
Bitte die PC's hochfahren und anmelden.

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EINFÜHRUNG IN PYTHON

Wer bin ich?

Tin Votan

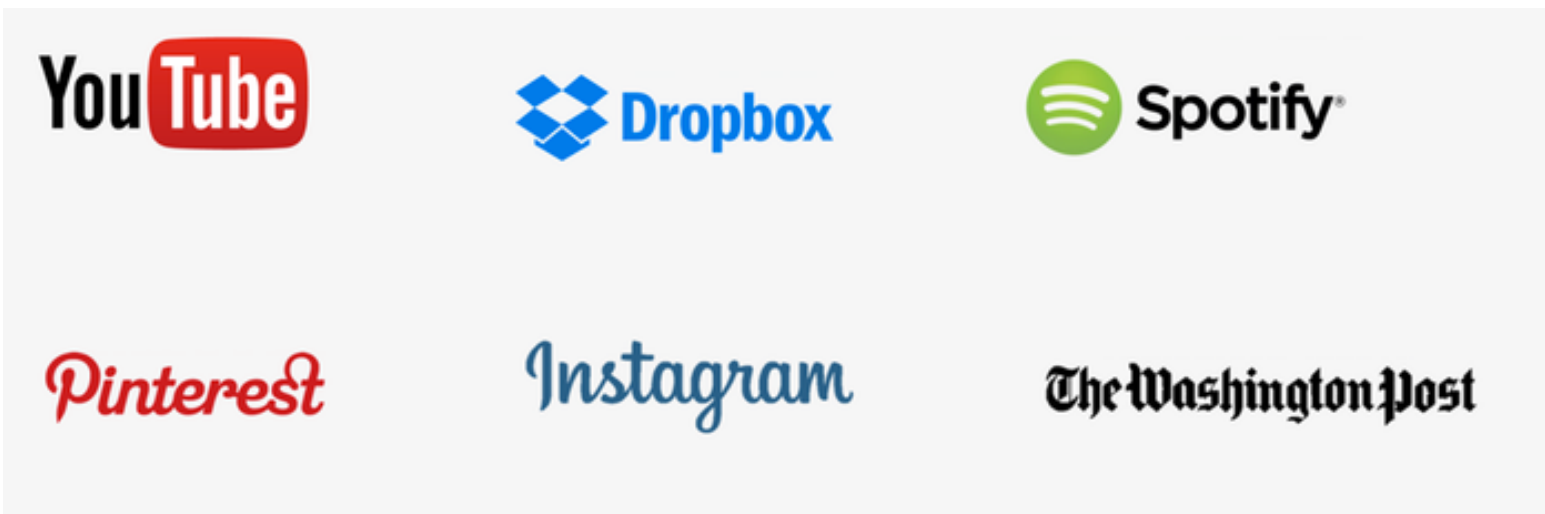
- Wirtschaftsingenieurwesen / Master of Science
Karlsruher Institut für Technologie
- Wirtschaftsingenieurwesen / Bachelor
Technische Universität Dresden
- Start-up-Gründer
- Machine Learning Engineer



Warum Python?



- **hohe Programmiersprache (Java, C#, C++, ...)**
- **leicht zu erlernen (besonders für Programmieranfänger)**
- **zur schnellen Entwicklung geeignet (RAD - Rapid Application Development)**
- **portabel, plattformunabhängig und kostenlos**
- **viele Anwendungsfälle**
- **sehr große Community und wachsende Community**
- **regelmäßige Wartung**
- **interaktive Anweisungen in der Python-Shell möglich**
- **viele Libraries und Open-Source-Projekte (vorgefertigte “Tools”)**
- **Python ist eine dynamische und interpretierte Sprache**
- **branchenübergreifend und in vielen Bereichen verwendet (Industrie, Wissenschaft, ...)**
- **hohe Nachfrage auf dem Arbeitsmarkt**



<https://www.blueshoe.de/de/blueshoe-blog/python-oder-php/> (Aufruf: 14.12.2019)

<https://labs.spotify.com/2013/03/20/how-we-use-python-at-spotify/>

<https://www.tumblr.com/privacy/consent?redirect=http%3A%2F%2Finstagram-engineering.tumblr.com%2Fpost%2F13649370142%2Fwhat-powers-instagram-hundreds-of-instances>

