

Aplicações de **Software Livre** para pesquisa

19 Semana Universitária
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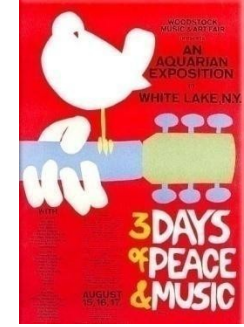


FACULDADE DE CIÊNCIA DA INFORMAÇÃO



UnB,
sua linda
meu orgulho é você

Software nos anos de 1970



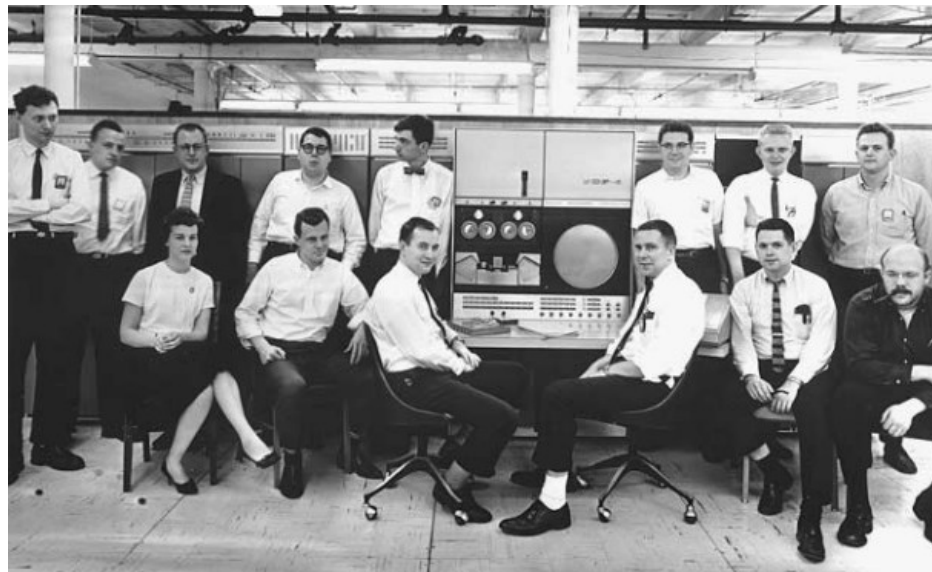
Era da Liberdade e Pós Woodstock

Software não era propriedade, era compartilhado.

Grupos de pesquisa produziam software livre.

Empresas distribuíaam software livre.

Programadores eram livres para cooperar.



Software nos anos de 1980

Era dos softwares proprietários e Microsoft

Software como propriedade exclusiva de empresas.

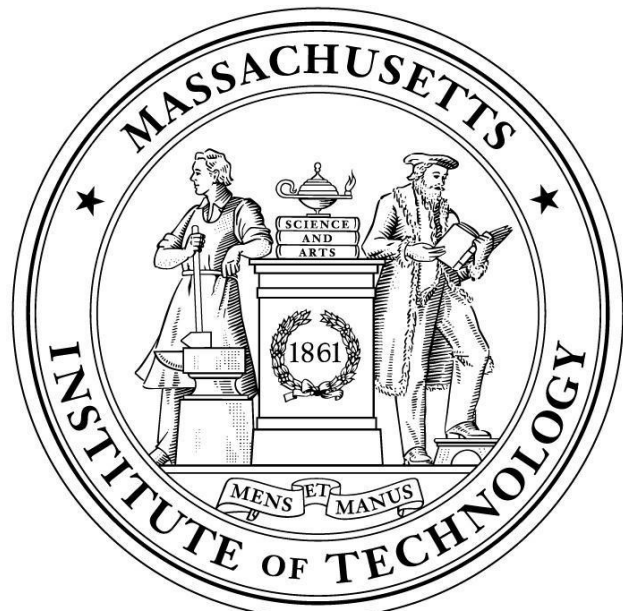
O usuário só tinha o direito de executar o programa, e em determinadas máquinas.

Conceito de licença de uso (o software continuava sendo da empresa)



O MIT, O Guru e A Impressora

Aqui começa a história do software livre....



Renasce a **Filosofia** de Software Livre

Conceito central é a liberdade

*“Free as in speech, not as
in beer.”*

*“Liberdade de expressão,
não cerveja grátis”*

Open Source Voices



Software Livre

Definição de Software Livre:

Qualquer programa de computador, onde exista a **liberdade** de ser **compartilhado, estudado e modificado**.

Software livre é o OPOSTO de software proprietário.

Software livre não OPÕE ao software comercial.

<http://www.fsf.org/about/what-is-free-software>

Proprietário x livre

Proprietário

Sem acesso ao código fonte do sistema.

Controle sobre a comercialização e utilização.

Lucro é sobre o software.

Livre

Acesso ao código fonte.

Permissão de cópia e alteração.

Lucro é no suporte e serviços relacionados.

