deactivate



```
1 int ilength, ih;
2 double ob1fnew;
3 bool again = true;
4
5 while (again) {
6     ih = false;
7     cin >> sInput;
8     if (sInput == "temp") {
9         again = true;
10        continue;
11    } else if ((sInput.length - 3) != -1) {
12        again = true;
13        continue;
14    } else if (sInput.length == 3) {
15        if (!isdigit(sInput[0])) {
16            again = true;
17        }
18    }
19 }
```

pipenv > venv

>> pip install virtualenv

- Done with a project? Want to copy your environment to somewhere else? Create a requirements file:

>> pip freeze > requirements.txt

- Want to create a repository and not upload venv:

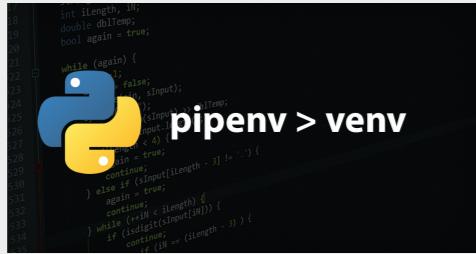
>> git init

>> echo 'venv' > .gitignore

- Created a new venv and want to install all files from a requirements.txt file?

>> pip install -r requirements.txt

- People also use **virtualenvwrapper** or **pipenv**



- Virtualenv with conda tutorial:

- <https://uoa-eresearch.github.io/eresearch-cookbook/recipe/2014/11/20/conda/>

Project 1: Social Media Data Warehousing

- Objective: For all artists of interest, collect information on a regular basis



serverless.yml

```
12 # Happy Coding!
13
14 service: dailyPull
15
16 # You can pin your service to only deploy with a specific Serverless version
17 # Check out our docs for more details
18 # frameworkVersion: "=X.X.X"
19 frameworkVersion: ">=1.1.0 <2.0.0"
20
21 provider:
22   name: aws
23   runtime: python3.6
24   environment:
25     DYNAMODB_TABLE: ${self:service}-${opt:stage, self:provider.stage}
26     MYEMAIL: ${ssm:MYEMAIL}
27     SPOTIFY_CLIENT_ID: ${ssm:SPOTIFY_CLIENT_ID}
28     SPOTIFY_CLIENT_SECRET: ${ssm:SPOTIFY_CLIENT_SECRET}
29   iamRoleStatements:
30     - Effect: Allow
31       Action:
32         - dynamodb:Query
33         - dynamodb:Scan
34         - dynamodb:GetItem
35         - dynamodb:PutItem
36         - dynamodb:UpdateItem
37         - dynamodb:DeleteItem
38     Resource: "arn:aws:dynamodb:${opt:region, self:provider.region}::table/${self:provider.environment.DYNAMODB_TABLE}"
39
40 functions:
41   daily:
42     handler: create.daily
43     events:
44       - schedule: rate(1 day)
45 resources:
46   Resources:
47     TodosDynamoDbTable:
48       Type: 'AWS::DynamoDB::Table'
49       DeletionPolicy: Retain
50       Properties:
51         AttributeDefinitions:
52           -
53             AttributeName: Artist
54             AttributeType: S
55           -
56             AttributeName: Date
57             AttributeType: S
58         KeySchema:
59           -
60             AttributeName: Artist
61             KeyType: HASH
62           -
63             AttributeName: Date
64             KeyType: RANGE
65         ProvisionedThroughput:
66           ReadCapacityUnits: 5
67           WriteCapacityUnits: 5
68         TableName: ${self:provider.environment.DYNAMODB_TABLE}
69
70 plugins:
71   - serverless-python-requirements
72
73 custom:
74   pythonRequirements:
75     dockerizePip: non-linux
76
```



