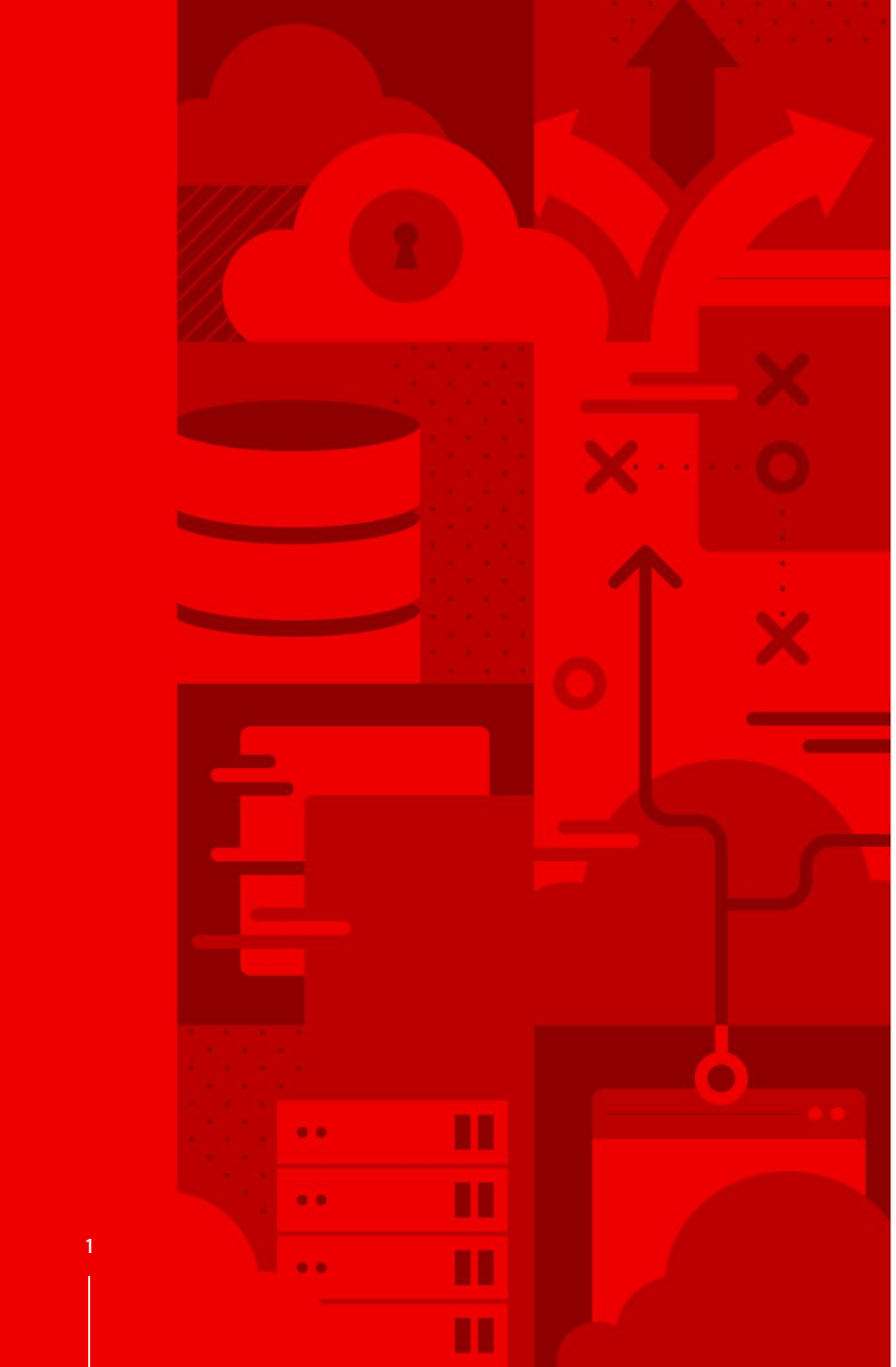

Thoth

Helping Python developers to create healthy applications

Fridolin Pokorny
Senior Software Engineer

Red Hat

Project Thoth

- A team of engineers trying to make Python better place to code in
- AICoE, Office of the CTO
- Creating a service Python community can use
- Homepage:
  - thoth-station.ninja

Our mission is to make Python better place to code in

- Python is one of the most popular programming languages
  - Intuitive programming, simple to use
  - Used in data science, machine learning
  - Fast application development
- Growing popularity