Wissenschaft

Data Visualisation

Data Science

Artificial Intelligence

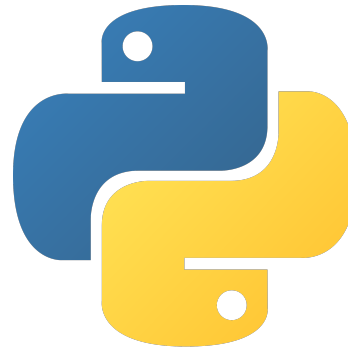
App Development

Web Development

Database Management

REST API

Games



Data Analytics

Big Data

Workflow Automation

Ethical Hacking

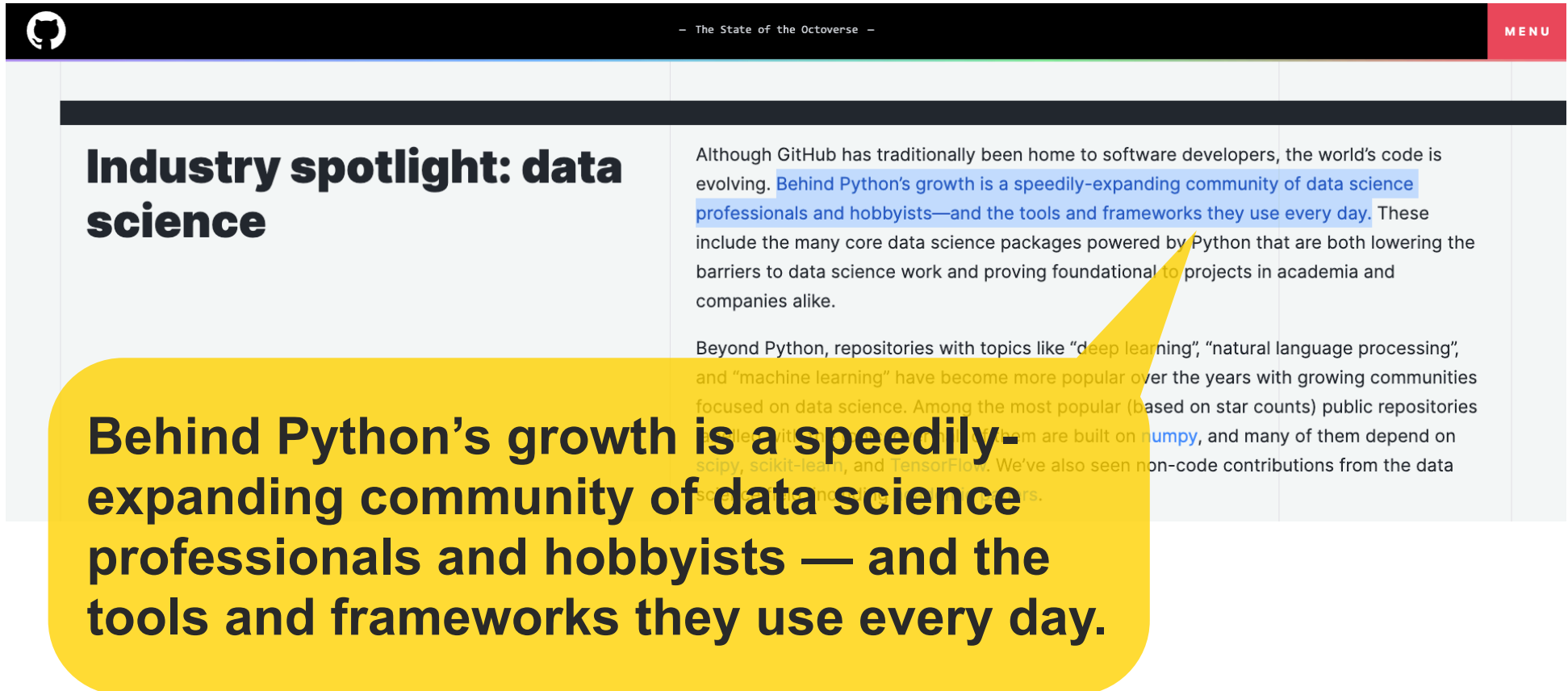
Documentation

Cloud Computing

CMS

Embedded Systems

Industrie



The image shows a screenshot of a GitHub Octoverse article titled "Industry spotlight: data science". The article text discusses the growth of Python and the data science community. A yellow callout box highlights a key sentence from the article.

