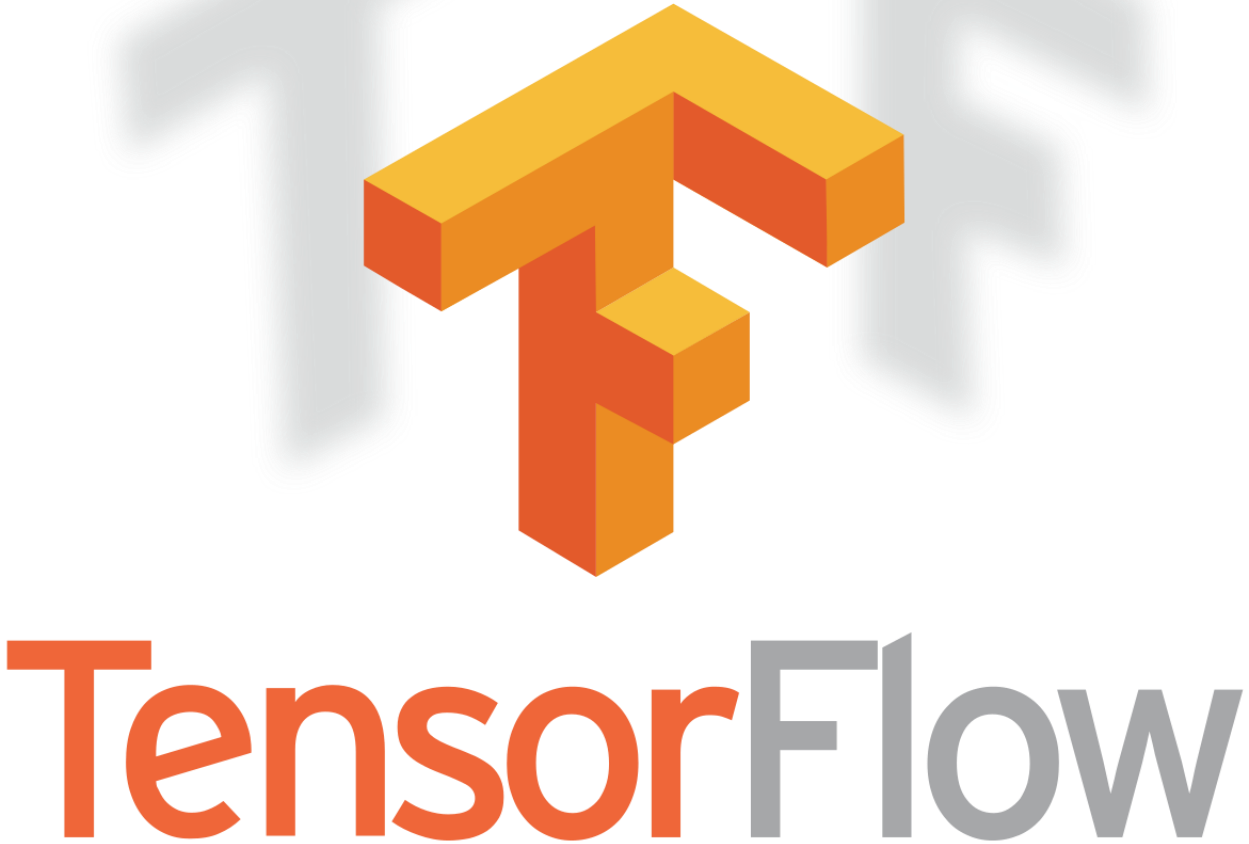
NOTE TO VIEWER

PLEASE VIEW THE SLIDES IN SLIDESHOW MODE TO BENEFIT FROM THE ANIMATIONS ADDED TO THE CONTENT



A Field Guide To TensorFlow Contribution

Srishti Yadav

The Vancouver Open Source Software Event
Microsoft, Vancouver
November 28, 2019

ABOUT ME

- **Graduate** Researcher at Simon Fraser University
- Develops **computer vision algorithm** for low power processing units
- Comes from a background in **Electronics** Engineering, later switched to **Computer Science**
- **Organizer** of **Women in Machine Learning workshop** (NeurIPS'19).
- **Organizer** of **Women in Computer Vision workshop** (CVPR'20)
- **Organizer** of developer community **meetups** in Vancouver.

Belief: Open Source used in research (read 'academia') should be reproducible.

MY STORY: HOW I ENTERED OPEN SOURCE?

Message in #general

We are hosting an Internati
are looking for a tech speal
'might' include but not limite
started, selection of local p

The event link: https://www

I was hoping if you can pro

Srishti
Mar 13th at 10:20 AM

of downtown Vancouver. We
g for a discussion which
e projects, the tools to get

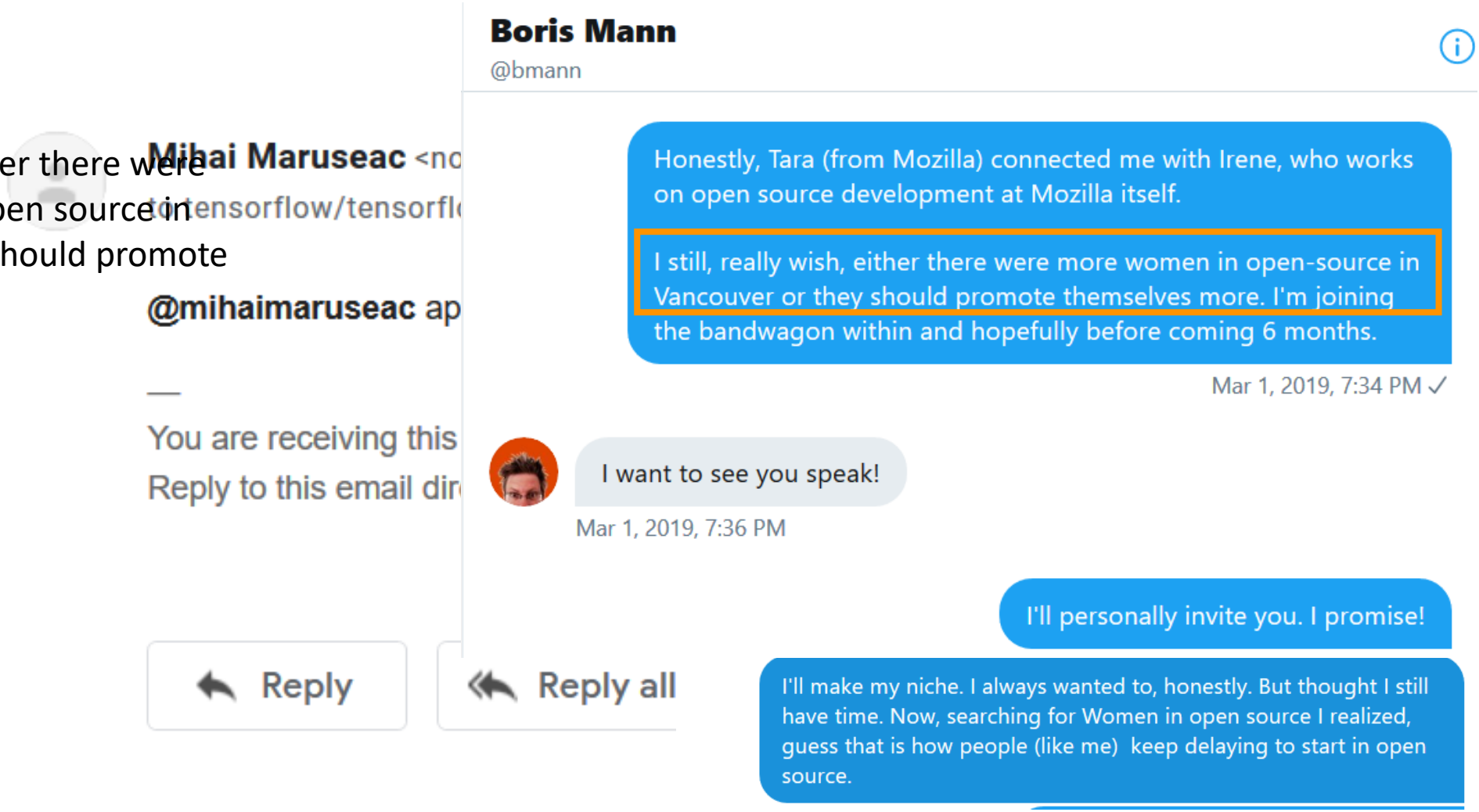
How do you reply to potential women speakers when they say that 'Thank you for considering but I'll have to pass because I can see the value and importance but not personally motivated enough to talk in a Women in X series'. Though the replies are pretty nicely written , how should we respond back?

