
ORANGE: Um Machine Learning Visual e Dinâmico!

— André Louzada Colodette —

Orange: o que é?

Site: <https://orange.biolab.si/>

É um kit de ferramentas de visualização de dados de código aberto, aprendizado de máquina e mineração de dados . Possui um front-end de programação visual para análise exploratória de dados e visualização interativa de dados , e também pode ser usado como uma biblioteca Python. (Wikipedia)

Pacote de software de código aberto lançado sob a GPL

Download: separado ou como parte do pacote de ferramentas do Anaconda

Site: <https://www.anaconda.com/distribution/>

[Sign in to Anaconda Cloud](#)[Home](#)[Environments](#)[Learning](#)[Community](#)[Documentation](#)[Developer Blog](#)

Applications on

base (root)

Channels

[Refresh](#)

JupyterLab

1.0.2

An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.

[Launch](#)

Notebook

6.0.0

Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.

[Launch](#)

Orange 3

3.19.0

Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.

[Launch](#)

Spyder

3.3.6

Scientific PYTHON Development Environment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features

[Launch](#)

Glueviz

0.13.3

Multidimensional data visualization across files. Explore relationships within and among related datasets.



RStudio

1.1.456

A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.

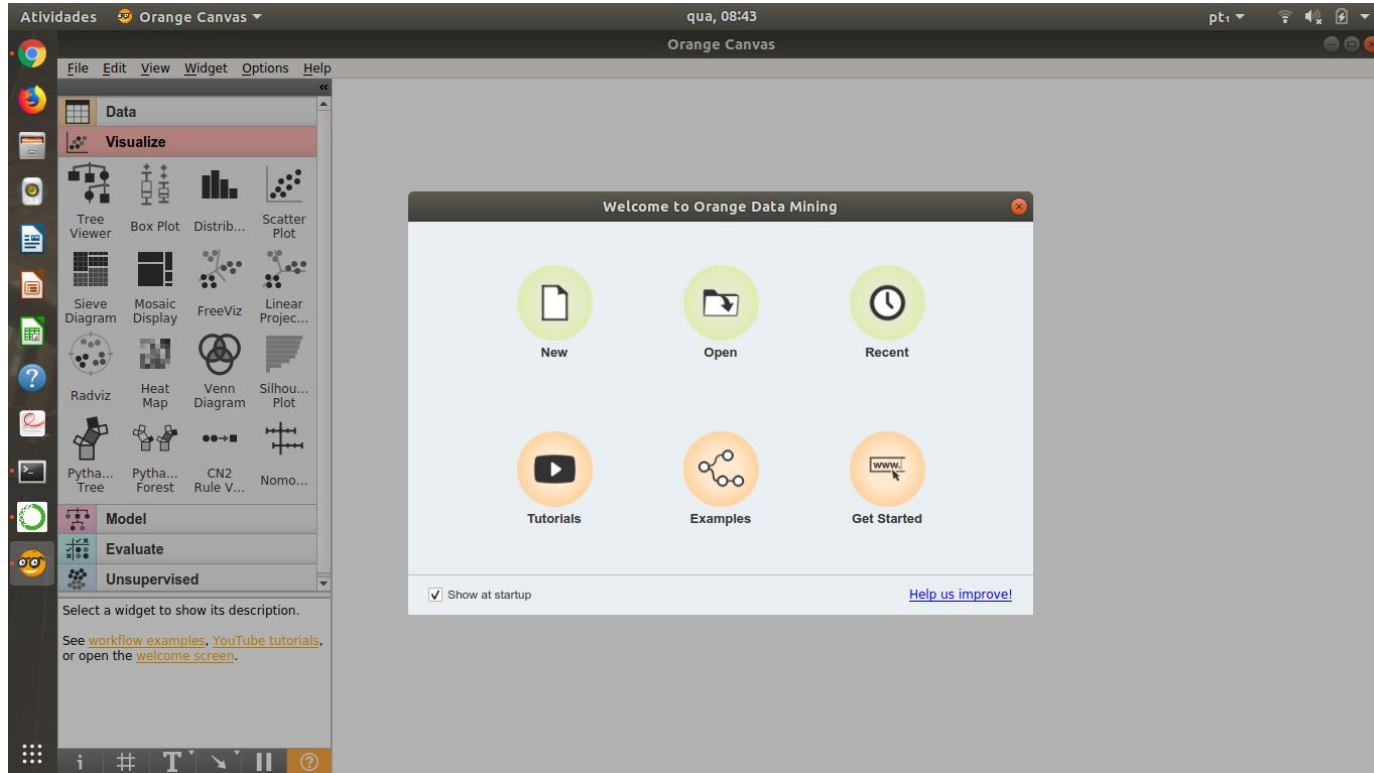


VS Code

1.38.1

Streamlined code editor with support for development operations like debugging, task running and version control.