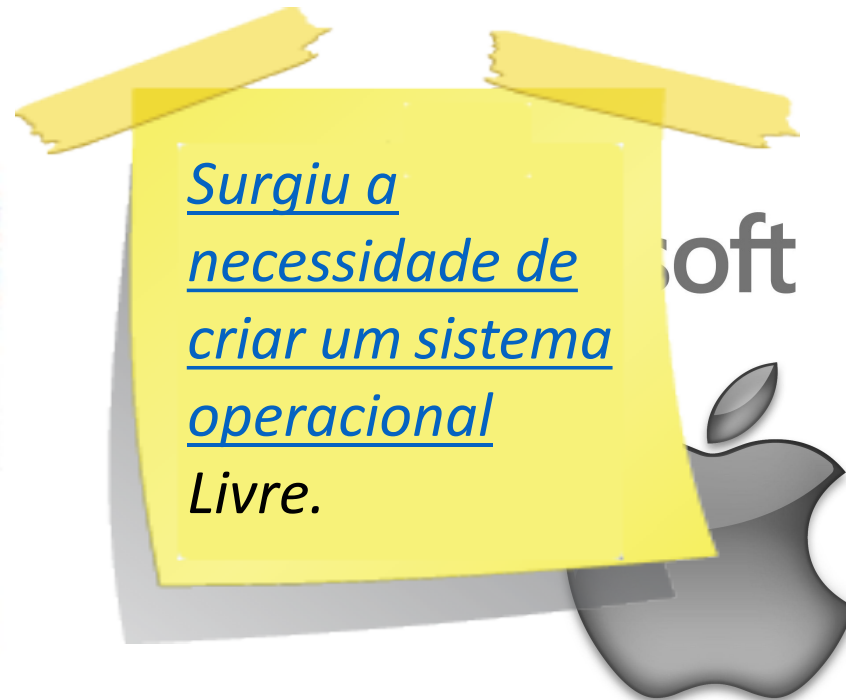
Libertando-se dos software proprietários

Software Livre é apenas a filosofia, mas como torná-la realidade ?

Como propagar software livre na era dos softwares proprietários ?



Surgiu a
necessidade de
criar um sistema
operacional
Livre.



Nasce o **Projeto GNU**



Fundado por Richard Stallman em 1984, tem como objetivo concretizar a ideologia de Software Livre

Solidariedade/Liberdade.

Um sistema livre compatível com Unix.

Ficar totalmente livre dos software proprietários.

Ainda Faltava o Kernel

Passado alguns anos, eles já tinha desenvolvido vários softwares, mas ...

Compiladores

GCC (Gnu C Compiler)

Editores

Vi, Emacs

Outros

Sed, Make, ...

Interpretadores de comando

Bash, Sh

“Nos anos 90, nós tínhamos ou encontrado ou escrito todos os componentes principais, exceto um -- o kernel” (Stallman)

Um pouco longe do MIT



TreinaLinux.com.br,

Surge o Linux no momento Certo

No dia 5 de outubro de 1991 , Linus publicou a seguinte mensagem no fórum de discussão, usenet, na WEB

“Você suspira pelos bons tempos do Minix-1.1, quando os homens eram homens e escreviam seus próprios "device drivers?... Você está sem um bom projeto em mãos e deseja trabalhar num S.O. que possa modificar de acordo com as suas necessidades?...”. Como eu mencionei há um mês atrás, estou trabalhando numa versão independente de um S.O. similar ao Minix para computadores AT-386... Ele está na versão 0.02... contudo eu tive sucesso ao executar bash, gcc, gnu-make, gnu-sed, compressão etc. nele.

GNU/LINUX

Linux é um clone livre do kernel do UNIX, escrito a partir do zero por Linus Torvalds, com a ajuda de um grupo de programadores espalhados pela internet.

GNU/Linux é o sistema operacional totalmente livre que usa o Linux como kernel.

GNU/Linux



O que é software livre?

- Software Livre, ou Free Software, conforme a [definição de software livre](#) criada pela [Free Software Foundation](#), é o software que pode ser usado, copiado, estudado, modificado e redistribuído sem restrição. A forma usual de um software ser distribuído livremente é sendo acompanhado por uma licença de software livre (como a GPL ou a BSD), e com a disponibilização do seu código-fonte.
- **Software Livre é diferente de software em domínio público.** O primeiro, quando utilizado em combinação com licenças típicas (como as licenças GPL e BSD), garante os direitos autorais do programador/organização. O segundo caso acontece quando o autor do software renuncia à propriedade do programa (e todos os direitos associados) e este se torna bem comum.

O que é software livre?

- O Software Livre como movimento organizado teve início em 1983, quando Richard Stallman (foto acima) deu início ao [Projeto GNU](#) e, posteriormente, à Free Software Foundation.
- Software Livre se refere à existência simultânea de **quatro tipos de liberdade** para os usuários do software, definidas pela Free Software Foundation. Veja abaixo uma explicação sobre as 4 liberdades, baseada no texto em português da Definição de Software Livre publicada pela FSF:
- As 4 liberdades básicas associadas ao software livre são:
 - A liberdade de executar o programa, para qualquer propósito (liberdade nº 0)
 - A liberdade de estudar como o programa funciona, e adaptá-lo para as suas necessidades (liberdade nº 1). Acesso ao código-fonte é um pré-requisito para esta liberdade.
 - A liberdade de redistribuir cópias de modo que você possa ajudar ao seu próximo (liberdade nº 2).
 - A liberdade de aperfeiçoar o programa, e liberar os seus aperfeiçoamentos, de modo que toda a comunidade se beneficie (liberdade nº 3). Acesso ao código-fonte é um pré-requisito para esta liberdade.

Algumas reflexões...

- Software é uma forma de criação intelectual;
- Uma maneira de expressar ideias, pensamentos e formas de como entendemos que as coisas deveriam funcionar;
- Dominar a forma de construir software é dominar uma forma de expressar o pensamento humano: um grau de liberdade a mais;
- É, sem dúvida, um valor que devemos defender e procurar nos capacitar como modo de expressão no universo da Ciência da Informação...
- Para as funções sociais que devemos desempenhar para a construção de uma sociedade livre, democrática e com menos desigualdade, essa é uma das ferramentas com as quais podemos atuar!