Here X was Open Source

MY STORY: HOW I ENTERED OPEN SOURCE?

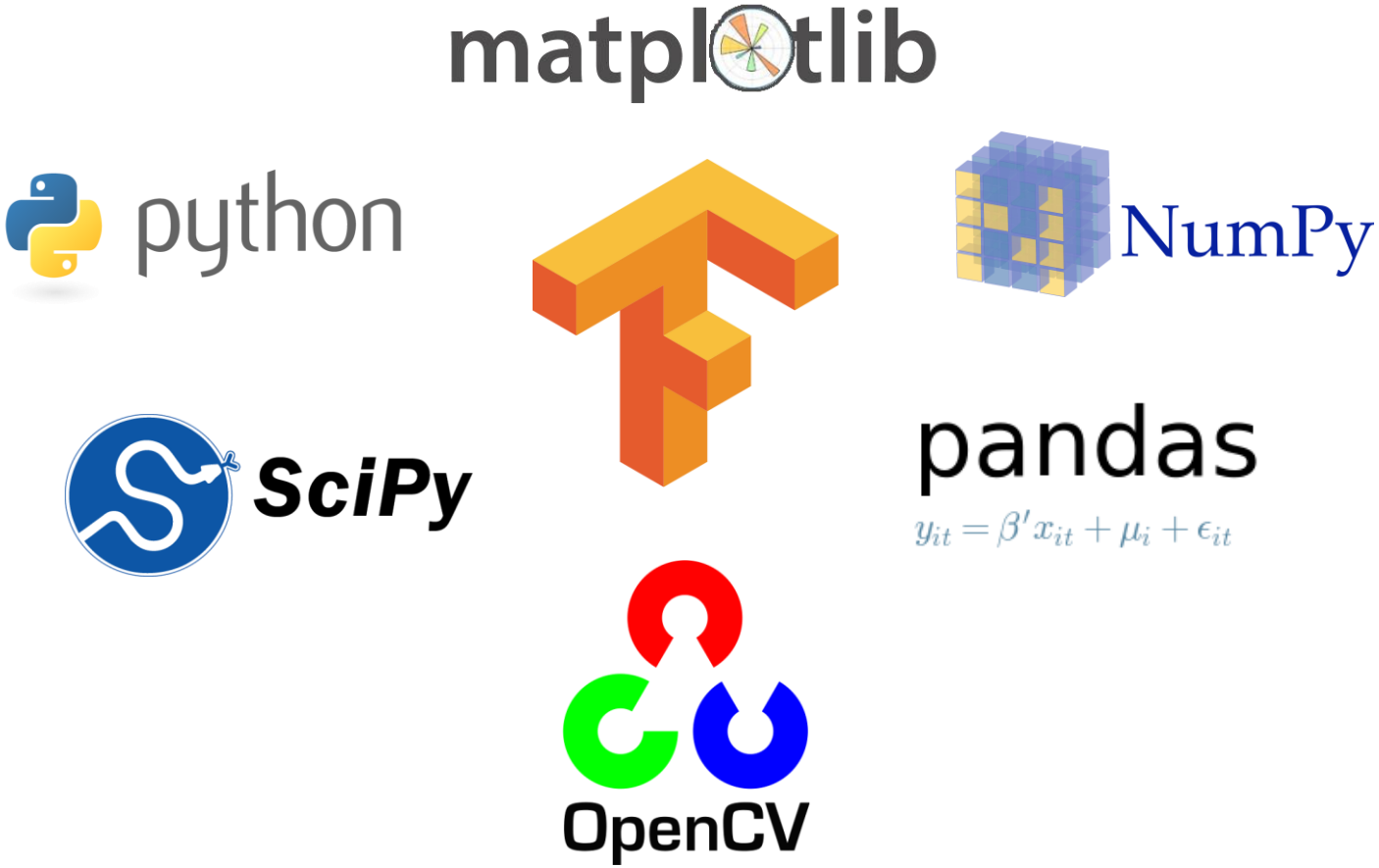
And one day..

“ I really wish, either there were more women in open source in Vancouver or thy should promote themselves more.”

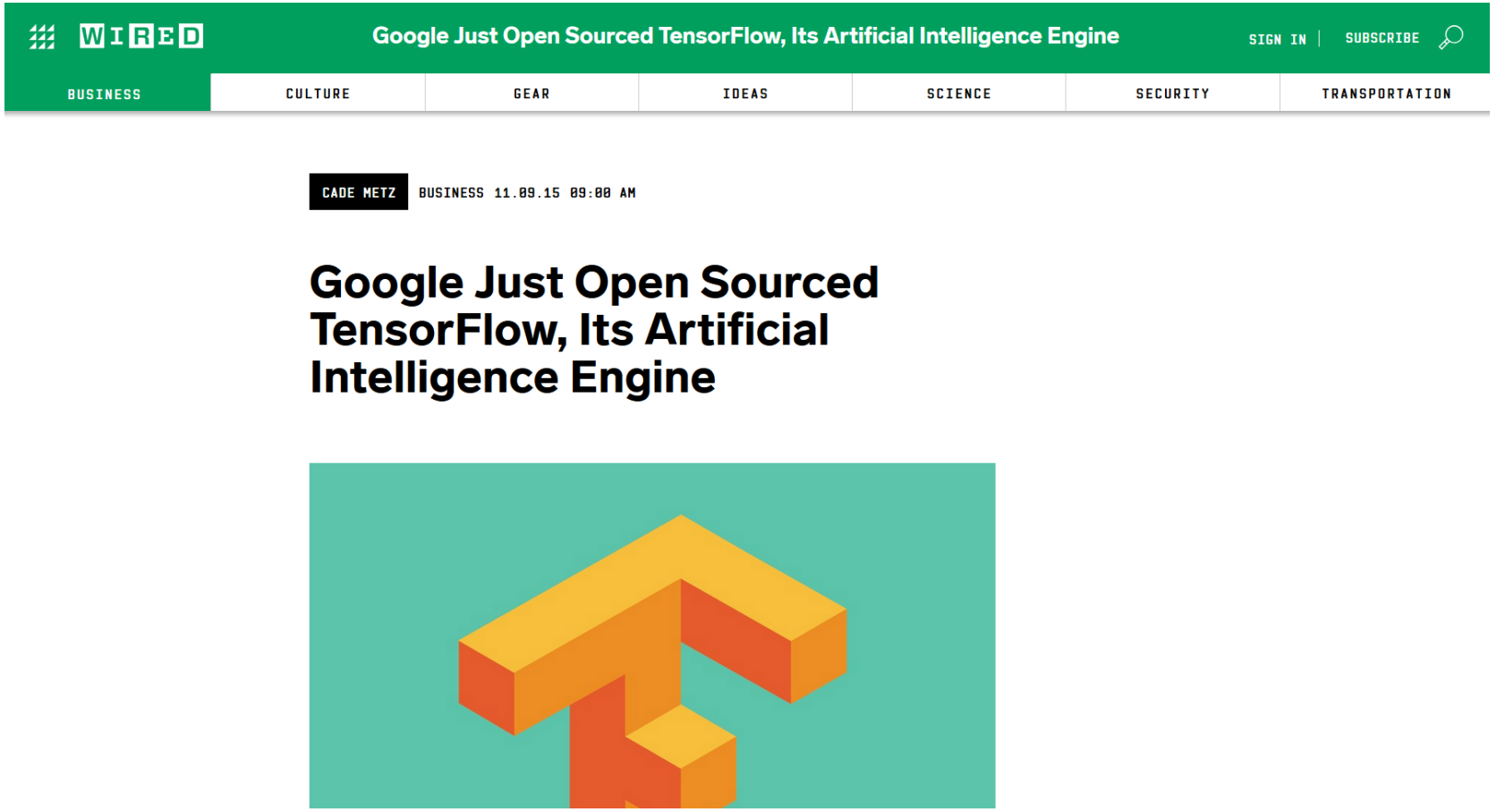


BUT WHY TENSORFLOW ?