Tela de Boas Vindas



Como que funciona?

Workflow

Canvas

Wingets

Tutorial: canal do YouTube Orange Data Mining

<https://www.youtube.com/channel/UCIKKWBe2SCAEyv7ZNGhle4g>

Widgets

Unidades computacionais do Orange.

Comunicam um com os outros.

Possuem um canal de entrada, um de saída ou ambos.

Documentação: <https://orange-development.readthedocs.io/>

Explica o código por trás de suas funcionalidades.

Orange Development

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[Orange.widgets.utils.
concurrent](#)

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Go



Widget Development

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Following the previous examples, our module defining the OWDataSamplerA widget starts out as:

```
import sys
import numpy

import Orange.data
from Orange.widgets import widget, gui
from Orange.widgets.utils.signals import Input, Output

class OWDataSamplerA(widget.OWWidget):
    name = "Data Sampler"
    description = "Randomly selects a subset of instances from the data"
    icon = "icons/DataSamplerA.svg"
    priority = 10

    class Inputs:
        data = Input("Data", Orange.data.Table)

    class Outputs:
        sample = Output("Sampled Data", Orange.data.Table)

    want_main_area = False

    def __init__(self):
        super().__init__()

        # GUI
        box = gui.widgetBox(self.controlArea, "Info")
        self.infoa = gui.widgetLabel(
            box, "No data on input yet, waiting to get something.")
        self.infob = gui.widgetLabel(box, '')
```

The widget defines an input channel “Data” and an output channel called “Sampled Data”. Both will carry tokens of the type **Orange.data.Table**. In the code, we will refer to the signals as *Inputs.data* and *Outputs.sample*.

Data

File Datasets SQL Table Data Table

Paint Data Data Info Data Sampler Select Colum...

Select Rows Rank Correl... Merge Data

Conca... Select by Dat... Trans... Rando...

Prepro... Transf... Impute Outliers

Edit Domain Python Script Color Contin...

Create Class Discre... Feature Constr... Feature Statist...

Data

Visualize

Tree Viewer Box Plot Distrib... Scatter Plot

Sieve Diagram Mosaic Display FreeViz Linear Projec...

Radviz Heat Map Venn Diagram Silhou... Plot

Pytha... Tree Pytha... Forest CN2 Rule V... Nomo...

Model

Evaluate

Unsupervised

Data

Visualize

Model

Const... CN2 Rule 1... kNN Tree

Random Forest SVM Linear Regre... Logistic Regre...

Naive Bayes AdaBo... Neural Network Stoch... Gradie...

Stacking Save Model Load Model

Evaluate

Unsupervised

Data

Visualize

Model

Evaluate

Test & Score Predic... Confu... Matrix ROC Analysis

Lift Curve Calibr... Plot

Unsupervised

Data

Visualize

Model

Evaluate

Unsupervised

Distance File Distance Matrix t-SNE Distance Map

Hierar... Cluste... k-Means Louvain Cluste... Manifold Learning

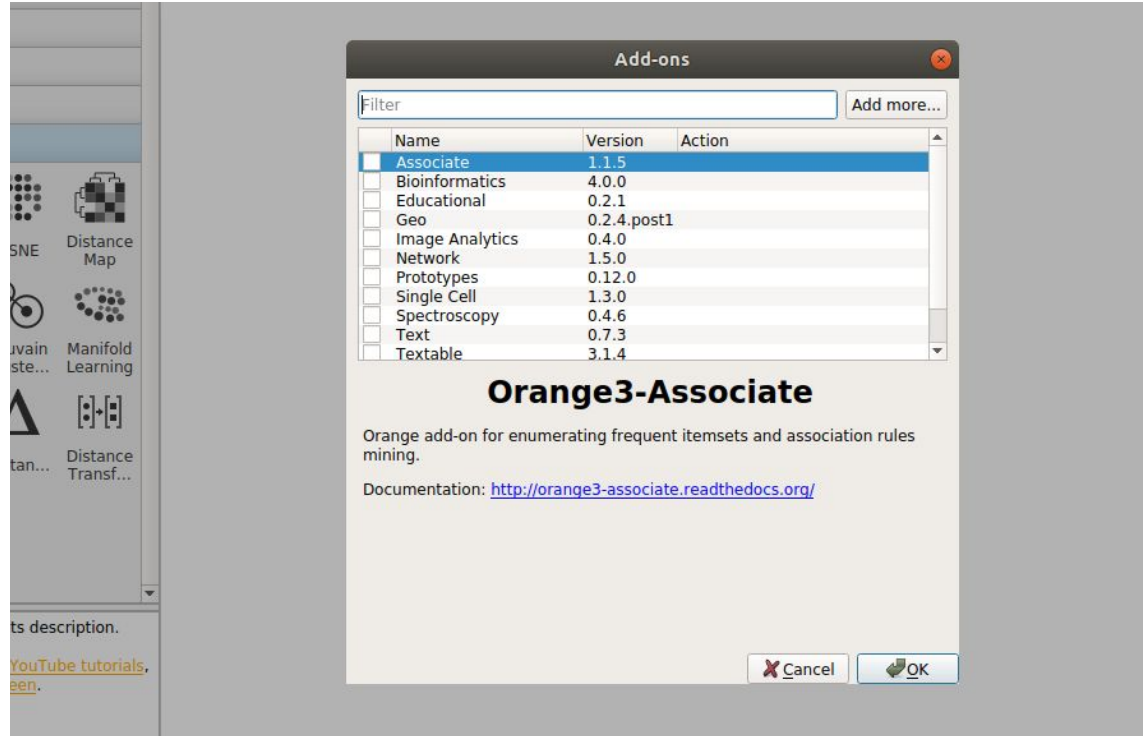
PCA Corres... Analysis Distan... Distance Transf...