Onde encontrar softwares livres?

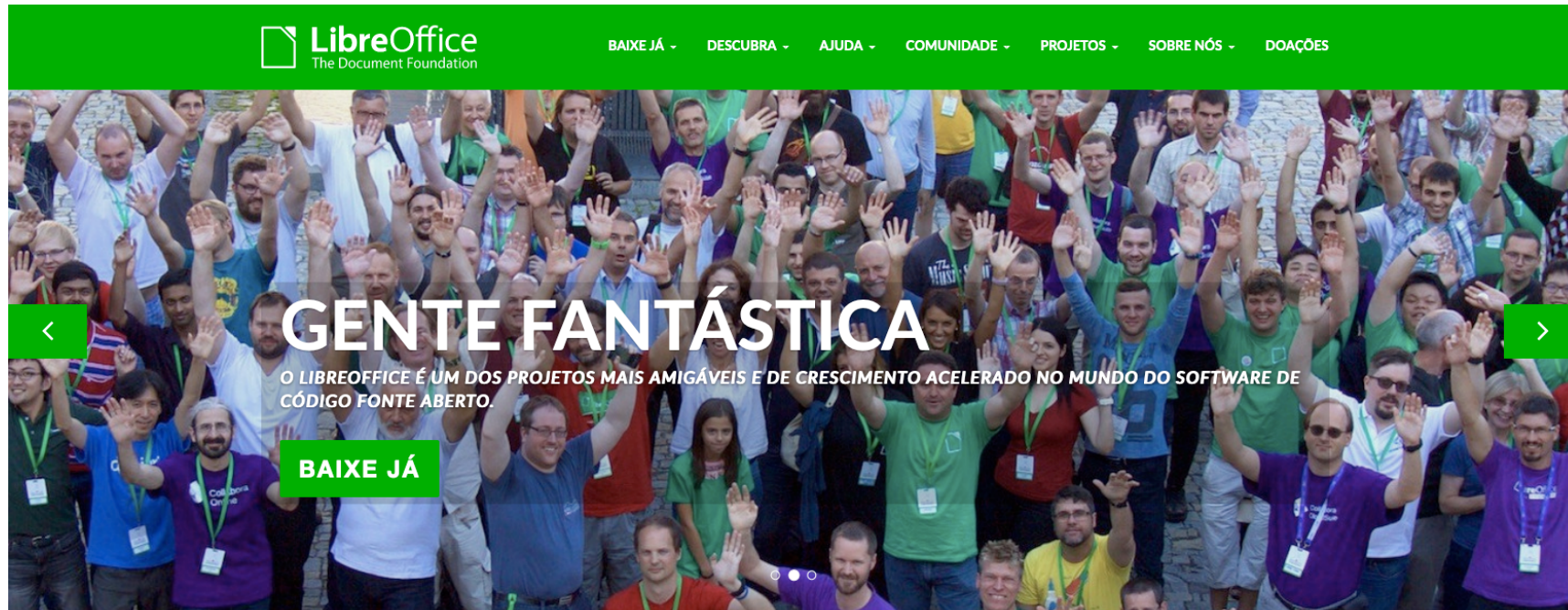
The screenshot shows the GitHub Explore page for user daltonmartins. The page is divided into several sections:

- Header:** Includes the GitHub logo, a search bar, and navigation links for Pull requests, Issues, Marketplace, and Explore. A "Get email updates" button is also present.
- User Profile:** Shows the user's profile picture, name "daltonmartins", and statistics: "0 starred topics" and "0 starred repositories".
- Explore Section:** Titled "Here's what we found based on your interests...". It features three repository cards:
 - systemd / systemd:** Popular on GitHub, 5.4k stars. Description: "The systemd System and Service Manager". Topics: systemd, c, linux. Updated Sep 26, 2019, 41 commits, 1,180 contributors.
 - microsoft / pyright:** Popular on GitHub, 4.5k stars. Description: "Static type checker for Python". Updated Sep 26, 2019, 940 commits, 21 contributors, TypeScript.
 - farah:** Based on topics you've starred. 1 star.
- Trending repositories today:** A list of trending repositories:
 - ton-blockchain / ton (622 stars)
 - aspnet / EntityFrameworkCore (8.2k stars) - Description: "Entity Framework Core is a lightweight and extensible version of the popular Entity Framework data access technology"
 - denisidoro / navi (2.6k stars) - Description: "An interactive cheatsheet tool for the command-line"
 - seaswalker / spring-analysis (4.7k stars) - Description: "Spring源码阅读"
- Trending developers:** A list of trending developers:
 - Franck Abgrall (kefranabg) - repository: readme-md-generator
 - Matteo Mazarolo (mmazarolo) - repository: react-native-modal-datetime-picker
 - Matthew Phillips

<https://github.com/explore>

Uma caixa de ferramentas de softwares livres
para pesquisa...

Pacote de aplicativos de escritório



LibreOffice
The Document Foundation

BAIXE JÁ - DESCUBRA - AJUDA - COMUNIDADE - PROJETOS - SOBRE NÓS - DOAÇÕES

GENTE FANTÁSTICA

O LIBREOFFICE É UM DOS PROJETOS MAIS AMIGÁVEIS E DE CRESCIMENTO ACELERADO NO MUNDO DO SOFTWARE DE CÓDIGO FONTE ABERTO.