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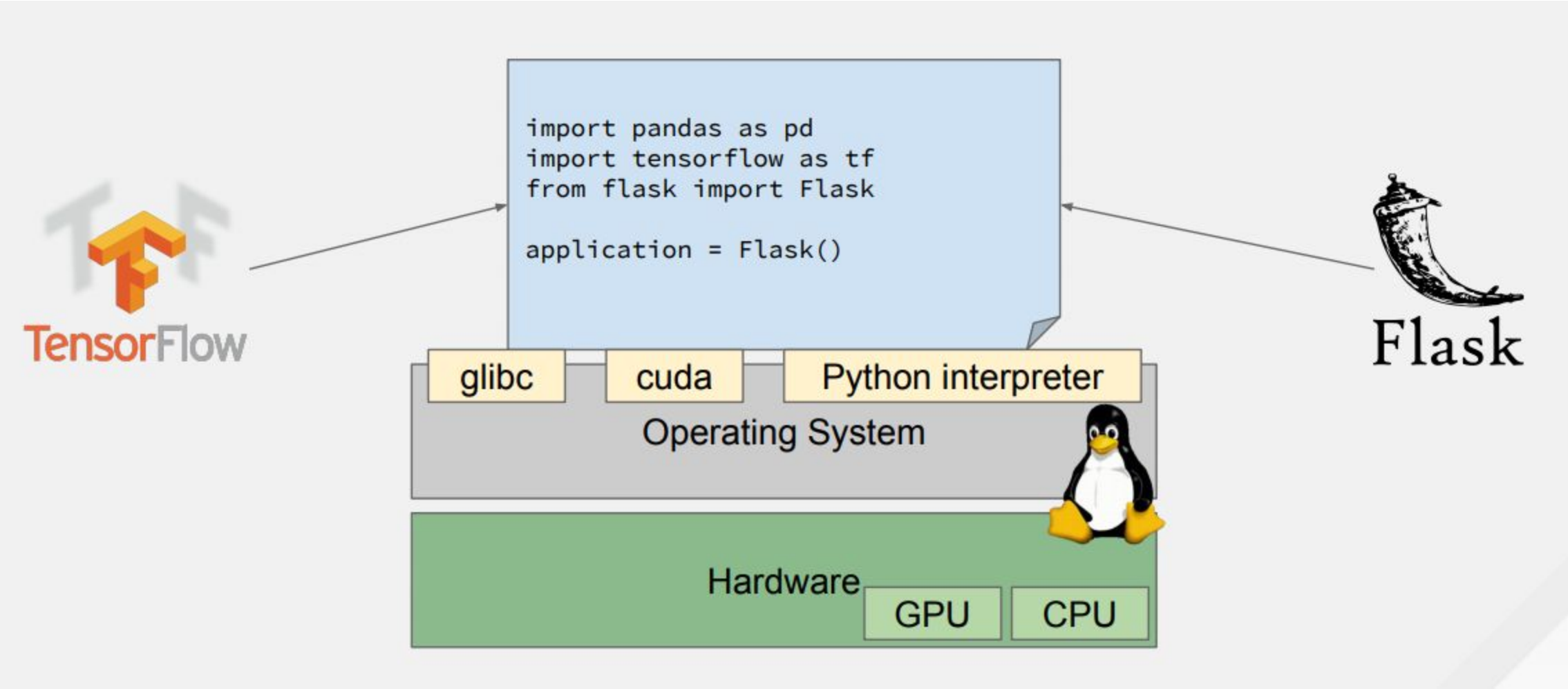
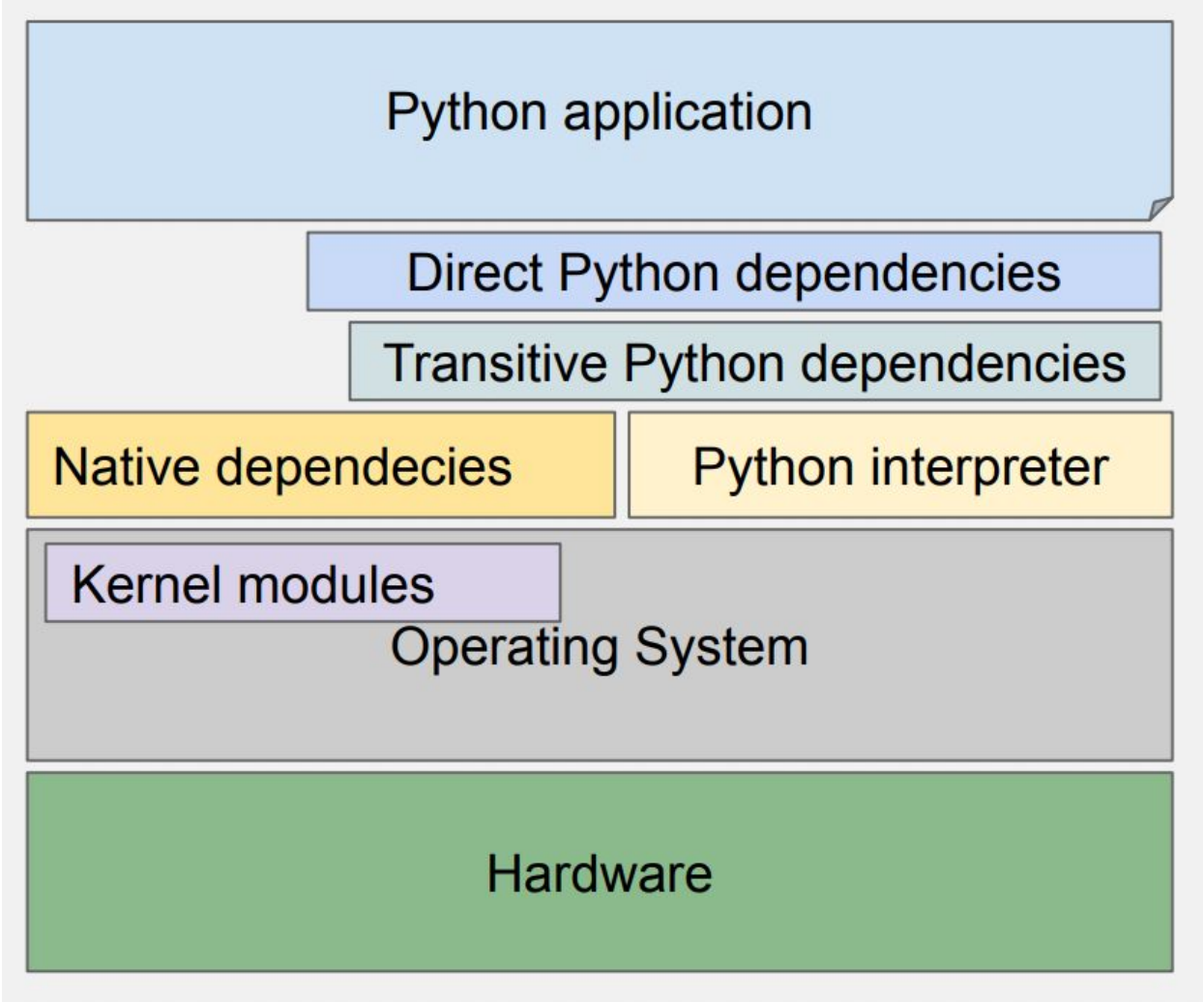
... but sometimes tricky