MDS Save Distan...

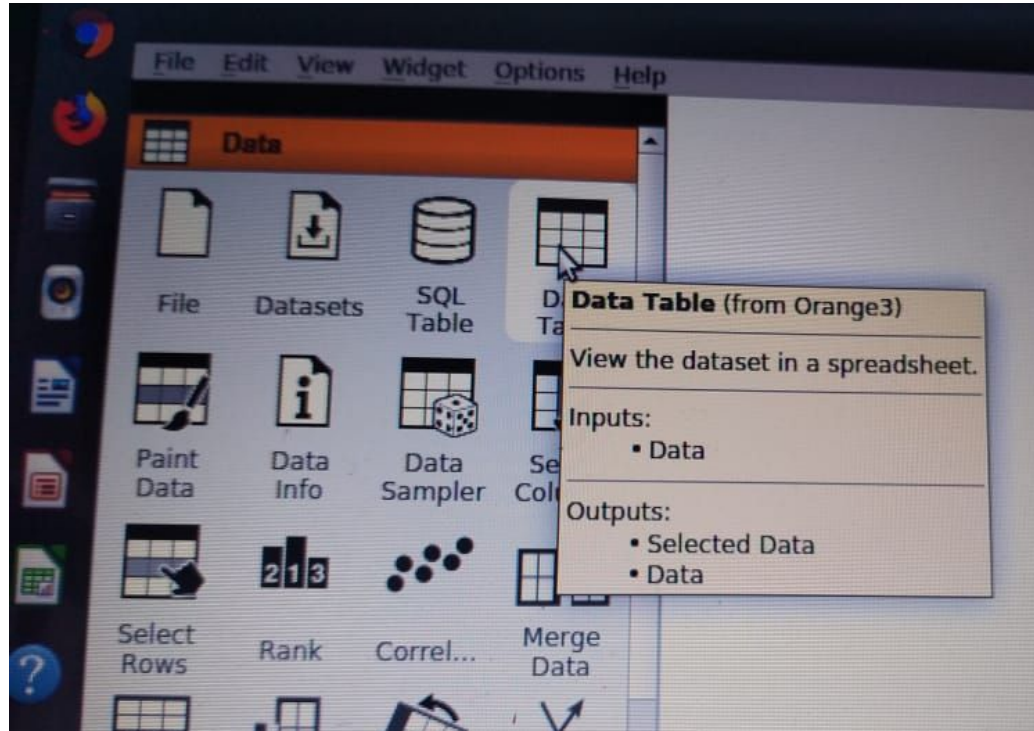
Complementos (Add-ons)