BAIXE JÁ

+Fácil, +Rápido, e + Produtivo!

O LibreOffice é uma poderosa suíte de produtividade de escritório com planilha, editor de texto, editor de apresentação e muito mais.

Sua interface limpa e suas ferramentas avançadas o farão soltar sua criatividade e melhorar sua produtividade.

O LibreOffice incorpora várias aplicações que as torna a mais poderosa suíte de produtividade de escritório livre e aberta do mercado.



Uma Suíte Office Livre



Gente Fantástica



Um Projeto Divertido

<https://pt-br.libreoffice.org/>

Tratamento de dados



OpenRefine

A free, open source,
powerful tool for working
with messy data



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Community

Documentation

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Welcome!

OpenRefine (previously Google Refine) is a powerful tool for working with messy data: cleaning it; transforming it from one format into another; and extending it with web services and external data.

OpenRefine always keeps your data private on your own computer until YOU want to share or collaborate. Your private data never leaves your computer unless you want it to. (It works by running a small server on your computer and you use your web browser to interact with it)

OpenRefine is available in English, Chinese, Spanish, French, Russian, Portuguese (Brazil), German, Japanese, Italian, Hungarian, Hebrew, Filipino, Cebuano, Tagalog

OpenRefine was supported in 2018 by:



Introduction to OpenRefine

1. Explore Data

OpenRefine can help you explore large data sets with ease. You can find out more about this functionality by watching the video below.



Contract ID	Contractor Name	Type of Contract	Date of Award	Start Date	End Date	Total value
1034	ASAP SOFTWARE EXPRESSING SOLUTIONS MARKETING LP	Microsoft Enterprise Agreement	04/01/2009	04/01/2009	05/30/2011	
1360	IMAC INC/FHASE DISTRIBUTION INCORPORATED	Remedy Service Desk Maintenance	04/01/2009	04/01/2009	03/01/2010	
1841	GOVCONNECTION INCORPORATED	Cisco SmartNet	05/01/2009	05/01/2009	04/30/2011	
1942	ITS CORPORATION	Time & Materials	03/31/2008	01/01/2009	03/30/2011	
7400	SENET INTERNATIONAL CORPORATION	IBM Cloud Print CEA	05/04/2009	05/05/2009	07/03/2009	
1840	IT FEDERAL SALES LIMITED LIABILITY COMPANY		01/28/2009	01/28/2010	05/30/2010	
1840	IT FEDERAL SALES LIMITED LIABILITY COMPANY		10/01/2009	10/01/2009	08/25/2010	

<http://openrefine.org/>

Análise estatística, análise e mineração de dados



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R Project

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Help With R

[Getting Help](#)

Documentation

[Manuals](#)

[FAQs](#)

[The R Journal](#)

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[Certification](#)

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Links

[Bioconductor](#)

[Related Projects](#)

[GSoC](#)

The R Project for Statistical Computing

Getting Started

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred [CRAN mirror](#).

If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

News

- [R version 3.6.1 \(Action of the Toes\)](#) has been released on 2019-07-05.
- useR! 2020 will take place in St. Louis, Missouri, USA.
- [R version 3.5.3 \(Great Truth\)](#) has been released on 2019-03-11.
- The R Foundation Conference Committee has released a [call for proposals](#) to host useR! 2020 in North America.
- You can now support the R Foundation with a renewable subscription as a [supporting member](#)
- The R Foundation has been awarded the Personality/Organization of the year 2018 award by the professional association of German market and social researchers.

News via Twitter

 The R Foundation Retweeted



useR! 2020

@useR2020stl

Save the date!

Who is planning on attending the 2020 conference in St. Louis, Missouri? Home of the Cardinals 🦅, toasted ravioli, gooey butter cake, and the new MLS expansion team! #StLouis #useR2020stl



Mineração de dados e aprendizagem de máquina

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Machine Learning at Waikato University

An exciting and potentially far-reaching development in computer science is the invention and application of methods of machine learning (ML). These enable a computer program to automatically analyse a large body of data and decide what information is most relevant. This crystallised information can then be used to automatically make predictions or to help people make decisions faster and more accurately.

Project Objectives

Our objectives are to

- make ML techniques generally available;
- apply them to practical problems that matter to New Zealand industry;
- develop new machine learning algorithms and give them to the world;
- contribute to a theoretical framework for the field.

Software

Our team has incorporated several standard ML techniques into a software "workbench" called Weka, for Waikato Environment for Knowledge Analysis. With it, a specialist in a particular field is able to use ML to derive useful knowledge from databases that are far too large to be analysed by hand. Weka's users are ML researchers and industrial scientists, but it is also widely used for teaching. Recently, our team has also worked on MOA, an environment for mining data streams.

<https://www.cs.waikato.ac.nz/ml/index.html>

Ciência de dados

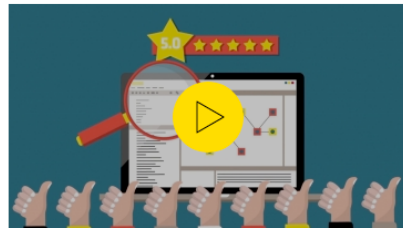


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KNIME Software

End to end data science for better decision making.