Industry spotlight: data science

Although GitHub has traditionally been home to software developers, the world's code is evolving. Behind Python's growth is a speedily-expanding community of data science professionals and hobbyists—and the tools and frameworks they use every day. These include the many core data science packages powered by Python that are both lowering the barriers to data science work and proving foundational to projects in academia and companies alike.

Beyond Python, repositories with topics like "deep learning", "natural language processing", and "machine learning" have become more popular over the years with growing communities focused on data science. Among the most popular (based on star counts) public repositories are scikit-learn, TensorFlow, and Keras. Many are built on numpy, and many of them depend on scipy, scikit-learn, and TensorFlow. We've also seen non-code contributions from the data science community.

Behind Python's growth is a speedily-expanding community of data science professionals and hobbyists — and the tools and frameworks they use every day.

<https://octoverse.github.com/> (Aufruf: 13.12.2019)



Data Scientist: *The Sexiest Job of the 21st Century*

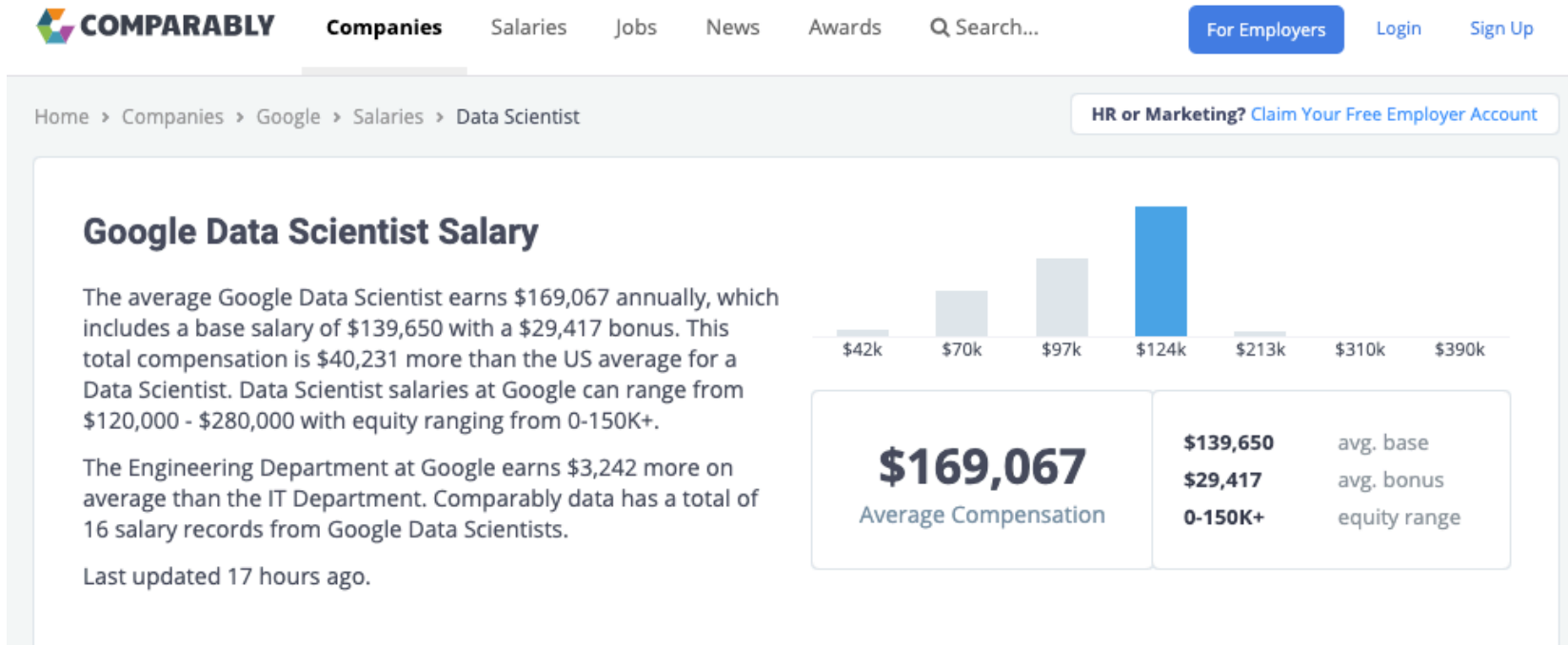
**Meet the people who
can coax treasure out of
messy, unstructured data.**

by Thomas H. Davenport
and D.J. Patil

When Jonathan Goldman arrived for work in June 2006 at LinkedIn, the business networking site, the place still felt like a start-up. The company had just under 8 million accounts, and the number was growing quickly as existing members invited their friends and colleagues to join. But users weren't seeking out connections with the people who were already on the site at the rate executives had expected. Something was apparently missing in the social experience. As one LinkedIn manager put it, "It was like arriving at a conference reception and realizing you don't know anyone. So you just stand in the corner sipping your drink—and you probably leave early."