import pandas as pd
import tensorflow as tf
from flask import Flask
application = Flask()
TensorFlow
Flask
glibc
cuda
Python interpreter
Operating System
Hardware
GPU
CPU


Python application
Direct Python dependencies
Transitive Python dependencies
Native dependecies
Python interpreter
Kernel modules
Operating System
Hardware

Which libraries to use?

- Different versions of libraries have different software quality aspects
  - Does the library install correctly?
  - Has the installed library any bugs?
  - How does it perform in my runtime environment?
  - Can I use another libraries that can utilize GPU?
  - ...
- Picking the right set of libraries and their versions can require additional knowledge about software

Which libraries to use?

- Releasing pip 20.3, featuring new dependency resolver
  - Better resolution of Python dependencies
  - Resolves the most recent versions of libraries
- Latest release is not always the greatest choice
  - Which libraries should I use?

Thoth advising software

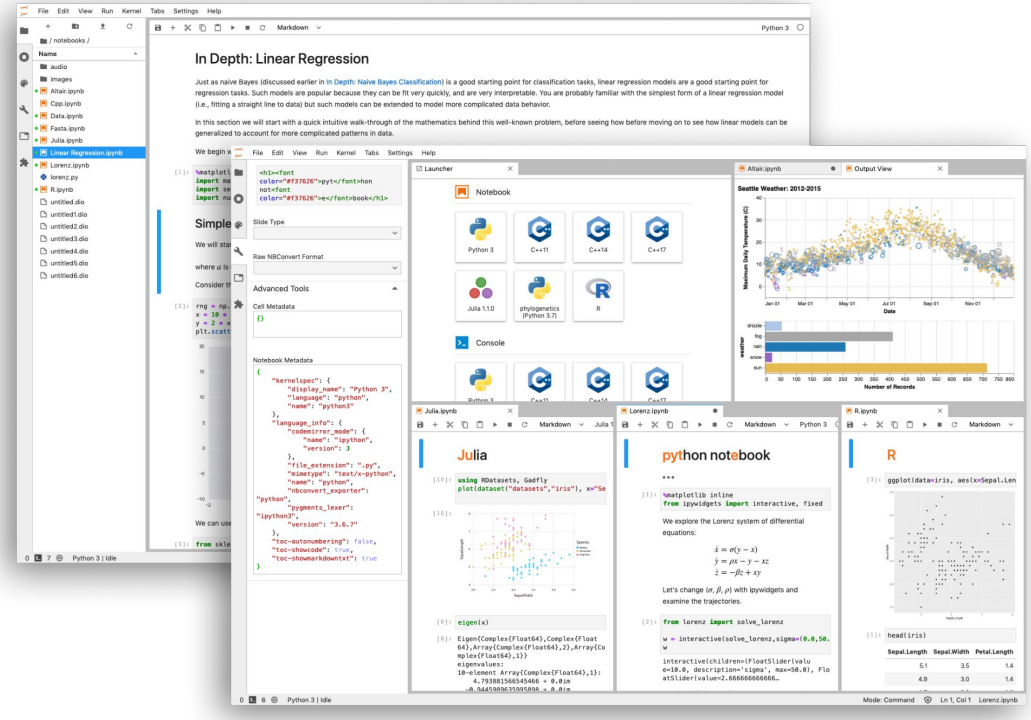
- Based on the aggregated knowledge about software, let's recommend what software should be installed and how
- Building "brain" that knows which libraries to install considering
  - Requirements on dependencies
  - Hardware and software environment
  - Intention with the application (e.g. model training, ...)

Thoth advising software

- Smart picking of libraries to meet desired quality
  - Resolution based on reinforcement learning
- Server side resolution
  - Recommending greatest software based on Thoth knowledge
  - pypi.org/project/thamos

```
$ pip install thamos
$ thamos config
$ thamos advise
```