[Introduction to KNIME Software](#)



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<https://www.knime.com/software-overview>

Gestão da informação e Repositórios

- Muitas possibilidades:
 - ATOM - <https://www.accesstomemory.org/pt-br/>
 - KOHA - <https://koha-community.org/>
 - Omeka - <https://omeka.org/>
 - Tainacan - <http://tainacan.org/>
 - Dspace - <https://duraspace.org/dspace/>
 - Dataverse - <https://dataverse.org/>
 - CKAN - <https://ckan.org/>
 - Etc...

Ciência de Dados com Python...

Linguagem de script para ciência de dados: Python

The image shows the Python.org website homepage. At the top, there is a navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is the Python logo and a search bar. A secondary navigation bar contains links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area features a code snippet on the left and an article titled "All the Flow You'd Expect" on the right. The code snippet demonstrates a for loop that calculates the product of numbers in a list. The article text explains that Python supports control flow statements like if, for, while, and range. Below the article is a pagination control with buttons for pages 1 through 5. A central banner states: "Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)". At the bottom, there are four columns of quick links: "Get Started" (with a power icon), "Download" (with a download icon), "Docs" (with a document icon), and "Jobs" (with a briefcase icon). Each column contains a brief description and a link to the relevant resource. At the very bottom, there are links for "Latest News" and "Upcoming Events", each with a "More" link.

```
# For loop on a list
>>> numbers = [2, 4, 6, 8]
>>> product = 1
>>> for number in numbers:
...     product = product * number
...
>>> print('The product is:', product)
The product is: 384
```

All the Flow You'd Expect
Python knows the usual control flow statements that other languages speak — `if`, `for`, `while` and `range` — with some of its own twists, of course. [More control flow tools in Python 3](#)

1 2 3 4 5

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

Get Started
Whether you're new to programming or an experienced developer, it's easy to learn and use Python.
[Start with our Beginner's Guide](#)

Download
Python source code and installers are available for download for all versions!
Latest: [Python 3.7.4](#)

Docs
Documentation for Python's standard library, along with tutorials and guides, are available online.
docs.python.org

Jobs
Looking for work or have a Python related position that you're trying to hire for? Our **relaunched community-run job board** is the place to go.
jobs.python.org

Latest News >>> More

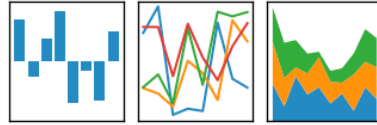
Upcoming Events >>> More

<https://www.python.org/>

Pandas: biblioteca Python para análise de dados

pandas

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



[home](#) // [about](#) // [get pandas](#) // [documentation](#) // [community](#) // [talks](#) // [donate](#)

Python Data Analysis Library

pandas is an open source, BSD-licensed library providing high-performance, easy-to-use data structures and data analysis tools for the [Python](#) programming language.

pandas is a [NumFOCUS](#) sponsored project. This will help ensure the success of development of *pandas* as a world-class open-source project, and makes it possible to [donate](#) to the project.

A Fiscally Sponsored Project of

NUMFOCUS
OPEN CODE = BETTER SCIENCE

v0.25.1 Final (August 22, 2019)

This is a minor bug-fix release in the 0.25.x series and includes some regression fixes and bug fixes. We recommend that all users upgrade to this version.

See the [full whatsnew](#) for a list of all the changes.

The release can be installed with conda from the defaults and conda-forge channels:

```
conda install pandas
```

Or via PyPI:

```
python -m pip install --upgrade pandas
```

VERSIONS

Release

0.25.1 - August 2019

[download](#) // [docs](#) // [pdf](#)

Development

0.26.0 - September 2019

[github](#) // [docs](#)

Previous Releases

0.25.0 - [download](#) // [docs](#) // [pdf](#)