Because I work with it and hence comfortable with the language.
Reason for choice can be simple!



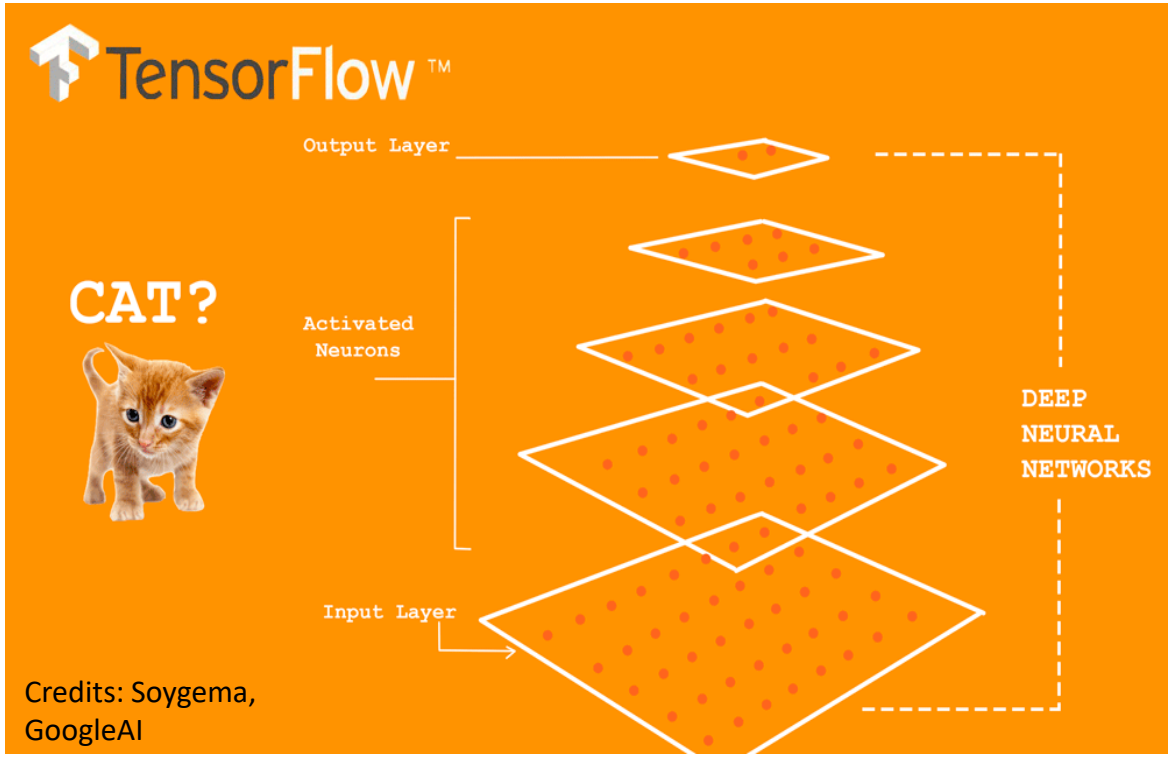
TENSORFLOW: IT ALL STARTED IN LATE 2015



WHAT IS TENSORFLOW AND HOW IT WORKS?

https://www.tensorflow.org/

TF is an open-source library for numerical computation and large scale machine learning

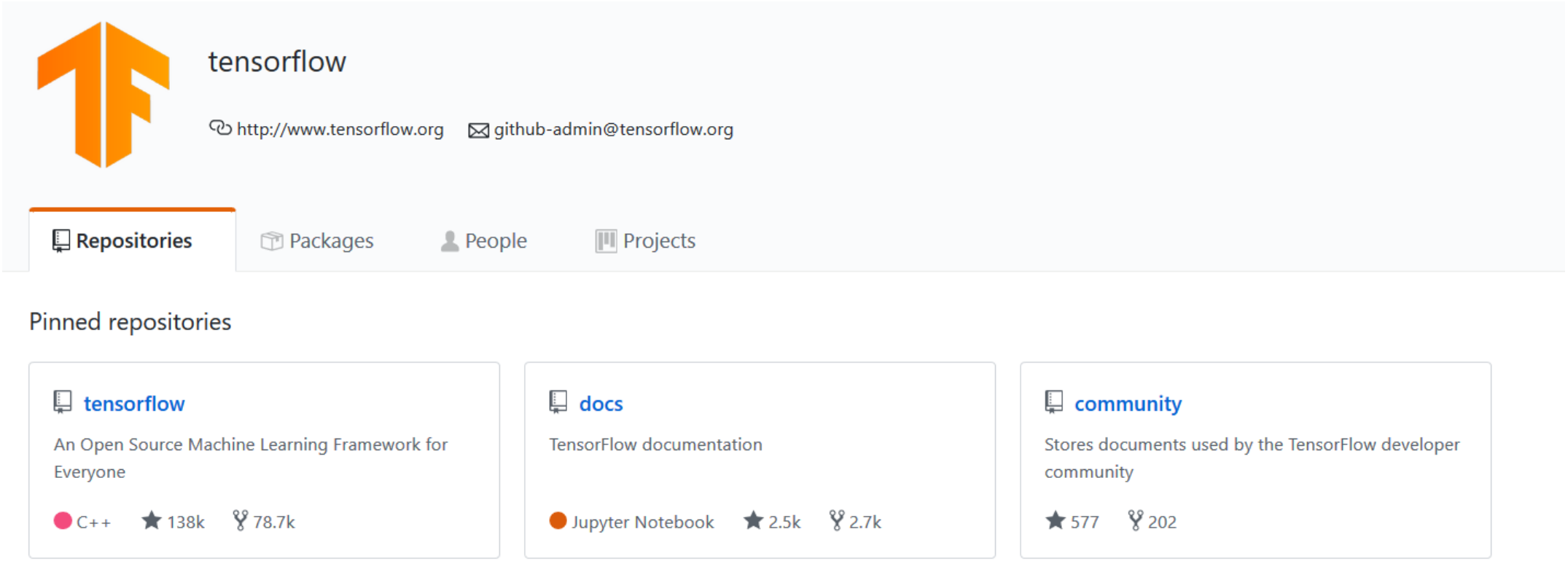


python provides a convenient **front-end** API for building applications

C++ **executes** those applications in high-performance

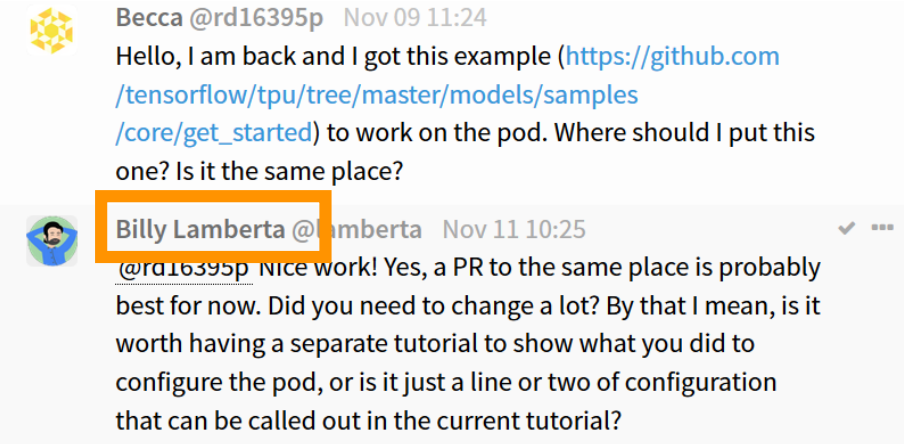
WHERE TO START ?