Jupyter notebooks



Source:
https://jupyter.org

Jupyter notebooks

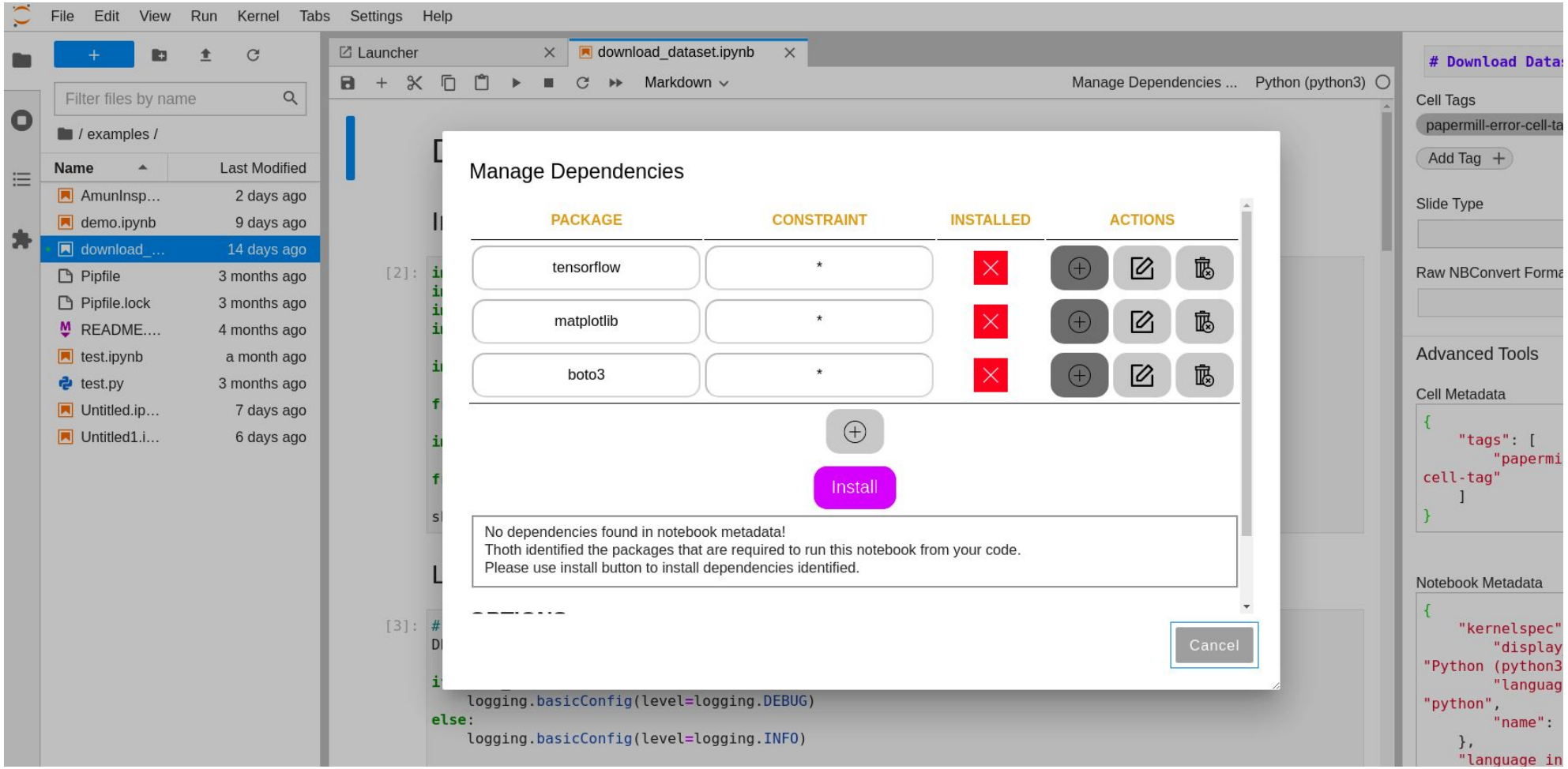
Install dependencies

In [2]:
```
! pip install tensorflow
! pip install boto3
! pip install matplotlib
```

Jupyterlab extension

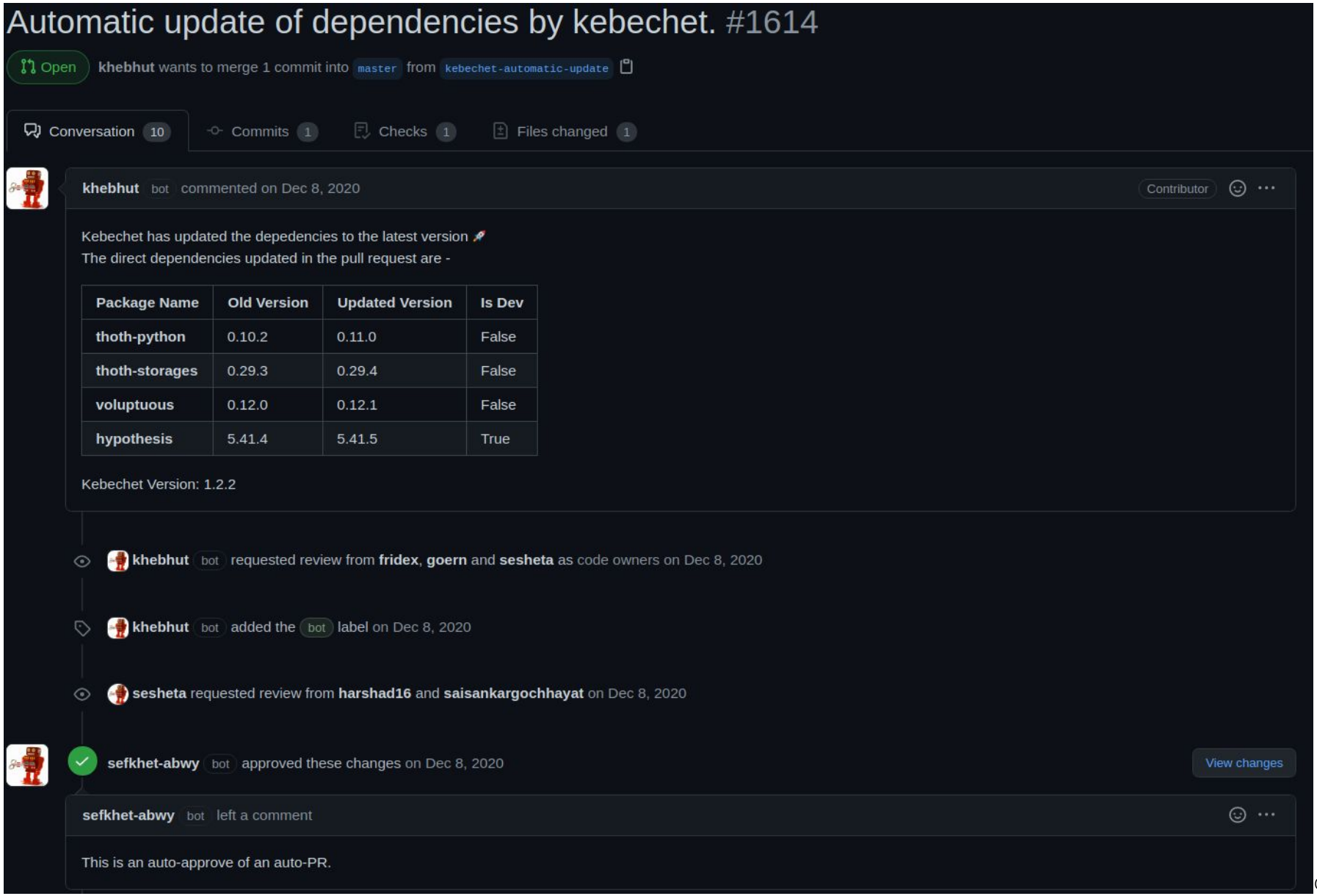
- GitHub repository
  - thoth-station/jupyterlab-extension
- Uses the recommendation engine to resolve software
- Manages lock file in notebooks for reproducibitliy
- Blog for dependency management in Jupyter Notebooks:
  - Managing Python dependencies with Thoth JupyterLab extension