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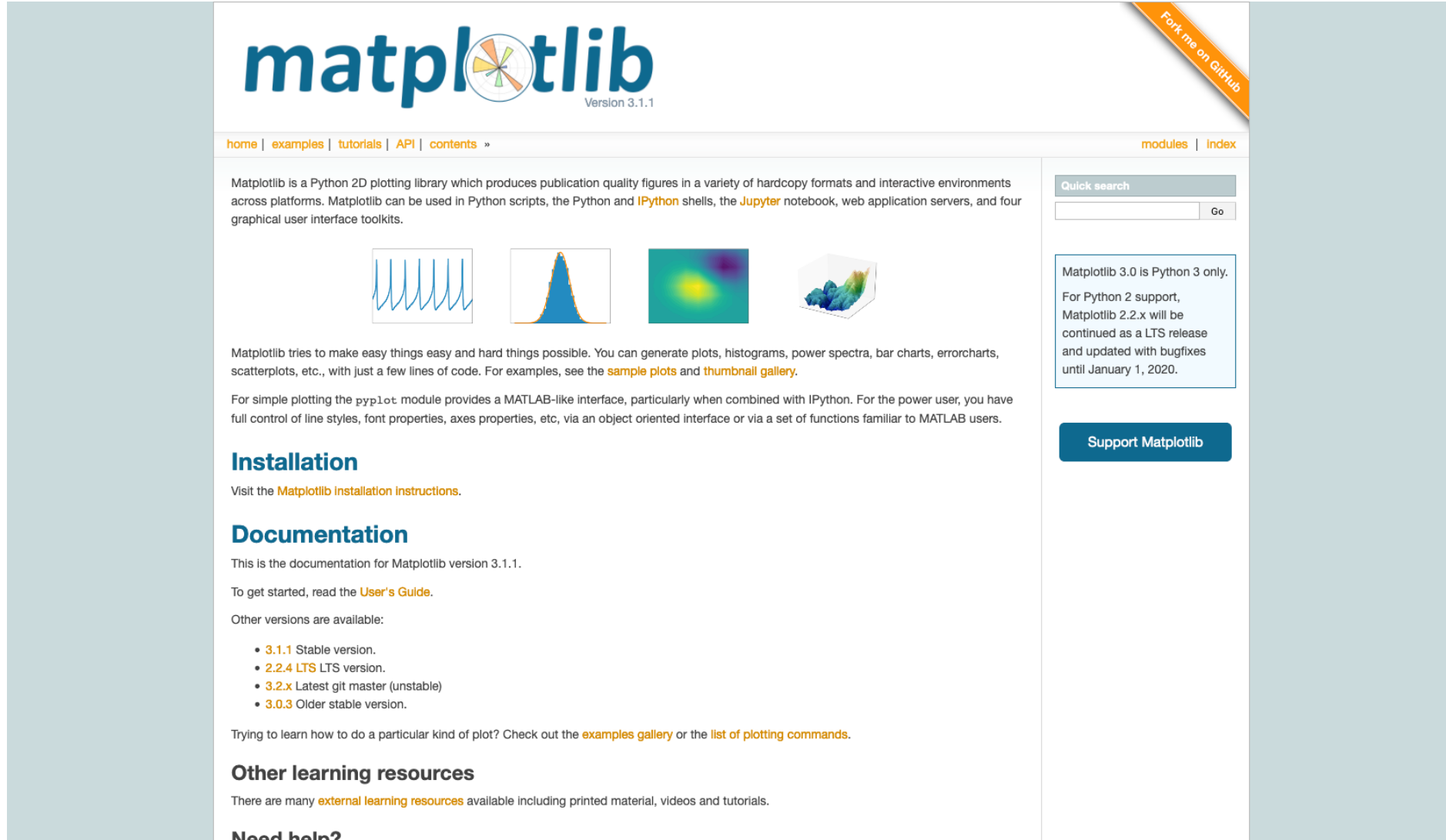
0.13.1 - [download](#) // [docs](#) // [pdf](#)

0.12.0 - [download](#) // [docs](#) // [pdf](#)

ABOUT PANDAS

<https://pandas.pydata.org/>

Matplotlib: gráficos com Python




The image shows the homepage of the Matplotlib website. At the top left is the Matplotlib logo, which consists of the word "matplotlib" in a blue, lowercase, sans-serif font, followed by a circular icon containing a stylized plot with a red line and a green shaded area. Below the logo, it says "Version 3.1.1". To the right of the logo is a yellow banner with the text "Fork me on GitHub". Below the logo is a navigation bar with links for "home", "examples", "tutorials", "API", and "contents", followed by a right arrow. On the far right of the navigation bar are links for "modules" and "index". The main content area starts with a paragraph describing Matplotlib as a Python 2D plotting library. Below this is a row of four small plot thumbnails: a line plot with multiple peaks, a histogram with a normal distribution curve overlaid, a 2D heatmap, and a 3D surface plot. Another paragraph follows, explaining the library's goal and providing links to "sample plots" and "thumbnail gallery". Below that is a section for "Installation" with a link to "Matplotlib Installation Instructions". The "Documentation" section follows, stating it's for version 3.1.1 and linking to the "User's Guide". A list of other versions is provided: 3.1.1 (Stable), 2.2.4 LTS (LTS), 3.2.x (Latest git master), and 3.0.3 (Older stable). A link to "examples gallery" and "list of plotting commands" is also present. The "Other learning resources" section mentions "external learning resources". Finally, a "Need help?" section is partially visible at the bottom.

matplotlib Version 3.1.1

home | examples | tutorials | API | contents » modules | index

Matplotlib is a Python 2D plotting library which produces publication quality figures in a variety of hardcopy formats and interactive environments across platforms. Matplotlib can be used in Python scripts, the Python and IPython shells, the Jupyter notebook, web application servers, and four graphical user interface toolkits.



Matplotlib tries to make easy things easy and hard things possible. You can generate plots, histograms, power spectra, bar charts, errorcharts, scatterplots, etc., with just a few lines of code. For examples, see the [sample plots](#) and [thumbnail gallery](#).

For simple plotting the `pyplot` module provides a MATLAB-like interface, particularly when combined with IPython. For the power user, you have full control of line styles, font properties, axes properties, etc, via an object oriented interface or via a set of functions familiar to MATLAB users.

Installation

Visit the [Matplotlib Installation Instructions](#).

Documentation

This is the documentation for Matplotlib version 3.1.1.

To get started, read the [User's Guide](#).

Other versions are available:

- [3.1.1](#) Stable version.
- [2.2.4 LTS](#) LTS version.
- [3.2.x](#) Latest git master (unstable)
- [3.0.3](#) Older stable version.

Trying to learn how to do a particular kind of plot? Check out the [examples gallery](#) or the [list of plotting commands](#).