Scrape web
on daily basis

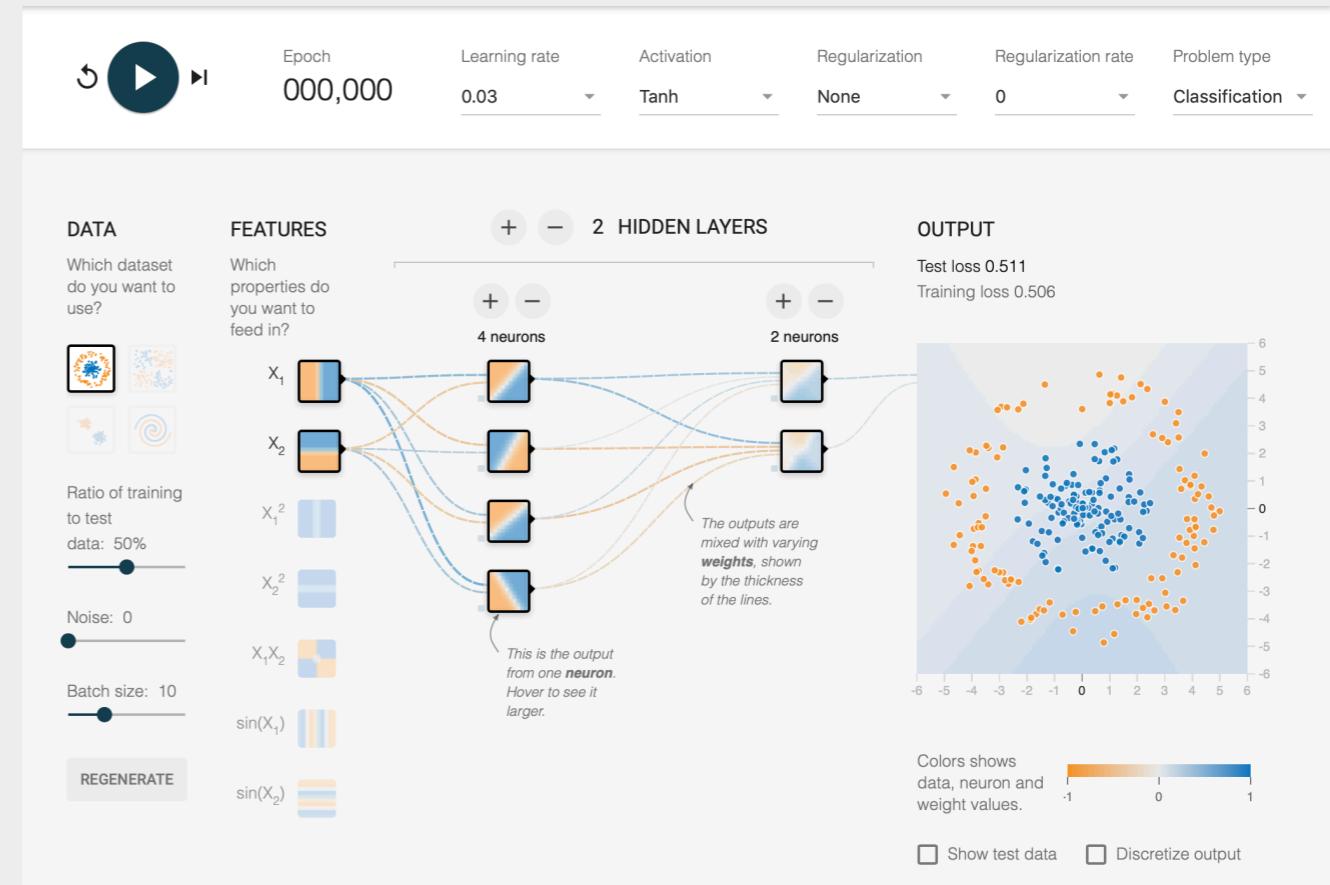


API



Wasting time with Neural Nets

