Intermediate Python for Finance Training

Dr. Yves J. Hilpisch | @dyjh

London, 28.—29. November 2017

Introduction

SERVICES
for financial institutions globally

EVENTS
for Python quants &
algorithmic traders

THE PYTHON QUANTS

TRAINING
about Python for finance
& algorithmic trading

CERTIFICATION
in cooperation with university

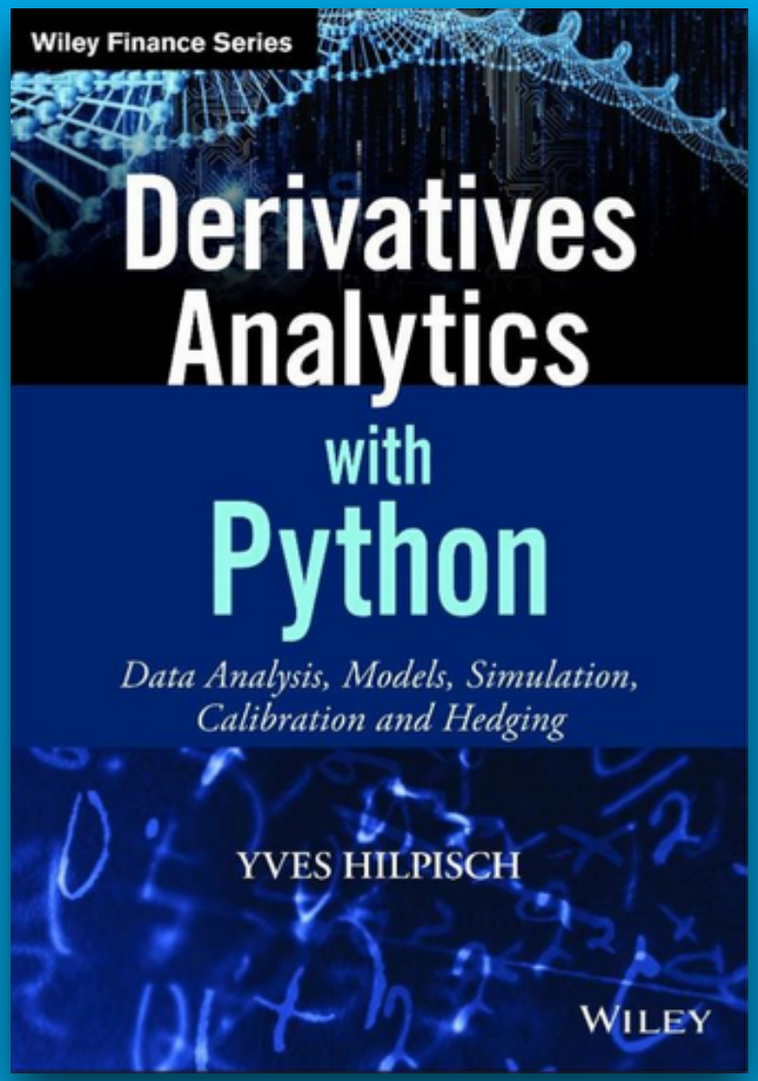
BOOKS
about Python and
finance

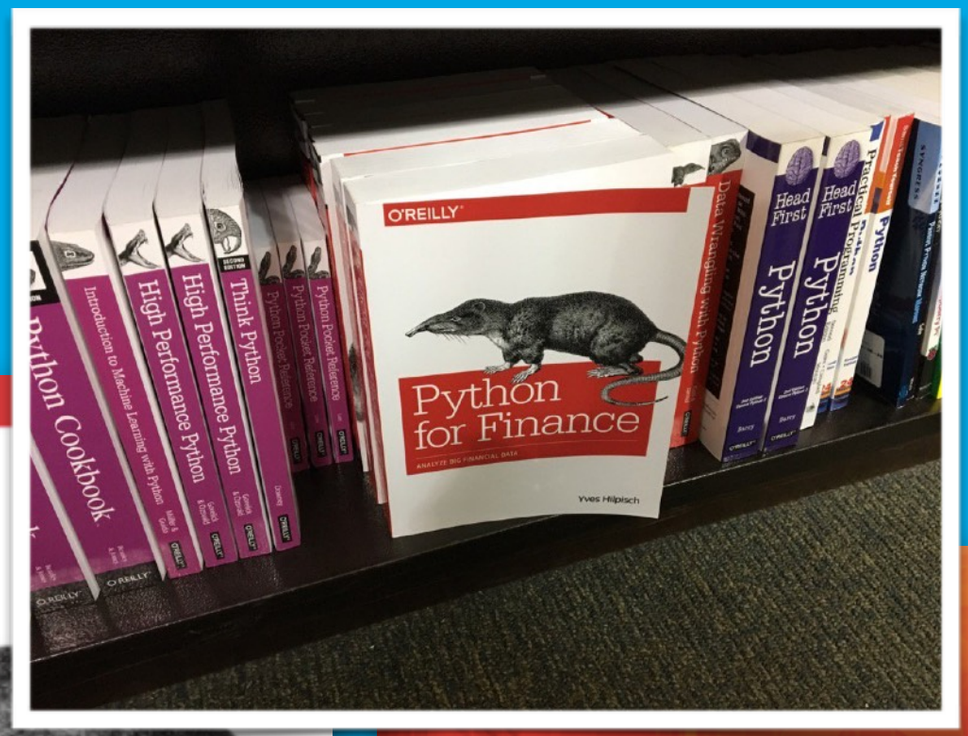
PLATFORM
for browser-based
data analytics