options → add-ons

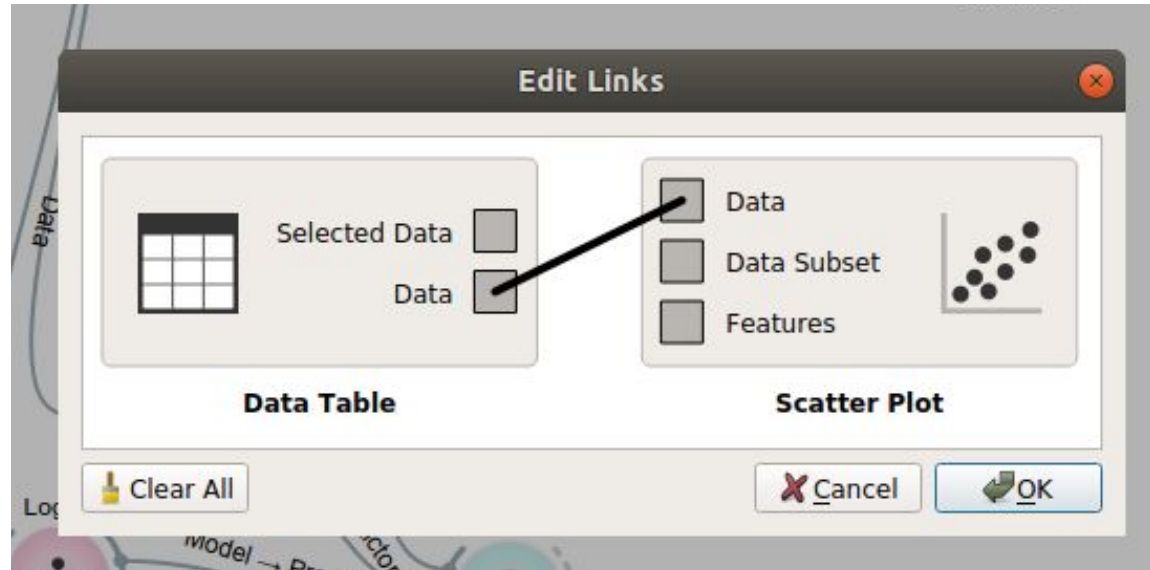
Selecione e reinicie o Orange.



Windgets



Windgets: canal de entrada e de saída



Carregando Dados

Orange pode ler vários formatos de dados: excel, tab, csv.

Tabelas → Usadas normalmente. Registros em linhas e atributos em colunas.

Não é necessário especificar explicitamente os tipos de atributos.

- Tipos de dados:
 - Contínuos → numéricos → 'c'
 - Discretos → categóricos → 'd'
 - String → textos → 's'
- Tipos de atributos:
 - Classe → 'class'
 - Extra → 'meta'

[illegible]

Atividades

Orange Canvas

qua, 11:32

Orange Canvas

pt1

File

Edit

View

Widget

Options

Help

Data

File

Datasets

SQL Table

Data Table

Paint Data

Data Info

Data Sampler

Select Column...

Select Rows

Rank

Correl...

Merge Data

Conca...

Select by Dat...

Trans...

Rando...

Prepro...

Transf...

Impute

Outliers

File

Read data from an input file or network and send a data table to the output.

more...

File

iris.tab

...

Reload

URL:

https://raw.githubusercontent.com/ajdapretnar/datasets/master/data/fruits-and-vegetables-train.tab

Info

35 instance(s)
9 feature(s) (no missing values)
Classification; categorical class with 1 meta attribute(s)

Columns (Double click to edit)

	Name	Type
1	vitamin A %	numeric
2	vitamin C %	numeric
3	calcium %	numeric
4	iron %	numeric
5	magnesium %	numeric
6	calories (per 100g)	numeric
7	potassium (mg)	numeric

Browse documentation datasets

Open...

Look in: /home/colodette_al/ana...ckages/Orange/datasets

Name	Size	Type	Date Modified
adult_sample.tab	144 KB	tab File	20/01/... 05:51
adult.tab	4,1 MB	tab File	20/01/... 05:51
anneal.tab	88 KB	tab File	20/01/... 05:51
audiology.tab	43 KB	tab File	20/01/... 05:51
auto-mpg.tab	17 KB	tab File	20/01/... 05:51
balance-scale.tab	6 KB	tab File	20/01/... 05:51
banking-crises.tab	31 KB	tab File	20/01/... 05:51
breast-cancer-wisconsin-cont.tab	34 KB	tab File	20/01/... 05:51
breast-cancer-wisconsin-disc.tab	23 KB	tab File	20/01/... 05:51
breast-cancer-wisconsin.tab	13 KB	tab File	20/01/... 05:51
breast-cancer.tab	18 KB	tab File	20/01/... 05:51
bridges.mt1.tab	3 KB	tab File	20/01/... 05:51
bridges.mt2.tab	3 KB	tab File	20/01/... 05:51
bridges.tab	6 KB	tab File	20/01/... 05:51
brown-selected.tab	95 KB	tab File	20/01/... 05:51

File name:

Files of type: All readable files (*.basket *.bsk *.csv *.csv.bz2 *.csv.gz *.csv.xz *.pi)

Open

Cancel

Obrigado!



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