70 Harvard Business Review October 2012

<https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century> (Aufruf: 13.12.2019)
<https://insights.newscred.com/hybrid-marketing-data-science/>
<https://medium.com/@zouh630/journey-to-become-a-data-scientist-2-d204cb906e84>



<https://www.comparably.com/companies/google/salaries/data-scientist> (Aufruf: 13.12.2019)



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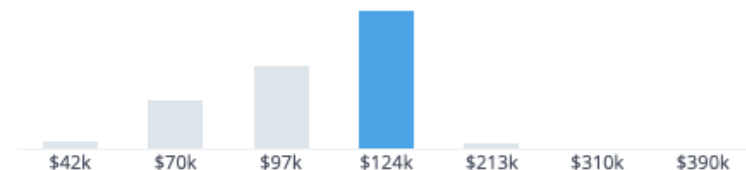
Home > Companies > Goldman Sachs > Salaries > Data Scientist

Goldman Sachs Data Scientist Salary

The average Goldman Sachs Data Scientist earns an estimated \$137,139 annually, which includes an estimated base salary of \$117,929 with a \$19,210 bonus. Goldman Sachs' Data Scientist compensation is \$8,303 more than the US average for a Data Scientist. Data Scientist salaries at Goldman Sachs can range from \$73,000 - \$240,000.

The Engineering Department at Goldman Sachs earns \$2,996 more on average than the HR Department.

Last updated 23 days ago.



\$137,139

Average Compensation

\$117,929

avg. base

\$19,210

avg. bonus

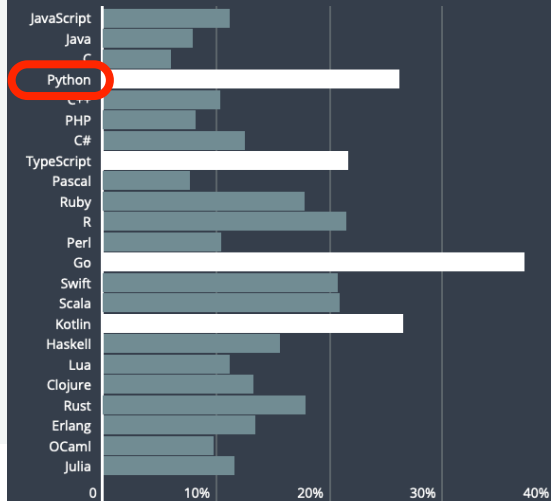
<https://www.comparably.com/companies/goldman-sachs/salaries/data-scientist> (Aufruf: 13.12.2019)