Jupyterlab extension



Bots helping with application development

- Let's reduce mundane work and focus on delivering solutions
- Dependency management and managing lifecycle of the repository
  - Automatic updates of libraries
  - Automatic release management
  - Spotting issues with the application
- GitHub application "qeb-hwt"
  - github.com/apps/qeb-hwt



Automatic update of dependencies by kebechet. #1614

Open **khebhut** wants to merge 1 commit into `master` from `kebechet-automatic-update`

Conversation 10 | Commits 1 | Checks 1 | Files changed 1

khebhut bot commented on Dec 8, 2020 — Contributor

Kebechet has updated the depedencies to the latest version 🚀
The direct dependencies updated in the pull request are -

Package Name	Old Version	Updated Version	Is Dev
thoth-python	0.10.2	0.11.0	False
thoth-storages	0.29.3	0.29.4	False
voluptuous	0.12.0	0.12.1	False
hypothesis	5.41.4	5.41.5	True

Kebechet Version: 1.2.2

khebhut bot requested review from **fridex**, **goern** and **sesheta** as code owners on Dec 8, 2020

khebhut bot added the bot label on Dec 8, 2020

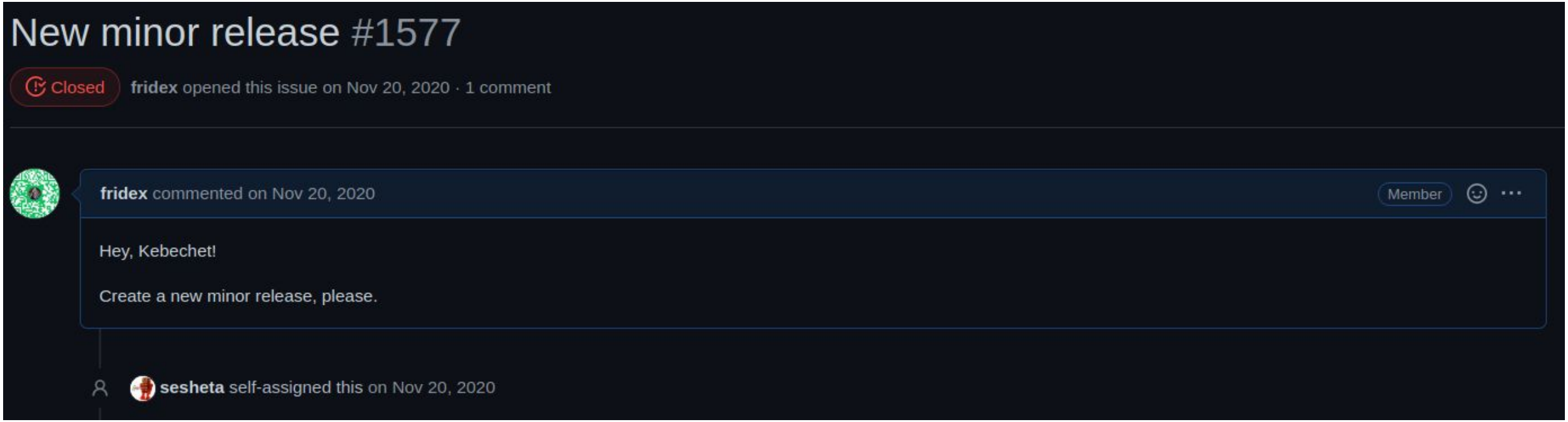
sesheta requested review from **harshad16** and **saisankargochhayat** on Dec 8, 2020