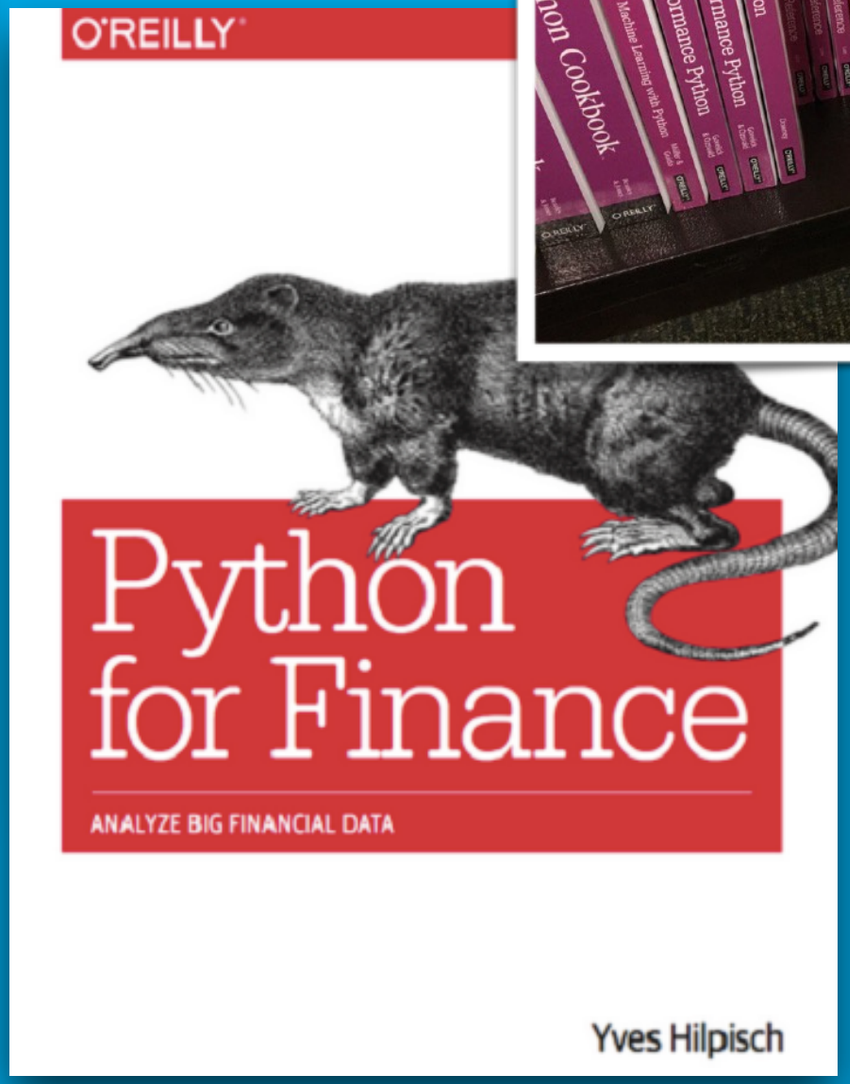
OPEN SOURCE
Python library
for financial analytics