Top languages

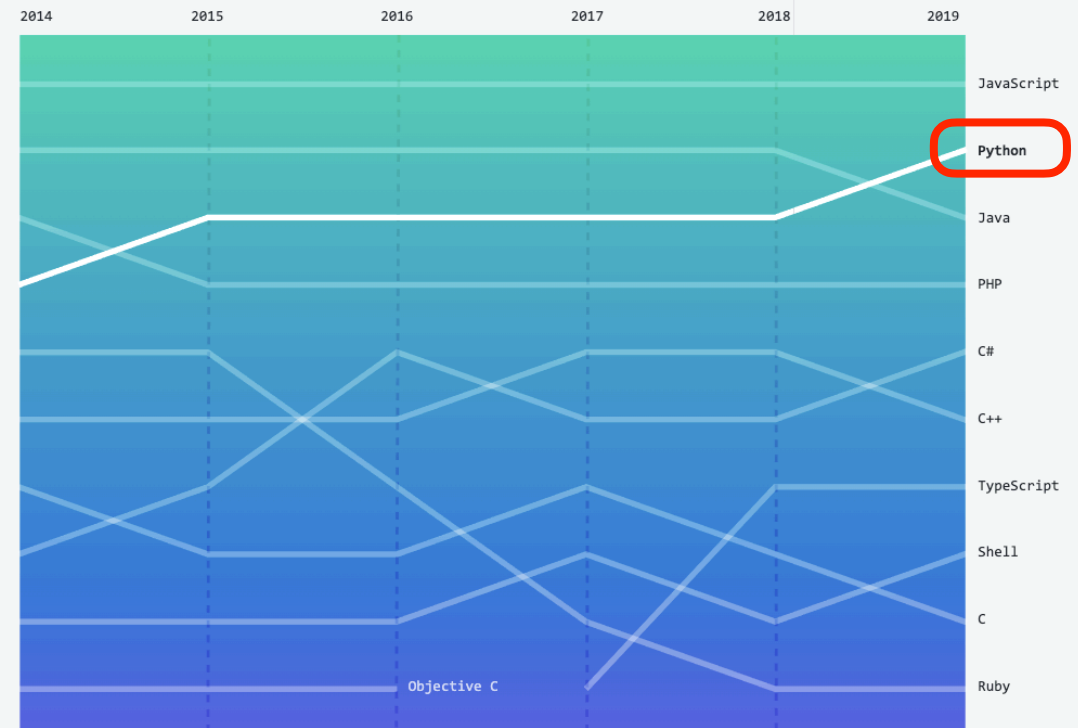
Top languages over time

This year, C# and Shell climbed the list. And for the first time, Python outranked Java as the second most popular language on GitHub by repository contributors.*