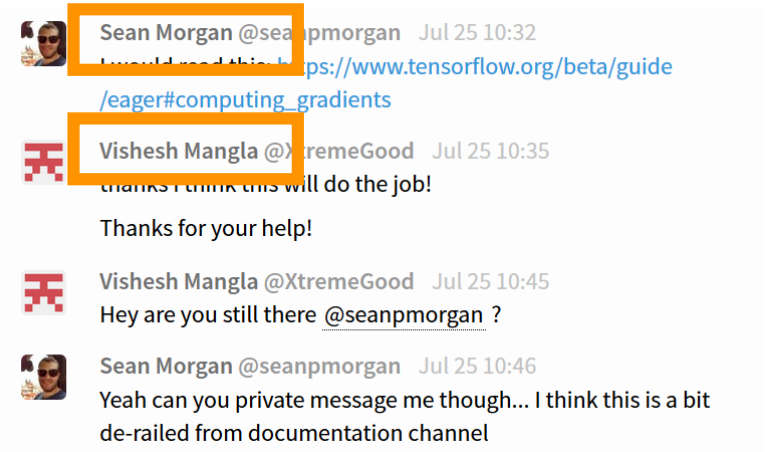
The easiest part: https://github.com/tensorflow



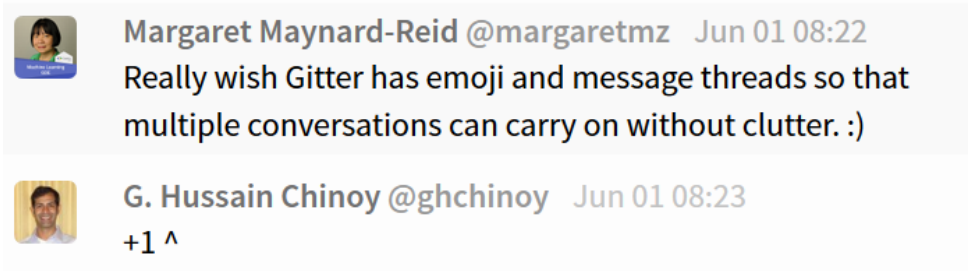
Gitter Chat Room

- Rooms: https://gitter.im/tensorflow/ ; **Docs** is a good place to start
- Good place to ask **smaller questions** and **interesting conversations:**

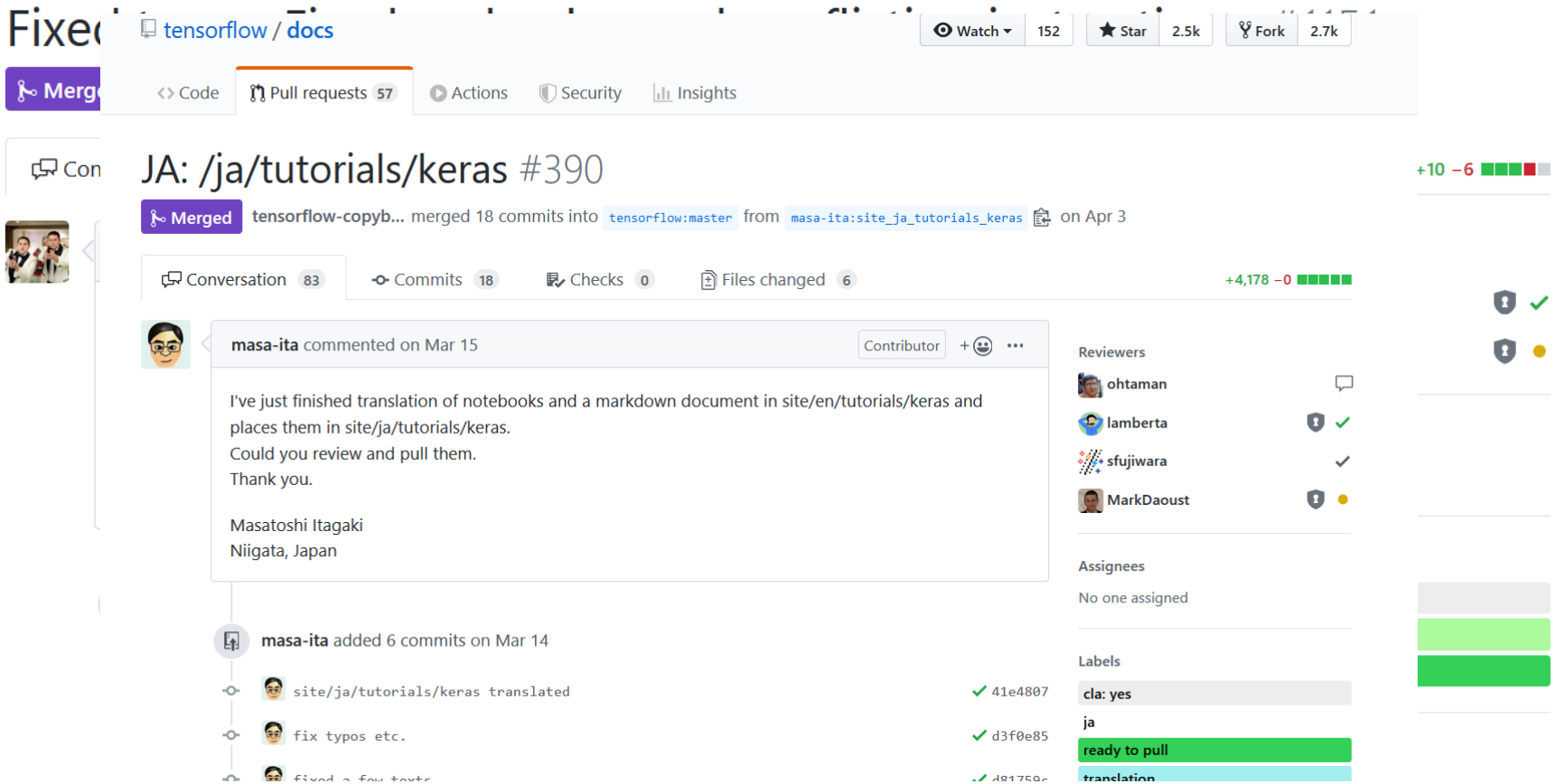




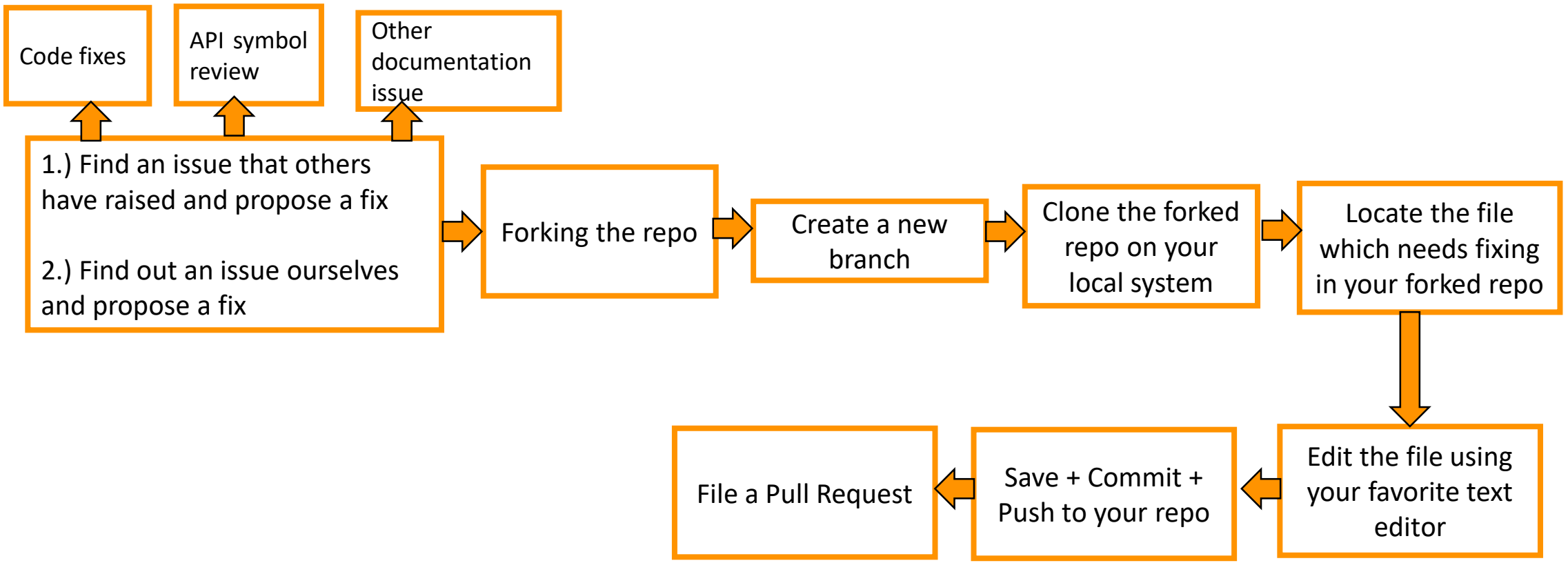
- Perfect place to **develop relations** with other **contributors** and the **maintainers**