- Tensorflow playground



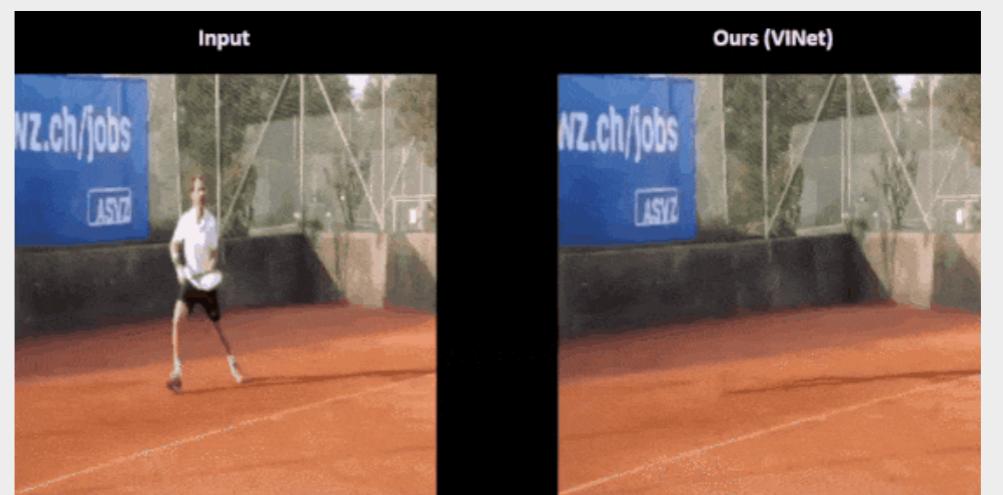
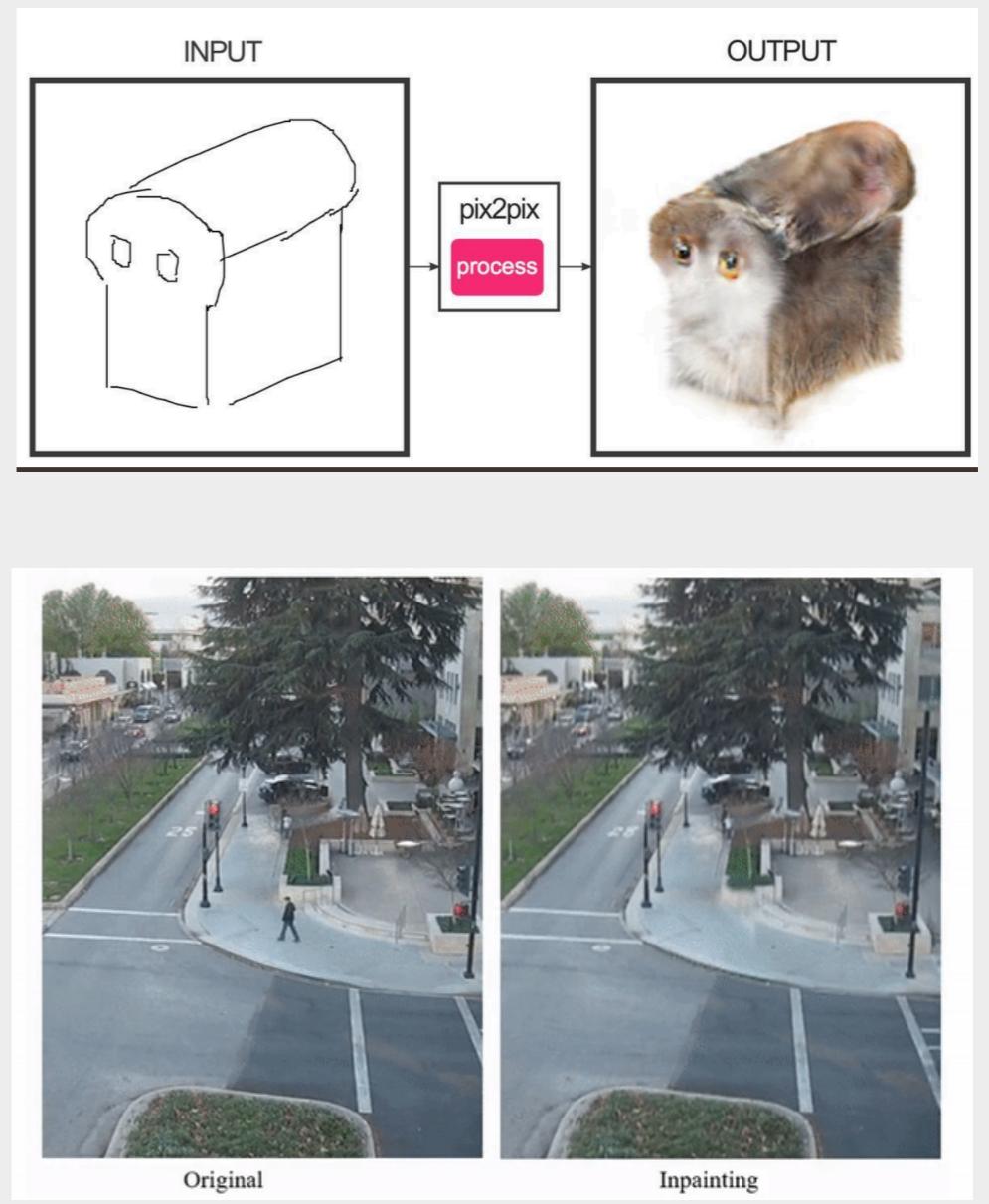
TensorFlow Hub

