



Pragmatic ML development

with SciKit-Learn & TensorFlow using Google ML Engine

Google Cloud Platform



@ZackAkil

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Why is your code not working on my machine?

2

How's the model coming along?

3

How do we put your model in our app?

Why is your code not working on my machine?

Reproducing code

```
scikit-image==0.13.1  
scikit-learn==0.19.2  
scipy==0.19.1  
seaborn==0.7.1  
simplegeneric==0.8.1  
six==1.11.0  
spacy==2.0.12  
statsmodels==0.8.0  
sympy==1.1.1  
tensorboard==1.10.0  
tensorflow==1.11.0rc2  
tensorflow-hub==0.1.1
```



requirements.txt

The meetup scenario (extreme reproducibility)

Local environment

setting up

doing the lesson

kaggle



colab.research.google.com

Collaborative Jupyter Notebooks

co

Hello, Collaboratory

File Edit View Insert Runtime Tools Help

CODE TEXT CELL CELL COPY TO DRIVE

CONNECT EDITING

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SECTION

co

Welcome to Collaboratory!

Collaboratory is a free Jupyter notebook environment that requires no setup and runs entirely in the cloud. See our [FAQ](#) for more info.

Getting Started

- [Overview of Collaboratory](#)
- [Loading and saving data: Local files, Drive, Sheets, Google Cloud Storage](#)
- [Importing libraries and installing dependencies](#)
- [Using Google Cloud BigQuery](#)
- [Forms, Charts, Markdown, & Widgets](#)
- [TensorFlow with GPU](#)
- [Machine Learning Crash Course: Intro to Pandas & First Steps with TensorFlow](#)

Highlighted Features

Seedbank

Looking for Colab notebooks to learn from? Check out [Seedbank](#), a place to discover interactive machine learning examples.

TensorFlow execution

Collaboratory allows you to execute TensorFlow code in your browser with a single click. The example below adds two matrices.

$$\begin{bmatrix} 1. & 1. & 1. \\ 1. & 1. & 1. \end{bmatrix} + \begin{bmatrix} 1. & 2. & 3. \\ 4. & 5. & 6. \end{bmatrix} = \begin{bmatrix} 2. & 3. & 4. \\ 5. & 6. & 7. \end{bmatrix}$$

```
[ ] import tensorflow as tf

input1 = tf.ones((2, 3))
input2 = tf.reshape(tf.range(1, 7, dtype=tf.float32), (2, 3))
output = input1 + input2

with tf.Session():
    result = output.eval()
    result
```

array([[2., 3., 4.],
 [5., 6., 7.]], dtype=float32)

CODE TEXT

GitHub

You can save a copy of your Colab notebook to Github by using File > Save a copy to Github...

You can load any .ipynb on Github by just adding the path to colab.research.google.com/github/. For example, [colab_research.google.com/github/tensorflow/models/blob/master/samples/core/get_started/_index.ipynb](#) will load [this .ipynb](#) on Github.

Colab Demo

[Fix_my_code_buddy.ipynb](#)

Working in a temporary environment

- Forces you to write more repeatable code
- Pushes you to remotely stored data
- Forces you to explicitly install non-standard libraries
E.g [this image processing notebook](#)



Cloud Storage

How's the model coming along?

Project approach

- 1 Is ML a want or a need?
- 2 Productionise every model
- 3 Stop when you have a “good enough” model

Want or need?

If you don't need ML,
but you want to learn about it,
then you need it.

(for educational purposes)

Deploy every model*



Cloud Functions

- Might already be good enough
(*so you can stop there*)
- Gives the application developers something to work with
- Quickly confirms if the project is going in the right direction

*Especially the heuristic model

Not Iris dataset



Petal Length

Petal Width

Sepal Length

Sepal Width



not Setosa

not Versicolor

not Virginica

Cloud Functions demo

[notebook](#)

How do we put your model in our app?

Deploying every model with ML Engine



XGBoost



Cloud ML Engine



Cloud ML Engine Demo

[notebook](#)

Final pragmatic advice



Manage expectations!

Machine Learning is mostly experimental,

It's not guaranteed to work.



Thank you

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