LET'S CHECKOUT SOME OF THE CONTRIBUTIONS



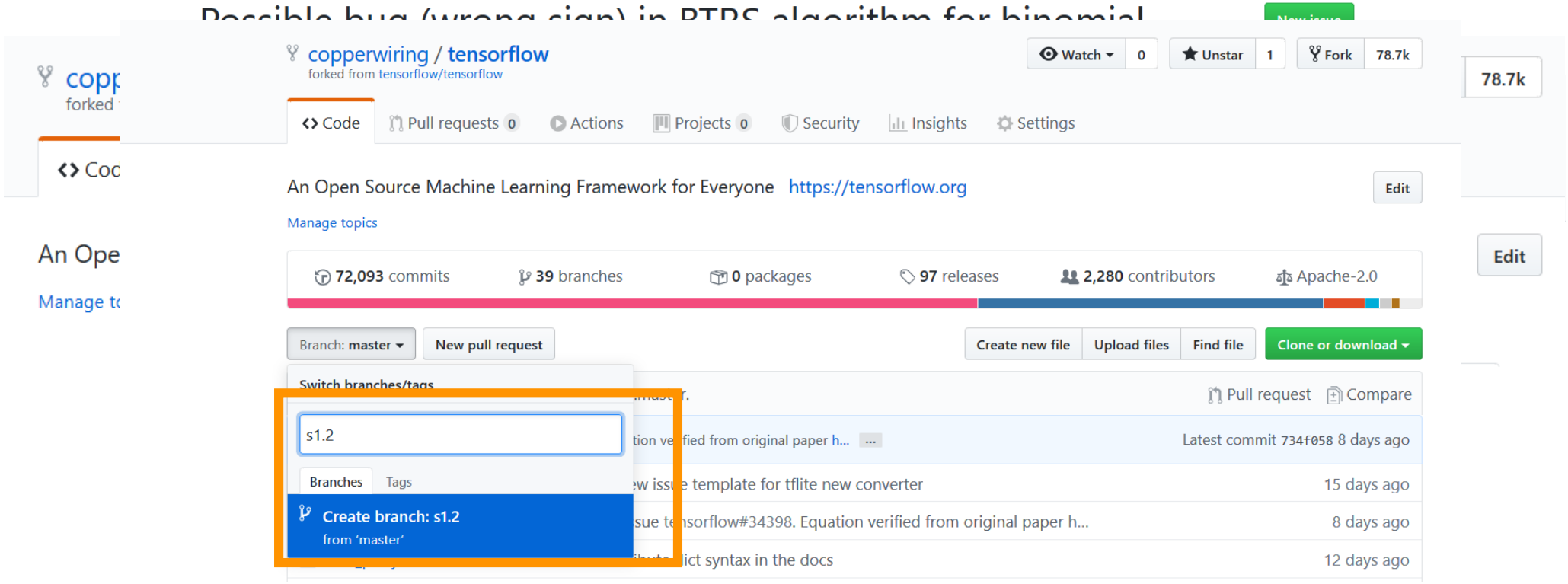
A TYPICAL WORKFLOW FOR YOUR FIRST PR



1.) Find an issue that others have raised and propose a fix

2.) Find out an issue ourselves and propose a fix

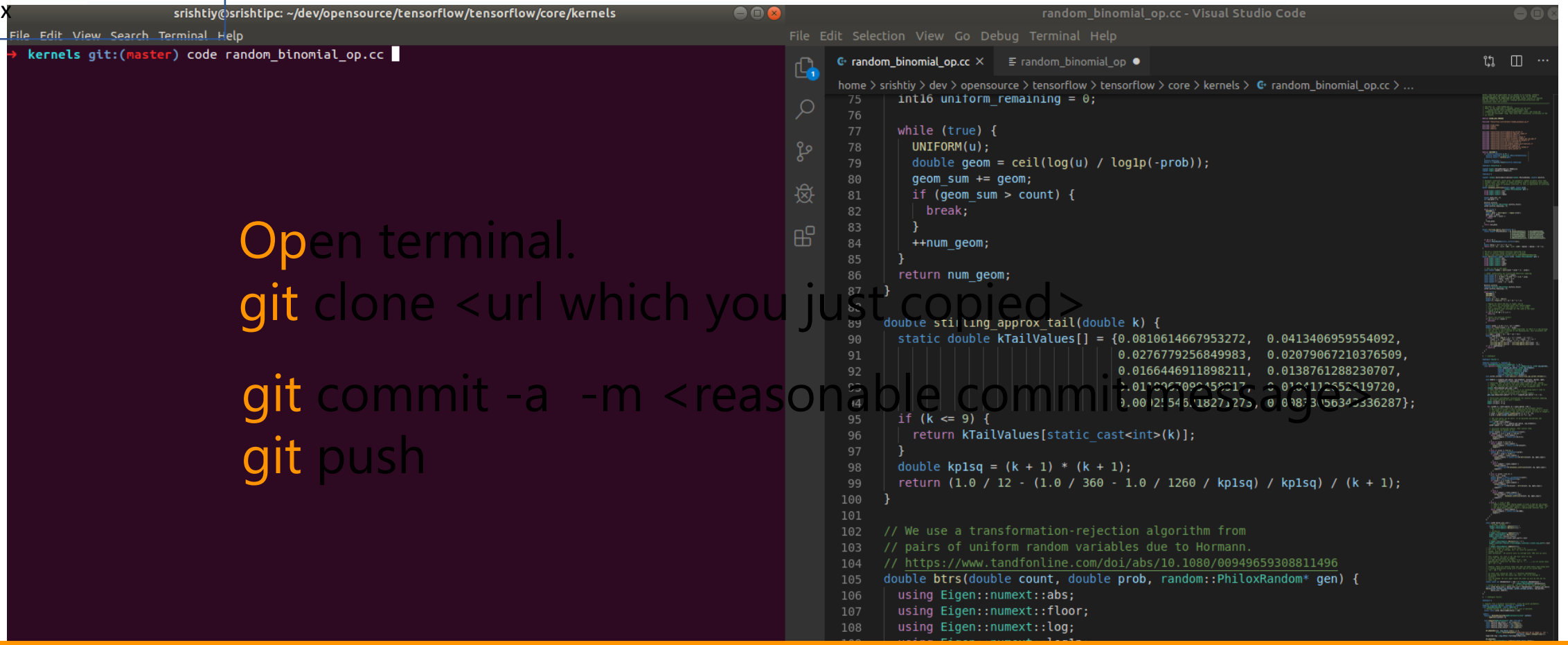
→ Forking the repo in your repository → Create a new branch →



1.) Find an issue that others have raised and propose a fix

2.) Find out an issue ourselves and propose a fix

→ Forking the repo in your repository → Create a new branch → Clone the repo on your local system → Locating the file which needs fixing in your forked repo → Editing the file using your favorite text editor → Save + Commit + Push to your repo →