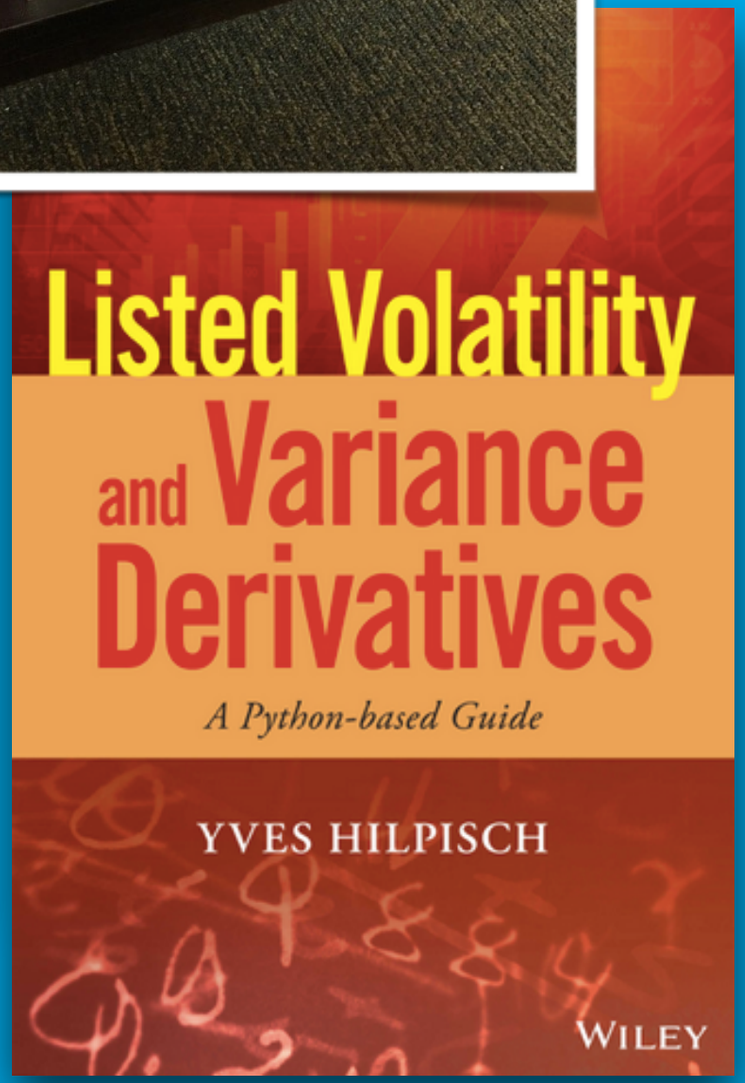
http://tpq.io

http://hilpisch.com





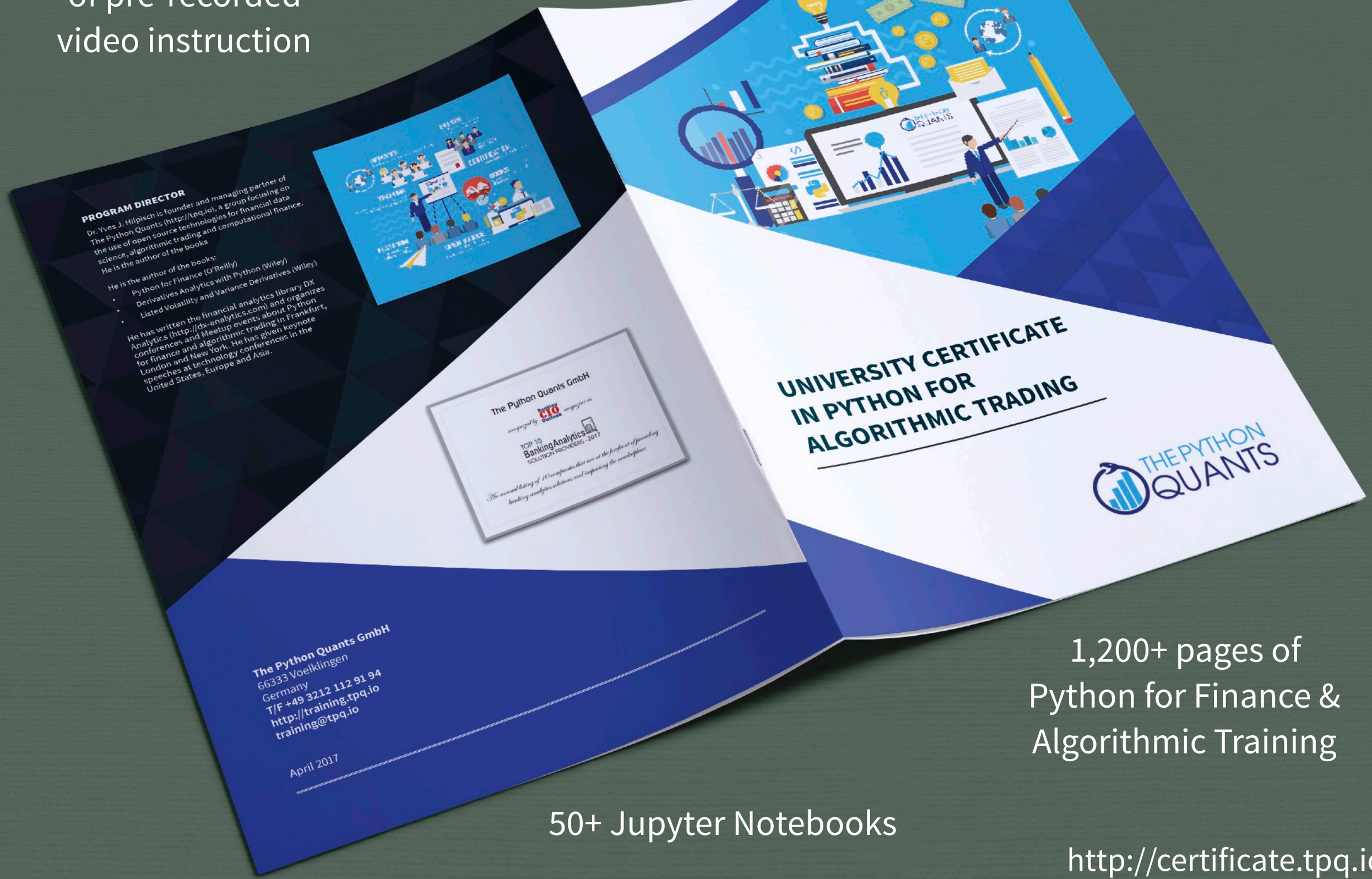




http://books.tpq.io

125+ hours
of pre-recorded
video instruction

5,000+ lines of code



1,200+ pages of
Python for Finance &
Algorithmic Training

50+ Jupyter Notebooks

http://certificate.tpq.io

THOMSON REUTERS

FitchLearning

CQF | INSTITUTE

htw saar

Hochschule für Technik und Wirtschaft des Saarlandes
University of Applied Sciences

Resources

Slides

http://hilpisch.com/intpython.pdf

Gist

https://goo.gl/NHmyj1

Why Python for Finance?

PYTHON'S BENEFITS ...	... COMPARED TO
1. open source software	vendor developed & maintained
2. general purpose language	domain specific language
3. multi-paradigm language	single-paradigm languages
4. powerful ecosystem of packages	weak ecosystems
5. leading in data science	just good in finance or single area
6. first class citizen in AI	no access to AI world
7. core technology in finance	just a "somehow used" technology
8. supported by many players	emphasized by selected players
9. strong and open communities	vendor driven and/or small communities
10. books, resources, trainings	vendor and/or few specialized resources

Program

DAY 1

introduction
infrastructure

first steps
data structures
first algorithm(s)

NumPy basics

NumPy applied to finance

DAY 2

pandas basics

pandas applied to finance

object-oriented programming

financial classes

“In building a house, there is the problem of the selection of wood.
It is essential that the carpenter’s aim be to carry equipment that will cut well and,
when he has time, to sharpen that equipment.”

Miyamoto Musashi (The Book of Five Rings)

“Any fool can write code that a computer can understand.
Good programmers write code that humans can understand.”

Martin Fowler

“In fact, I'm a huge proponent of designing your code around the data,
rather than the other way around, …”

Linus Torvalds

“Dataism says that the universe consists of data flows, and the value of any phenomenon or entity is determined by its contribution to data processing. … Dataism thereby collapses the barrier between animals [humans] and machines, and expects electronic algorithms to eventually decipher and outperform biochemical algorithms”

Yuval Noah Harari (Homo Deus)

Interactive Style

"Making mistakes together."