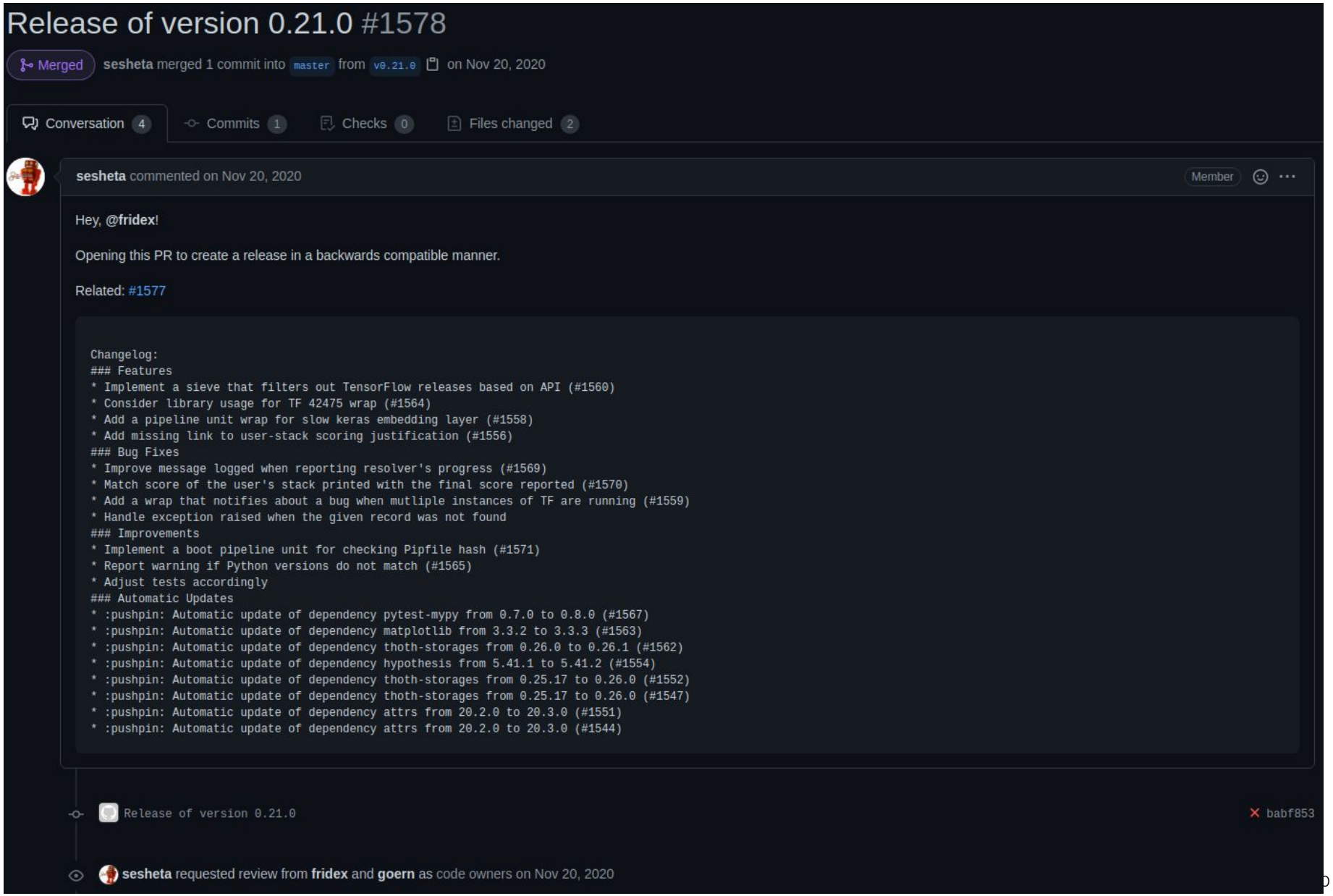
sefkhet-abwy bot approved these changes on Dec 8, 2020 — View changes

sefkhet-abwy bot left a comment

This is an auto-approve of an auto-PR.

Red Hat


New minor release #1577
Closed
fridex opened this issue on Nov 20, 2020 · 1 comment
fridex commented on Nov 20, 2020
Member
Hey, Kebechet!
Create a new minor release, please.
sesheta self-assigned this on Nov 20, 2020