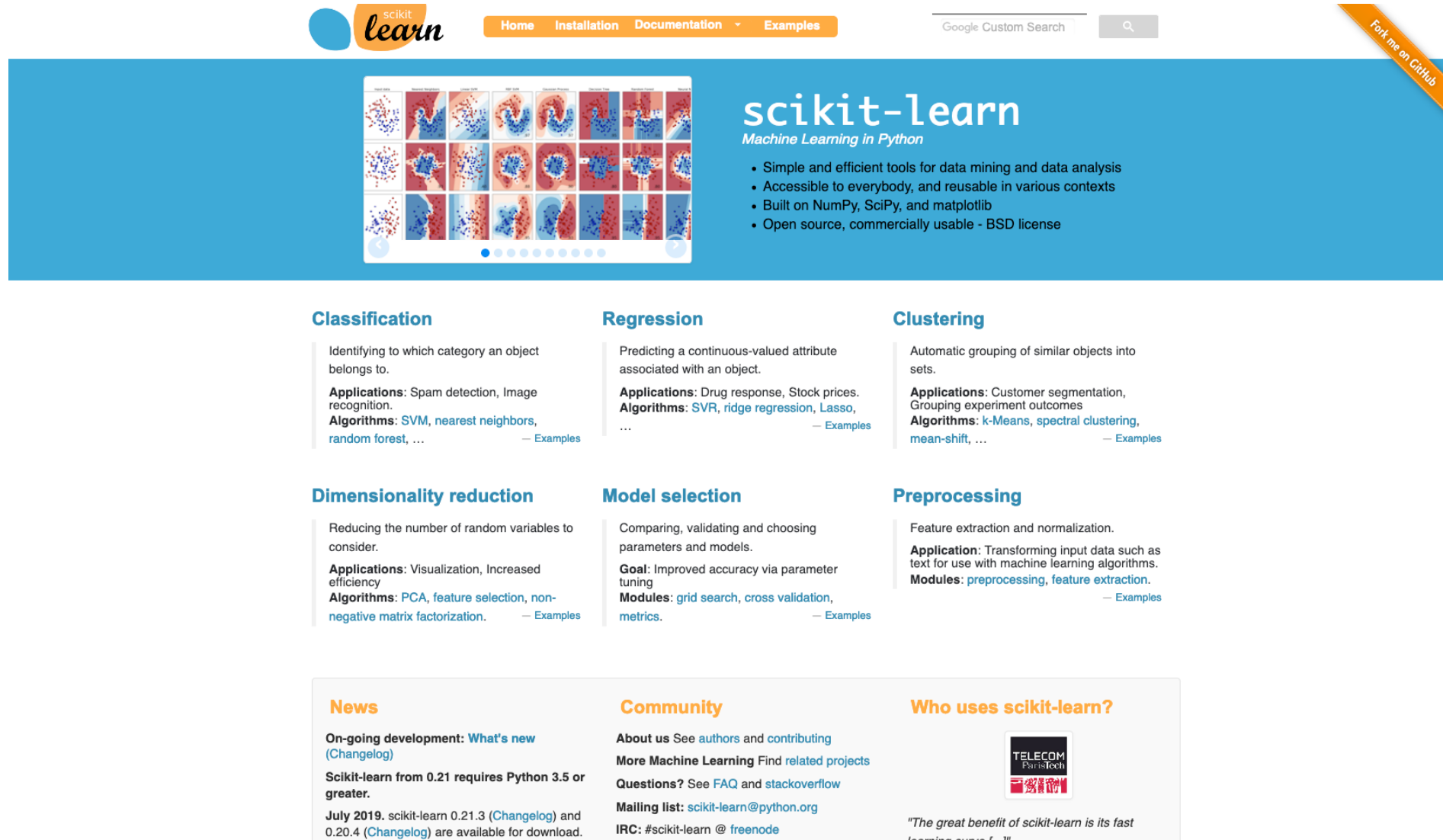
Other learning resources

There are many [external learning resources](#) available including printed material, videos and tutorials.

Need help?

<https://matplotlib.org/>

Scikit-learn: aprendizagem de máquina com Python



scikit-learn
Machine Learning in Python

- Simple and efficient tools for data mining and data analysis
- Accessible to everybody, and reusable in various contexts
- Built on NumPy, SciPy, and matplotlib
- Open source, commercially usable - BSD license

Classification

Identifying to which category an object belongs to.

Applications: Spam detection, Image recognition.

Algorithms: SVM, nearest neighbors, random forest, ... — Examples

Regression

Predicting a continuous-valued attribute associated with an object.

Applications: Drug response, Stock prices.

Algorithms: SVR, ridge regression, Lasso, ... — Examples

Clustering

Automatic grouping of similar objects into sets.

Applications: Customer segmentation, Grouping experiment outcomes

Algorithms: k-Means, spectral clustering, mean-shift, ... — Examples

Dimensionality reduction

Reducing the number of random variables to consider.

Applications: Visualization, Increased efficiency

Algorithms: PCA, feature selection, non-negative matrix factorization. — Examples

Model selection

Comparing, validating and choosing parameters and models.

Goal: Improved accuracy via parameter tuning

Modules: grid search, cross validation, metrics. — Examples

Preprocessing

Feature extraction and normalization.

Application: Transforming input data such as text for use with machine learning algorithms.

Modules: preprocessing, feature extraction. — Examples

News

On-going development: [What's new \(Changelog\)](#)

Scikit-learn from 0.21 requires Python 3.5 or greater.

July 2019. scikit-learn 0.21.3 ([Changelog](#)) and 0.20.4 ([Changelog](#)) are available for download.