Languages developers want to learn in 2019

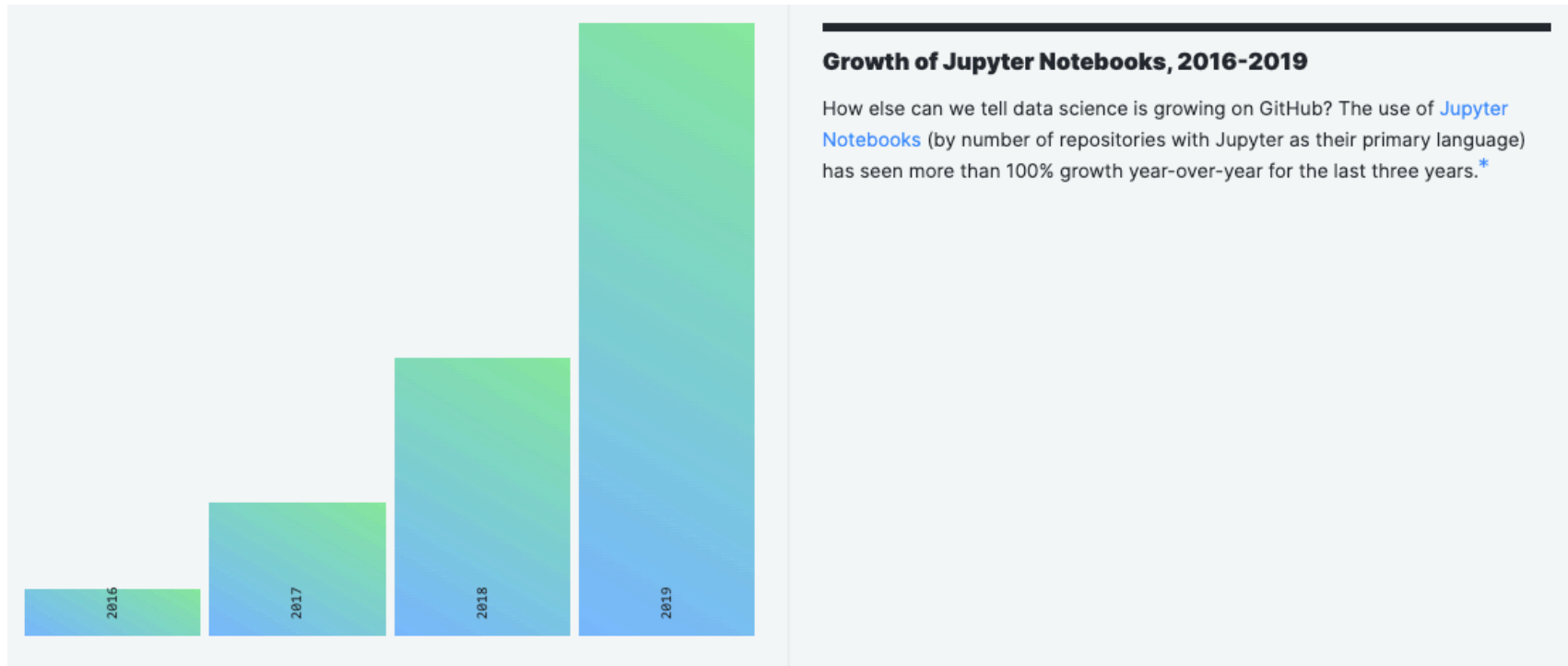


In the last year, developers collaborated in more than 370 primary languages on GitHub.



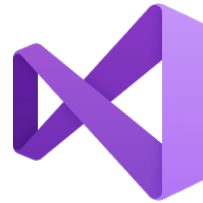
<https://octoverse.github.com/> (Aufruf: 13.12.2019)

https://info.hackerrank.com/rs/487-WAY-049/images/HackerRank_2019-2018_Developer-Skills-Report.pdf



<https://octoverse.github.com/> (Aufruf: 13.12.2019)

IDE



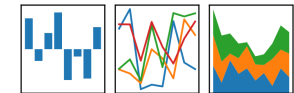
Python-Libraries

matplotlib



pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Weitere Empfehlung: PyCharm by JetBrains



<https://www.jetbrains.com/de-de/pycharm/>

Code zu finden auf GitHub:

- https://github.com/tvotan/dhbw_python

Weitere Empfehlungen (nicht in Übung behandelt):

- Installation mit pip ([https://de.wikipedia.org/wiki/Pip_\(Python\)](https://de.wikipedia.org/wiki/Pip_(Python)))
- Virtual Environment (<https://virtualenv.pypa.io/en/stable/>)

Anleitung zur Installation von Python und Anaconda:

- <https://www.python.org/downloads/release/python-380/>
- <https://www.anaconda.com/distribution/>

1. Grundlagen von Python - Operatoren, Variablen, Schleifen

2. Grundlagen von Python - Bedingungen, Funktionen

3. Vertiefung von Python - Container und Klassen

**4. Numerische Analysen und Berechnungen mit Pandas und NumPy
und Grafische Darstellung mit Matplotlib**

5. Projektarbeit

A	13.01.2019	08:30 - 11:45	Grundlagen von Python - Operatoren, Variablen, Schleifen
B	21.01.2019	13:00 - 16:15	Grundlagen von Python - Operatoren, Variablen, Schleifen
A	30.01.2019	13:00 - 16:15	Grundlagen von Python - Schleifen, Funktionen, Bedingungen
B	31.01.2019	13:00 - 16:15	Grundlagen von Python - Schleifen, Funktionen, Bedingungen
A	03.02.2019	13:00 - 16:15	Vertiefung von Python - Container und Klassen
B	10.02.2019	13:00 - 16:15	Vertiefung von Python - Container und Klassen
A	17.02.2019	13:00 - 16:15	Numerische Analysen und Berechnungen mit Pandas und NumPy und Grafische Darstellung mit Matplotlib
B	18.02.2019	13:00 - 16:15	Numerische Analysen und Berechnungen mit Pandas und NumPy und Grafische Darstellung mit Matplotlib
A	19.02.2019	13:00 - 16:15	Projektarbeit
B	20.02.2019	08:30 - 11:45	Projektarbeit

Woyand, Hans-Bernhard (2019): *Python für Ingenieure und Naturwissenschaftler / Einführung in die Programmierung, mathematische Anwendungen und Visualisierungen*, 3. Auflage, München: Hanser.

Kalista, Heiko (2018): *Python 3 : Einsteigen und Durchstarten*, München: Hanser.

Klein, Bernd (2019): *Numerisches Python : Arbeiten mit NumPy, Matplotlib und Pandas*, München: Hanser.



Weitere kostenlose Lernmöglichkeiten

Offizielles Python-Wiki:

<https://wiki.python.org/moin/FrontPage>

Kostenloser Online-Kurs mit Video (Englisch):

<https://www.freecodecamp.org/news/learn-python-basics-in-depth-video-course/>

Kostenloser Online-Kurs (sehr gut aufbereitet, Englisch):

https://python.quantecon.org/index_learning_python.html