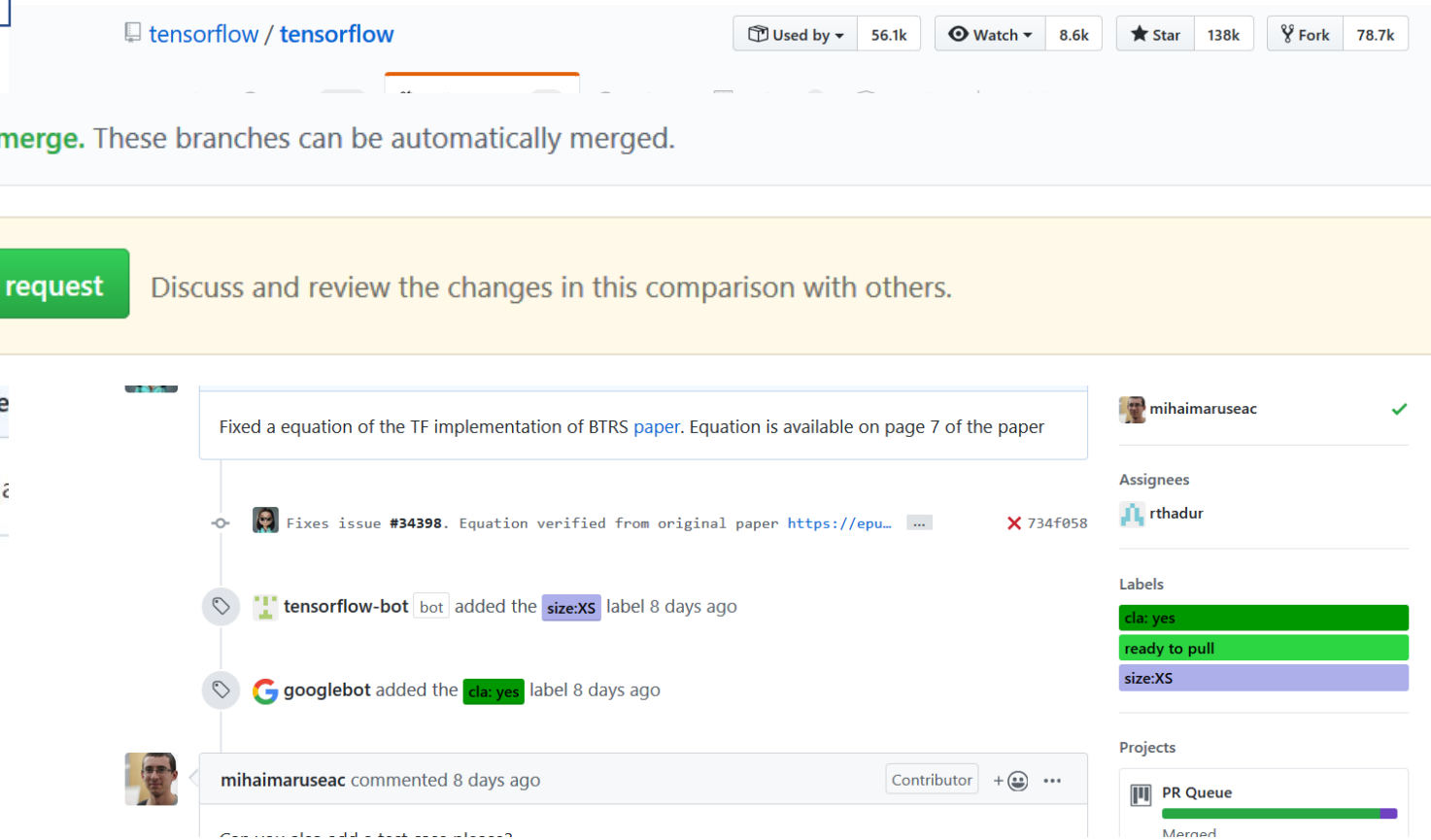
Open terminal.
git clone <url which you just copied>

git commit -a -m <reasonable commit message>
git push

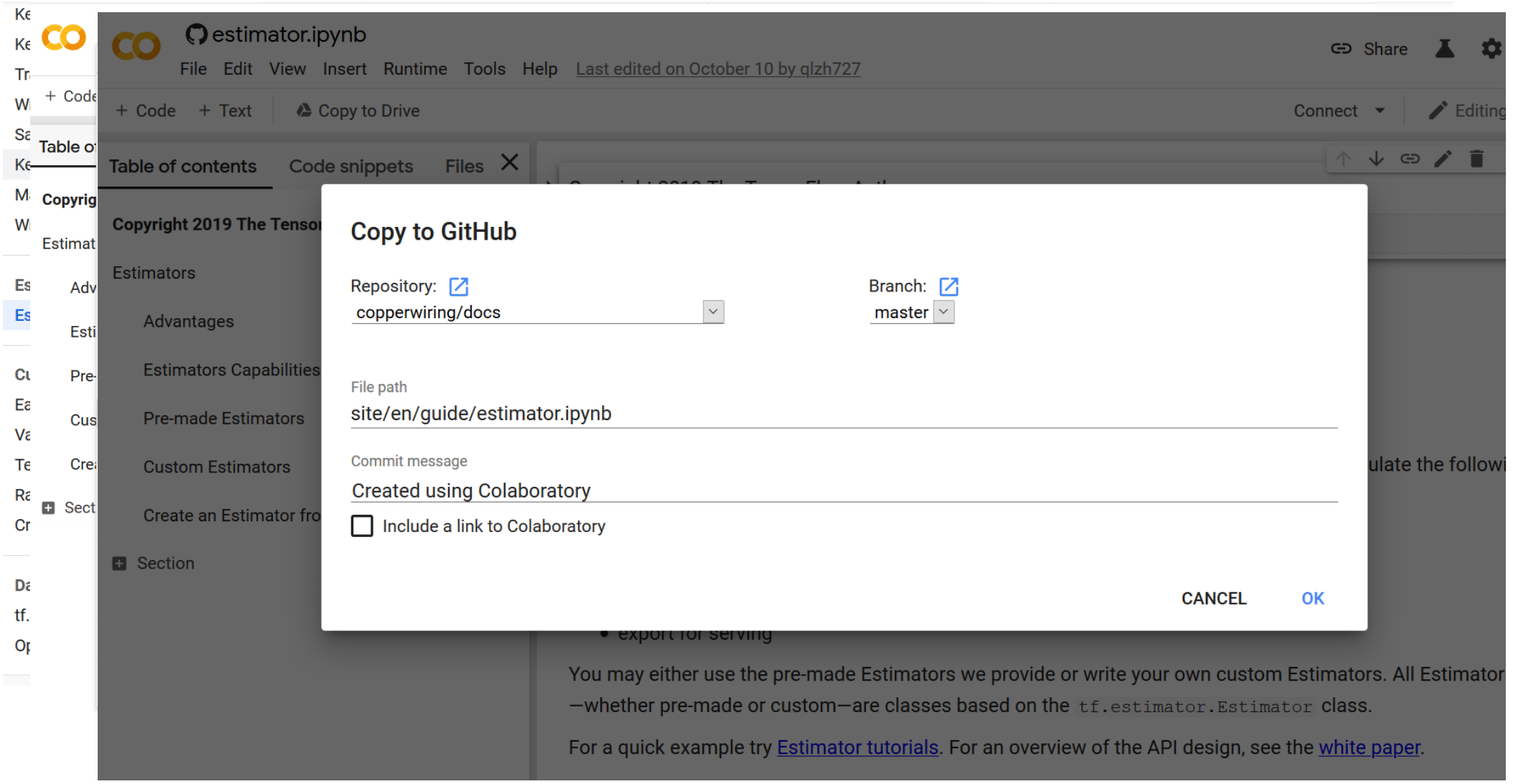
1.) Find an issue that others have raised and propose a fix

2.) Find out an issue ourselves and propose a fix

→ Forking the repo in your repository → Create a new branch → Clone the repo on your local system → Locating the file which needs fixing in your forked repo → Editing the file using your favorite text editor → Save + Commit + Push to your repo → File a Pull Request



BONUS : YOU CAN ALSO EDIT IN COLAB



YOUR FIRST CONTRIBUTION NEED NOT BE A PULL REQUEST

- You can raise an issue . Someone may benefit from your issue.
- Support others answers by upvoting them. Gives more visibility to better answers.
- Post links to relevant forums/discussions which may help an existing issue.