- Neural net generated rap song

- Colab notebooks

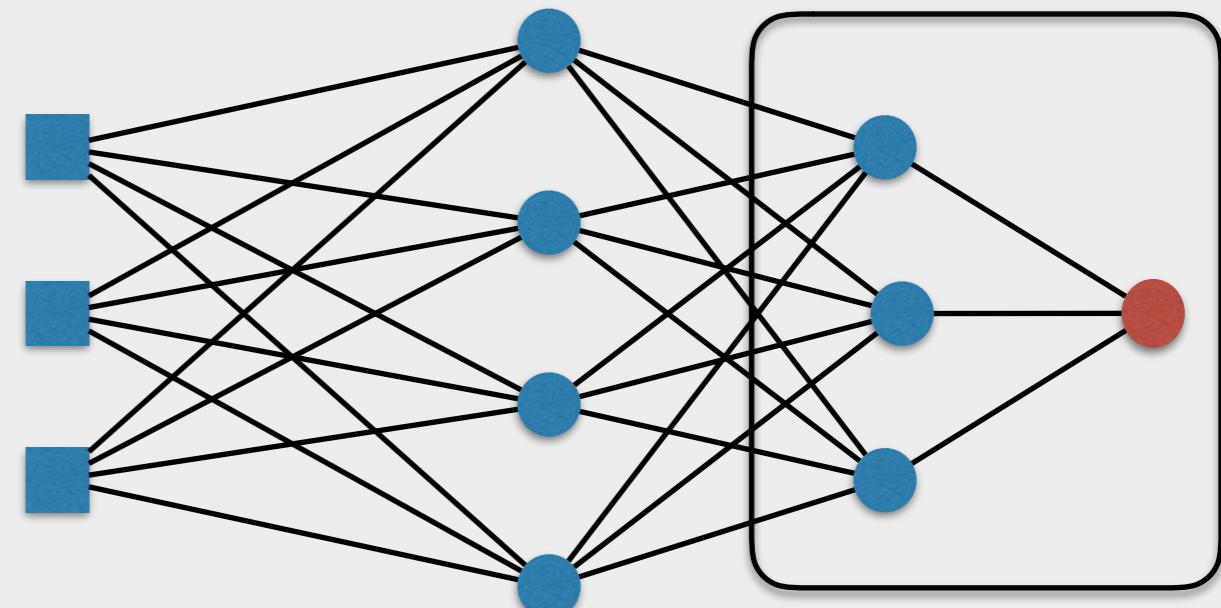
Wasting time with GANs

- Pix-2-pix
- CycleGAN
- Object removal
- Portrait GAN
- Fake people



Wasting time with Tutorials

- If you are interested in a quick tutorial to use venv and Transfer Learning I have created a very basic repository so that you can work with both!
- The transfer learning tutorial is a copy of the PyTorch Transfer Tutorial:
https://pytorch.org/tutorials/beginner/transfer_learning_tutorial.html
- GitHub repository:
git clone <https://github.com/ozaltun/PyTorch-TransferLearning-Tutorial>



1. Initialize weights with pertained weights
2. Train on last layers

Thanks for listening!

Bora Ozaltun