vim

```
#
# Simple Tick Data Server with
# ZeroMQ
#
import zmq
import time
import random

context = zmq.Context()
socket = context.socket(zmq.PUB)
socket.bind('tcp://0.0.0.0:5555')

AAPL = 100.

while True:
    AAPL += random.gauss(0, 1) * 0.5
    msg = 'AAPL %s' % AAPL
```

tick_server.py [+]

```
#
# Simple Tick Data Client with
# ZeroMQ
#
import zmq
import datetime

context = zmq.Context()
socket = context.socket(zmq.SUB)
socket.connect('tcp://0.0.0.0:5555')
socket.setsockopt_string(zmq.SUBSCRIBE, 'AAPL')

while True:
    msg = socket.recv_string()
    t = datetime.datetime.now()
    print('%s | %s' % (t, msg))
```

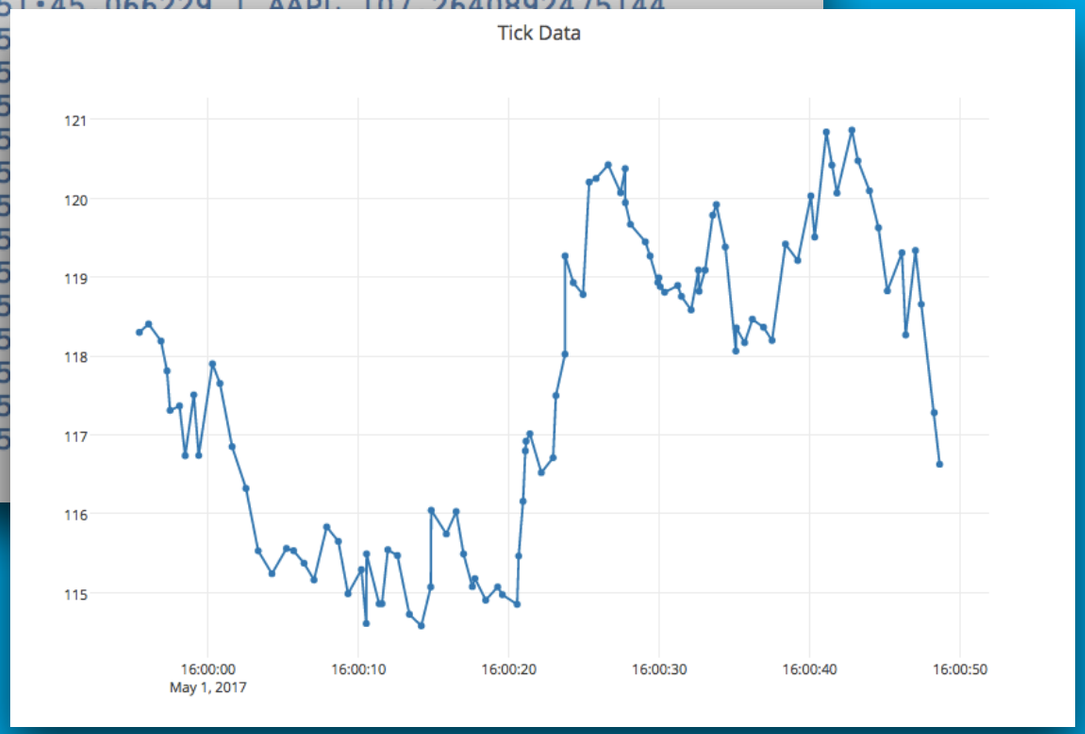
tick_client.py

IPython: live/data (python3.6)

```
AAPL 107.15636235397254
AAPL 107.18612019583905
AAPL 107.4983187955743
AAPL 107.2640892475144
AAPL 107.68358829560407
AAPL 106.9232056802307
AAPL 106.55017297488794
AAPL 105.97708319698597
AAPL 106.00856053822193
AAPL 105.37221723045396
AAPL 105.09251644774177
AAPL 104.9267694947986
AAPL 105.03306681222703
AAPL 105.1223727550806
AAPL 105.29880694705703
AAPL 105.438670667864
AAPL 105.60426198517378
```

root@pythonquants02: ~ (python3.6)

```
2017-05-01 23:51:44.010545 | AAPL 106.94730057503057
2017-05-01 23:51:44.184665 | AAPL 107.15636235397254
2017-05-01 23:51:44.663153 | AAPL 107.18612019583905
2017-05-01 23:51:44.707051 | AAPL 107.4983187955743
2017-05-01 23:51:45.066229 | AAPL 107.2640892475144
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
2017-05-01 23:5
```



The Python Quants GmbH

Dr. Yves J. Hilpisch
+49 3212 112 9194
http://tpq.io | team@tpq.io
@dyjh