Release of version 0.21.0 #1578
Merged
sesheta merged 1 commit into master from v0.21.0 on Nov 20, 2020
Conversation 4
Commits 1
Checks 0
Files changed 2
sesheta commented on Nov 20, 2020
Member
Hey, @fridex!
Opening this PR to create a release in a backwards compatible manner.
Related: #1577
Changelog:
Features
* Implement a sieve that filters out TensorFlow releases based on API (#1560)
* Consider library usage for TF 42475 wrap (#1564)
* Add a pipeline unit wrap for slow keras embedding layer (#1558)
* Add missing link to user-stack scoring justification (#1556)
Bug Fixes
* Improve message logged when reporting resolver's progress (#1569)
* Match score of the user's stack printed with the final score reported (#1570)
* Add a wrap that notifies about a bug when mutliple instances of TF are running (#1559)
* Handle exception raised when the given record was not found
Improvements
* Implement a boot pipeline unit for checking Pipfile hash (#1571)
* Report warning if Python versions do not match (#1565)
* Adjust tests accordingly
Automatic Updates
* :pushpin: Automatic update of dependency pytest-mypy from 0.7.0 to 0.8.0 (#1567)
* :pushpin: Automatic update of dependency matplotlib from 3.3.2 to 3.3.3 (#1563)
* :pushpin: Automatic update of dependency thoth-storages from 0.26.0 to 0.26.1 (#1562)
* :pushpin: Automatic update of dependency hypothesis from 5.41.1 to 5.41.2 (#1554)
* :pushpin: Automatic update of dependency thoth-storages from 0.25.17 to 0.26.0 (#1552)
* :pushpin: Automatic update of dependency thoth-storages from 0.25.17 to 0.26.0 (#1547)
* :pushpin: Automatic update of dependency attrs from 20.2.0 to 20.3.0 (#1551)
* :pushpin: Automatic update of dependency attrs from 20.2.0 to 20.3.0 (#1544)
Release of version 0.21.0
babf853
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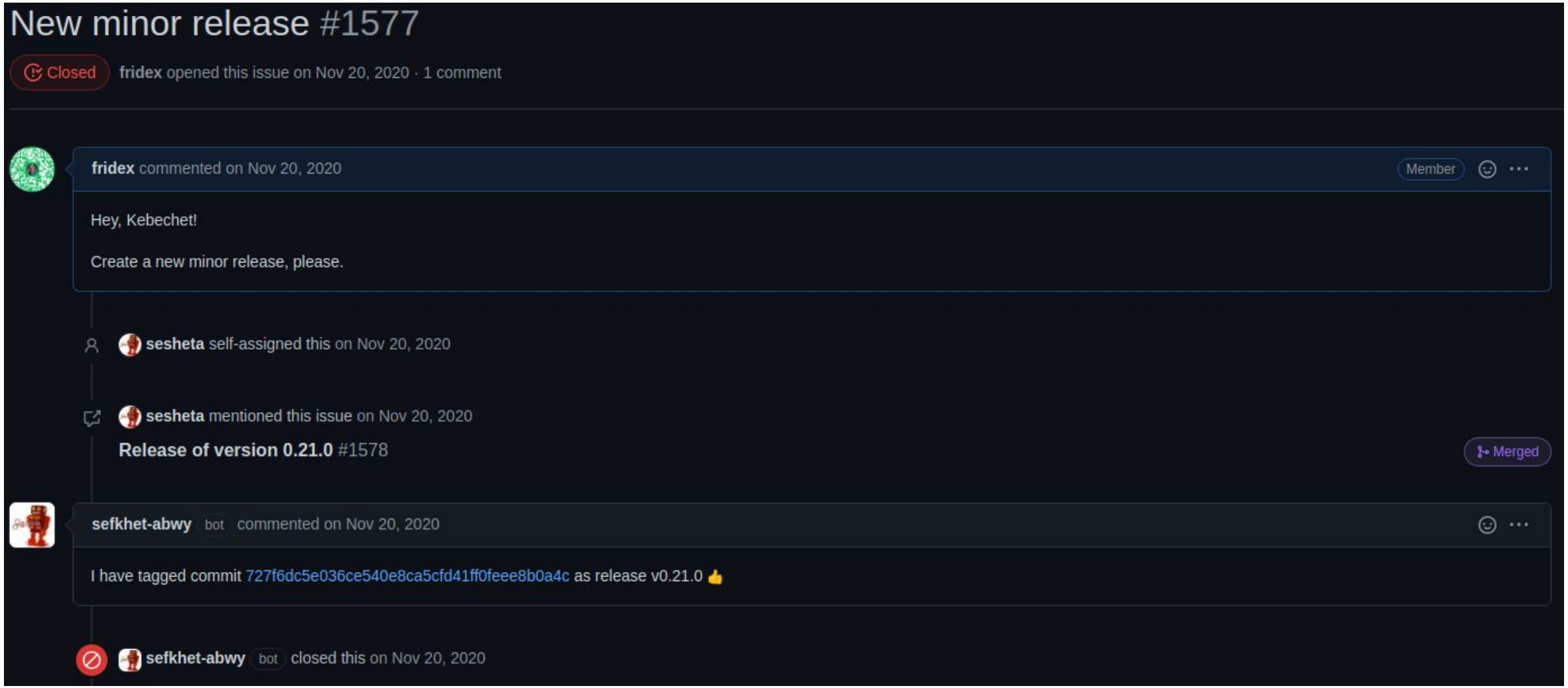
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sesheta mentioned this issue on Nov 20, 2020
Release of version 0.21.0 #1578
Merged
sefkhet-abwy bot commented on Nov 20, 2020
I have tagged commit 727f6dc5e036ce540e8ca5cfd41ff0feee8b0a4c as release v0.21.0
sefkhet-abwy bot closed this on Nov 20, 2020

YouTube channel News Talks Datasets Documentation AICoE Index API Status **Get involved**

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Using Artificial Intelligence to analyse and recommend software stacks for Python applications.