TENSORFLOW 2.0

WHAT'S NEW IN TENSORFLOW 2.0

1.) Keras is integrated as a part of core TF API.
It is recommended high level API

We no more need to write:

```
$ pip install keras
import keras as keras
```

We can simply write:

```
$ pip install --upgrade tensorflow
import tensorflow as tf
from tensorflow import keras
```

WHAT'S NEW IN TENSORFLOW 2.0

2.) We no longer need Session()

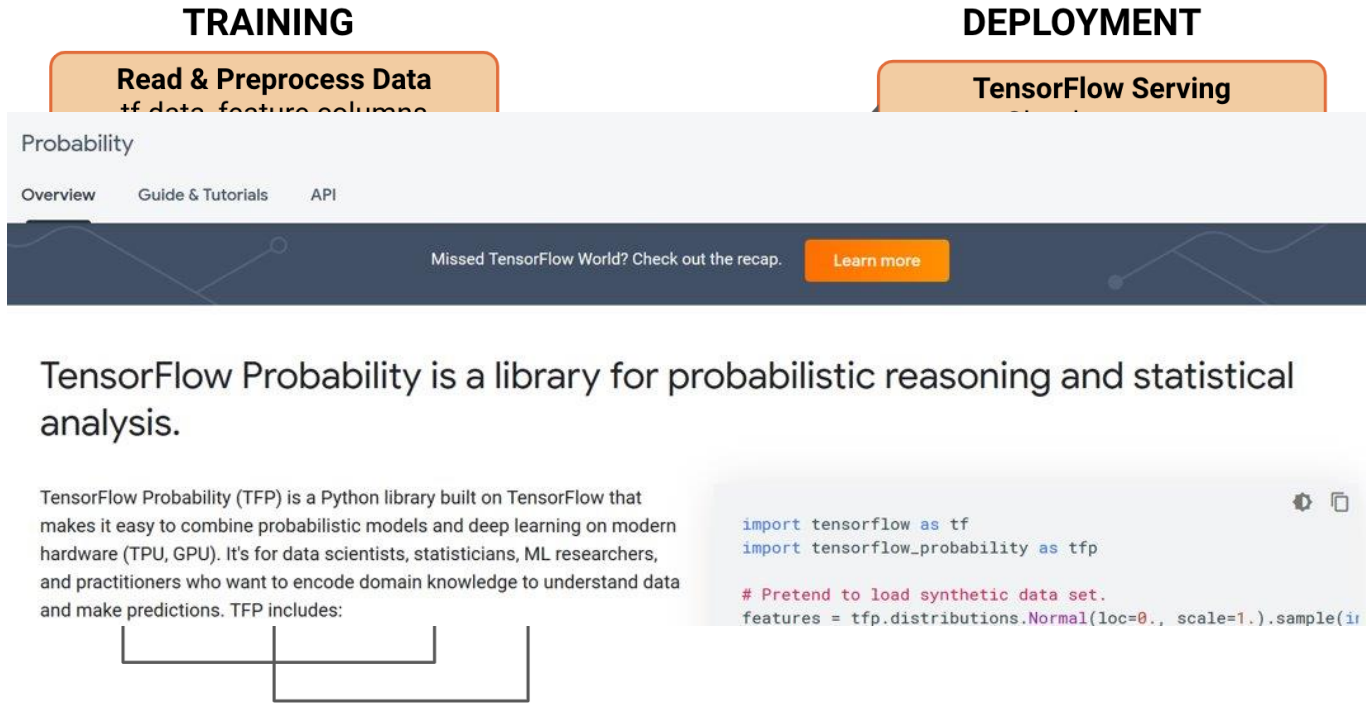
```
1  import tensorflow as tf
2
3  # define the inputs
4  x = tf.placeholder(tf.float32)
5  y = tf.placeholder(tf.float32)
6
7  # define the graph
8  g_mean = tf.sqrt(x * y)
9
10 # run the graph
11 with tf.Session() as sess:
12     res = sess.run(g_mean, feed_dict={x: 2, y: 8})
13     print(res)
```

```
1  import tensorflow as tf
2
3  # define the inputs
4  x = 2.0
5  y = 8.0
6
7  # define the graph
8  g_mean = tf.sqrt(x * y)
9  tf.print(g_mean)
10
```

WHAT'S NEW IN TENSORFLOW 2.0

3.) Ecosystem

- TF is more than just TF Core i.e. there are a lot of parts to the ecosystem now
- Compatibility throughout TensorFlow ecosystem:
  - For instance, previously we had multiple ways to save models
  - Now it is standardized to something called `saved_models`.



WHAT'S NEW IN TENSORFLOW 2.0

4.) Duplication & Faster Debugging

- Eager executions are now default

```
[3]  a = tf.constant( [ [1,0], [0,1] ],
                      dtype=float )
     print (a)
```

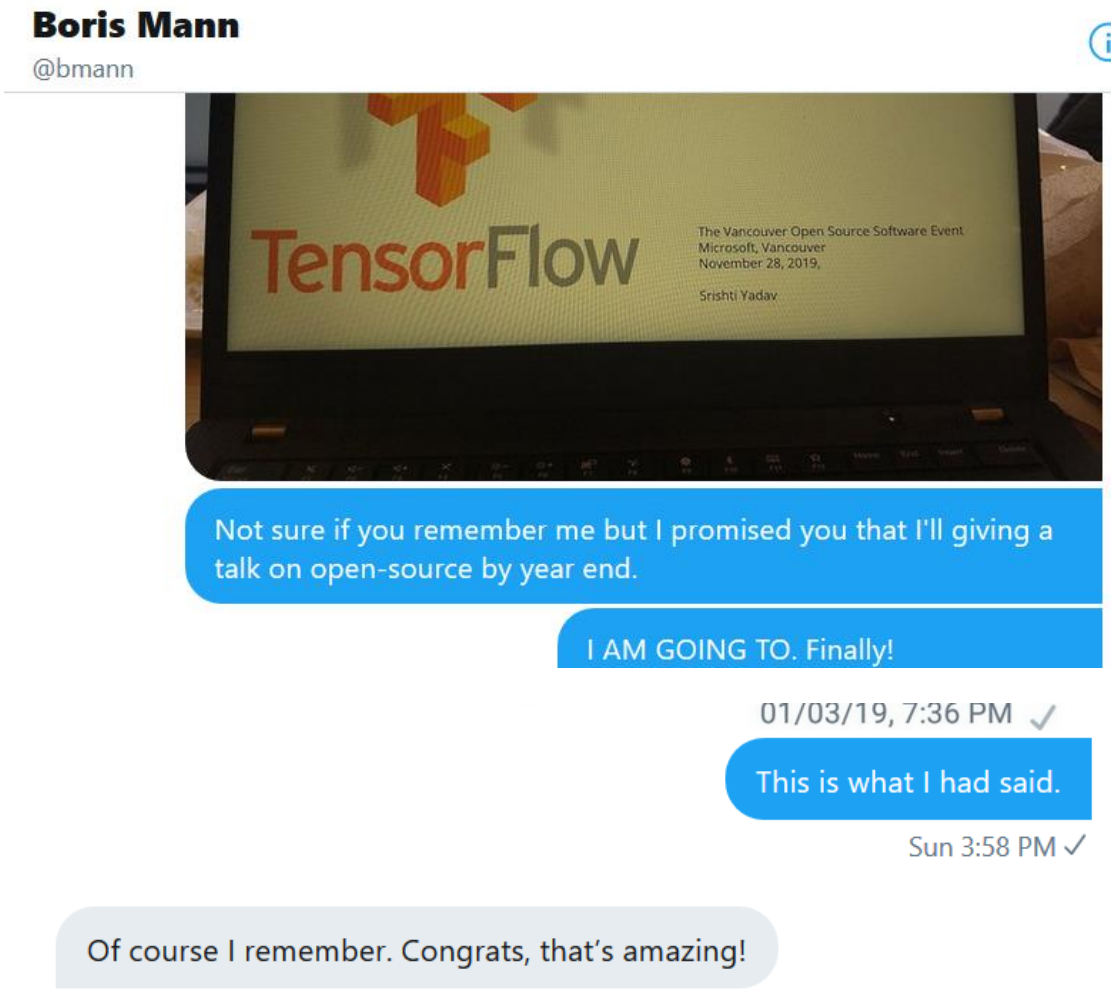
```
tf.Tensor(
[[1. 0.]
 [0. 1.]], shape=(2, 2), dtype=float32)
```