Community

About us See [authors](#) and [contributing](#)


More Machine Learning Find [related projects](#)

Questions? See [FAQ](#) and [stackoverflow](#)

Mailing list: scikit-learn@python.org

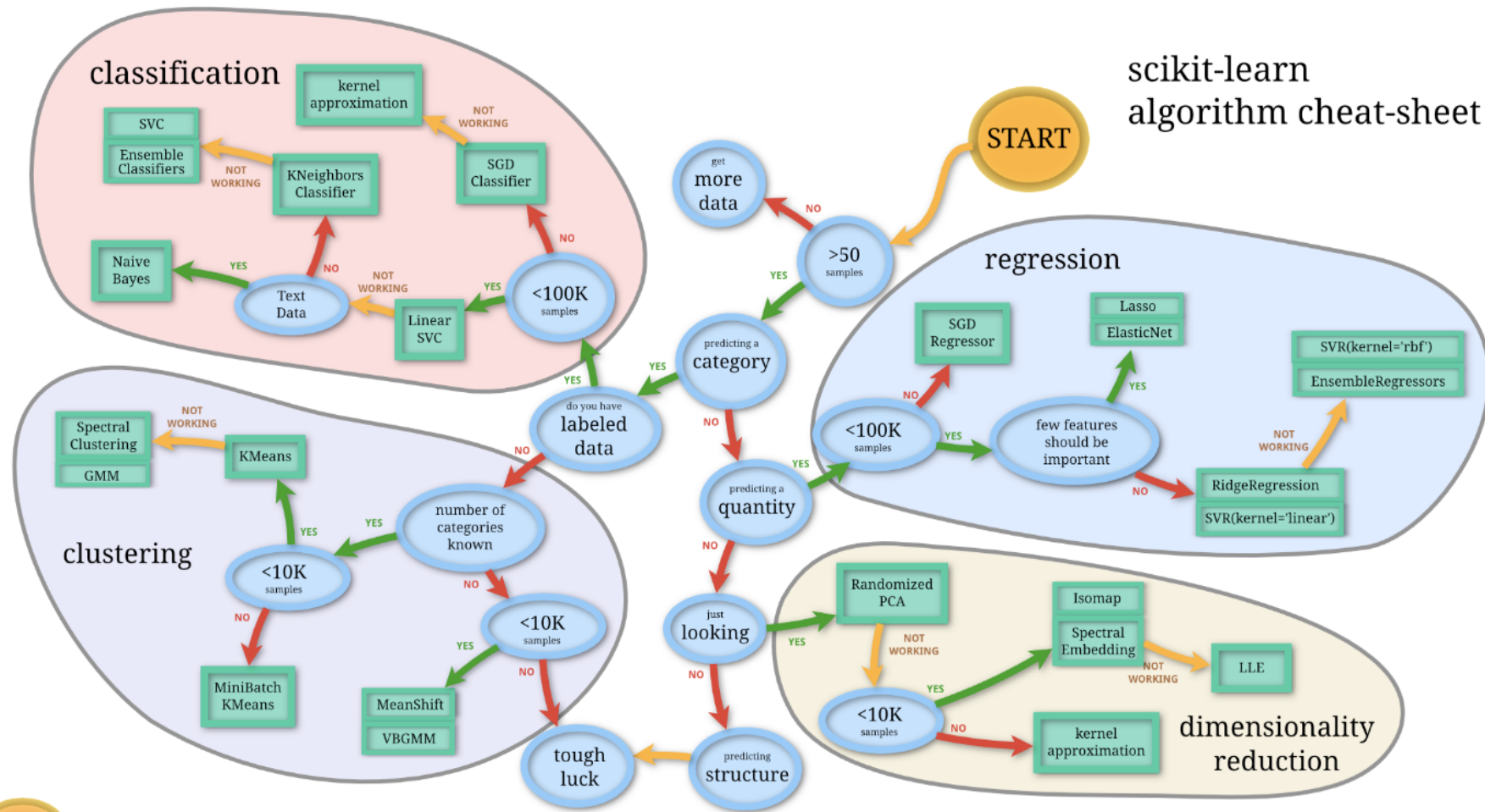
IRC: #scikit-learn @ [freenode](#)

Who uses scikit-learn?




"The great benefit of scikit-learn is its fast learning curve!"

Scikit-learn: aprendizagem de máquina com Python



Scikit-image: processamento de imagem em Python



scikit-image
image processing in python

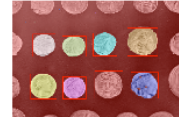
Download Gallery Documentation Community Guidelines Source Search documentation ...

Stable (release notes)
0.15.0 - April 2019
Download

Development
pre-0.16
Download

Image processing in Python

scikit-image is a collection of algorithms for image processing. It is available **free of charge and free of restriction**. We pride ourselves on high-quality, peer-reviewed code, written by an active **community of volunteers**.



If you find this project useful, please cite: [BIBTeX]

Stéfan van der Walt, Johannes L. Schönberger, Juan Nunez-Iglesias, François Boulogne, Joshua D. Warner, Neil Yager, Emmanuelle Gouillart, Tony Yu and the scikit-image contributors. **scikit-image: Image processing in Python**. PeerJ 2:e453 (2014) <https://doi.org/10.7717/peerj.453>

News

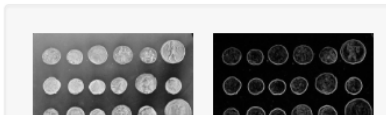
- **Release!** Version 0.14.3 2019-06-11
- **Release!** Version 0.15.0 2019-04-02
- **Release!** Version 0.14.2 2019-01-18
- **CZI announces funding support for scikit-image!** 2018-12-07
- **Release!** Version 0.14.1 2018-10-02

Getting Started

Filtering an image with `scikit-image` is easy! For more examples, please visit our [gallery](#).

```
from skimage import data, io, filters

image = data.coins()
# ... or any other NumPy array!
```



[OPEN CHAT](#)