Get started

Source:
https://thoth-station.ninja

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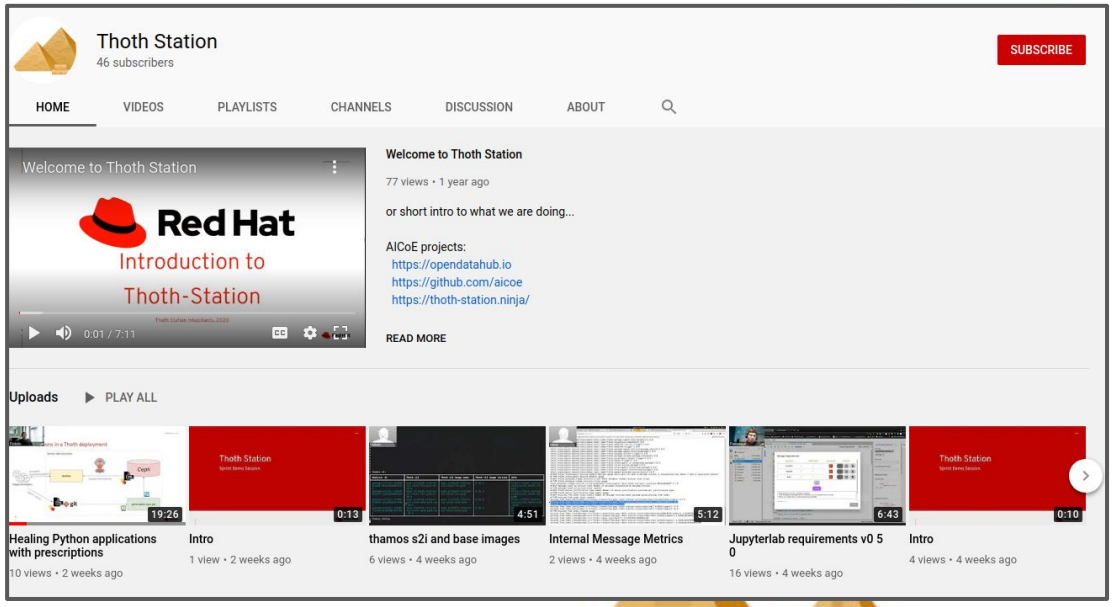
bit.ly/thoth-on-youtube



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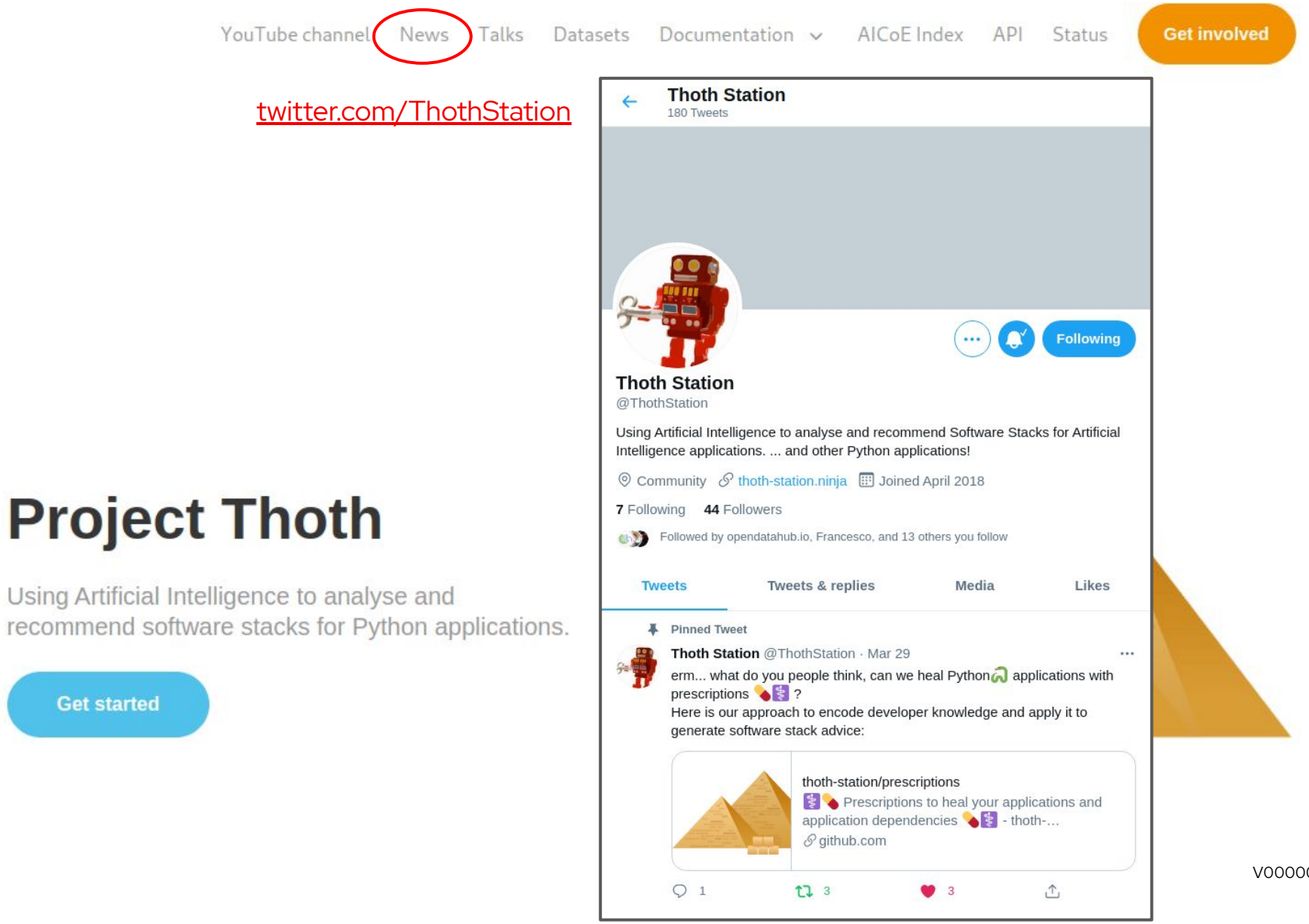

twitter.com/ThothStation

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Useful references

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