- In 2.0 contrib is gone so other projects are more independent but still part of the ecosystem

OPEN SOURCE IS ALL ABOUT COMMUNTY

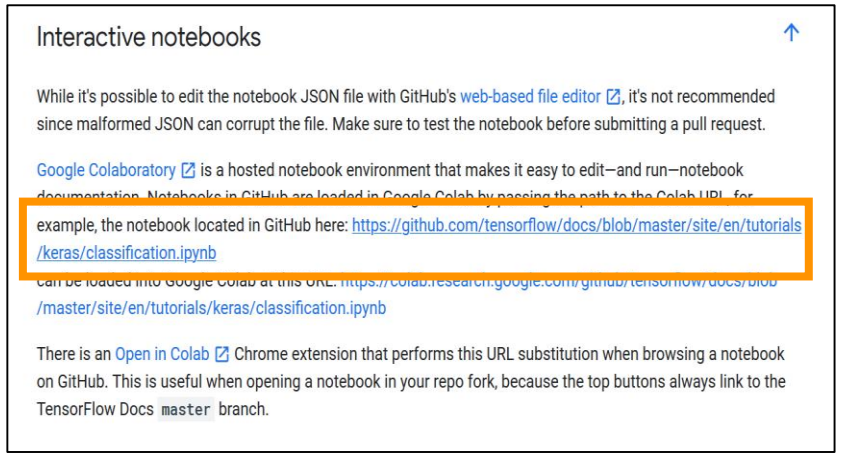
- It improves a solution that community as a whole can benefit from (and believe in)
- Open source code means you get full visibility of the code base.
- Open source software's code is often more secure because it's thoroughly reviewed and vetted by the community

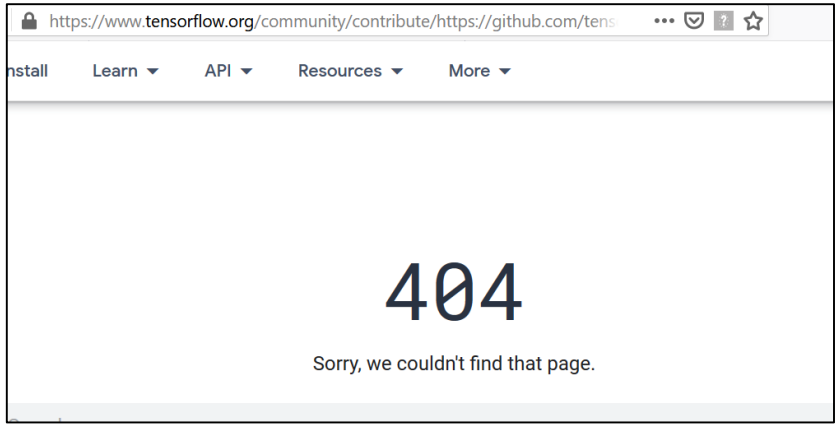
THIS WAS MY STORY



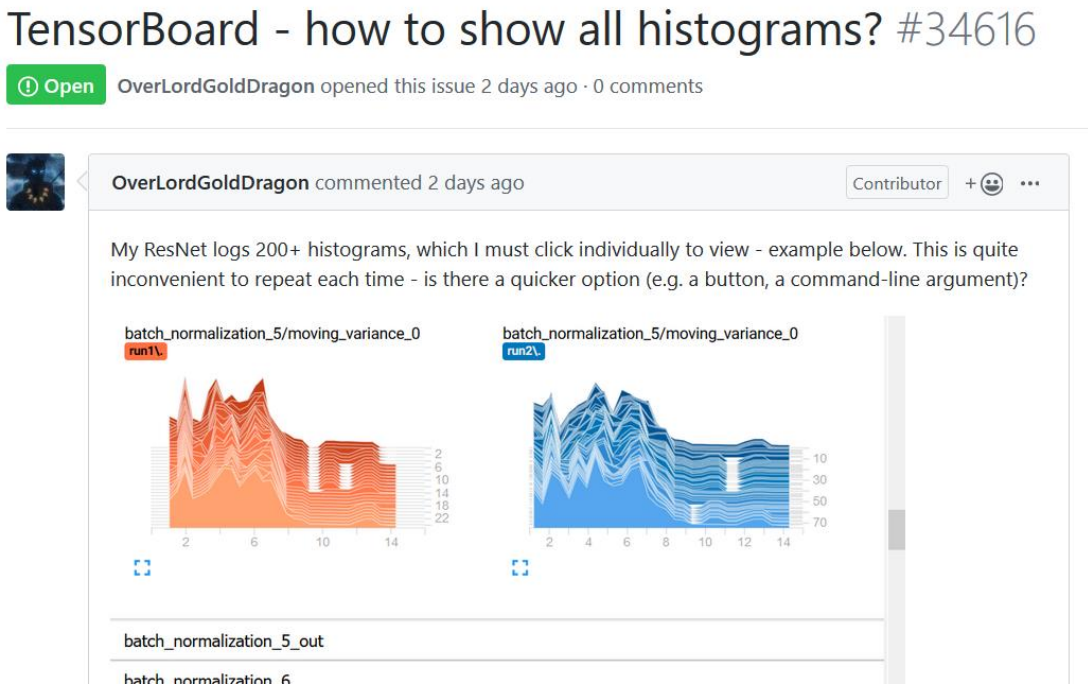
YOUR FIRST CONTRIBUTION ?

Beginner





Advanced



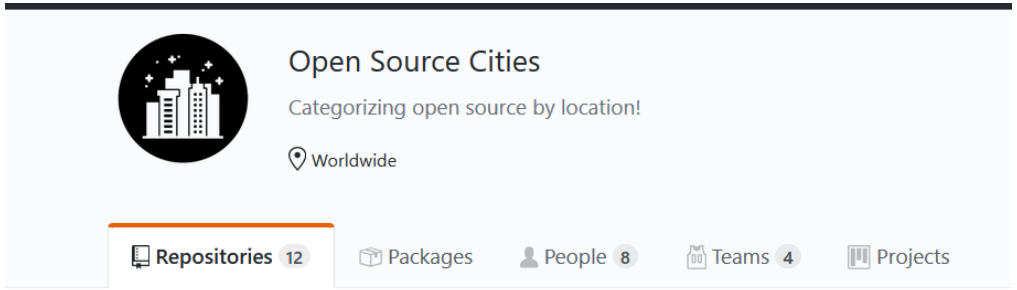
WE NEED YOUR HELP!

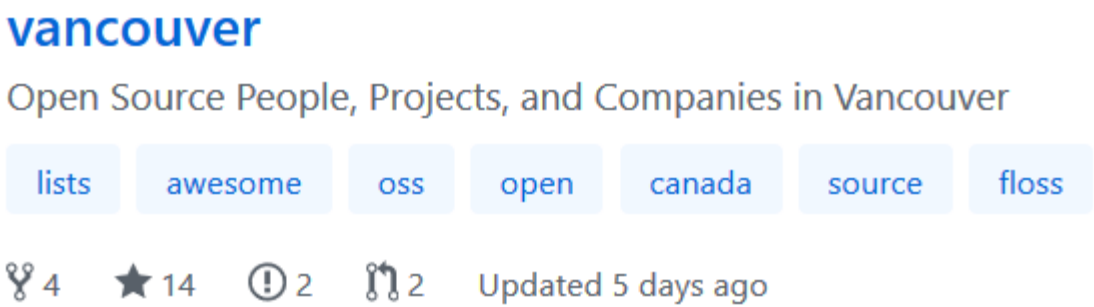
Disclaimer: It's not a personal project. It's a community initiative from Vancouver

- Do you contribute to Open Source?
- Do you have an Open Source project which you're proud of?
- Are you an organization involved in open source?

We welcome Pull Request (I recently started maintaining it) to:

https://github.com/opensourcecities





THANK YOU

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- **Email**: srishtiy@sfu.ca
- **Link for opensource cities**: https://github.com/opensourcecities