DYALOG
Eastbourne 2026

Plots and Tables

A MODERN APPROACH



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Dyalog Ltd

OUTLINE

- Introduction
- Packages
- Example
- Usage

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- Usage

Data Visualization in APL

```
      ⍴array
500 3
      5↑array
```

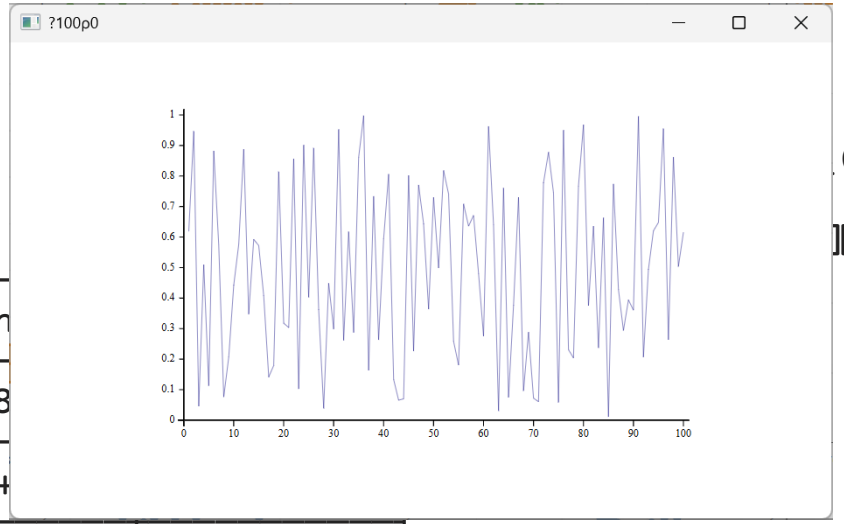
First col	Second one	A third one
5.006	3.428	1.462
6.588	2.974	5.552
7.454	4.755	2.212
5.006	3.428	1.462

```
      '⎕'⍴⍨⌊0.5+2×?5⍴9
⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕
⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕
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⎕⎕⎕⎕
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```

Data Visualization in APL

```
      parray
500 3
      5↑array
```

First col	Secon	
5.006	3.428	
6.588	2.974	
7.454	4.755	2.212
5.006	3.428	1.462




```
      0.5+2×?5⍴9
```

```
      ]plot ?100⍴0
```

A MODERN APPROACH

Namespaces

- Define namespaces with array notation

```
options←(title:'My Title' ⋄ size:200 320)
```

- Merge namespaces with ⎕NS

```
options←⎕NS options default
```

- Access to individual fields with ⎕VGET and ⎕VSET

```
t←options ⎕VGET ⊂'title' '[no title]'
```

JSON

- Conversion from/to namespaces

```
      ⎕JSON options

{"size":[200,320],"title":"My Title"}
```

- JS libraries

Plotly, Apache Echarts, Vega & Vega-Lite, Highcharts, ApexCharts. Tabulator, Grid.js, AG Grid, Handsontable. Cytoscape.js, Vis-Network (vis.js). MapLibre GL JS, Leaflet. JSON Editor, Form.io, ...

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JSON

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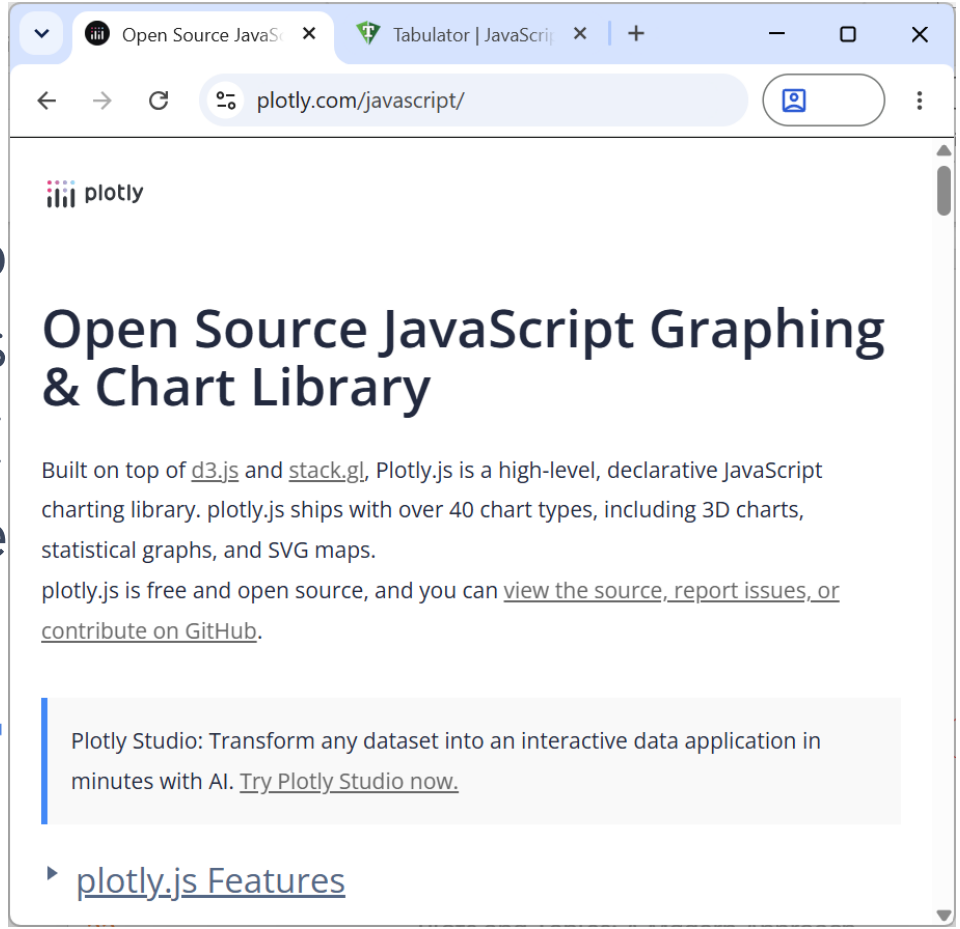
JSON

- Conversio

```
JS
{"size":[
```

- JS librarie



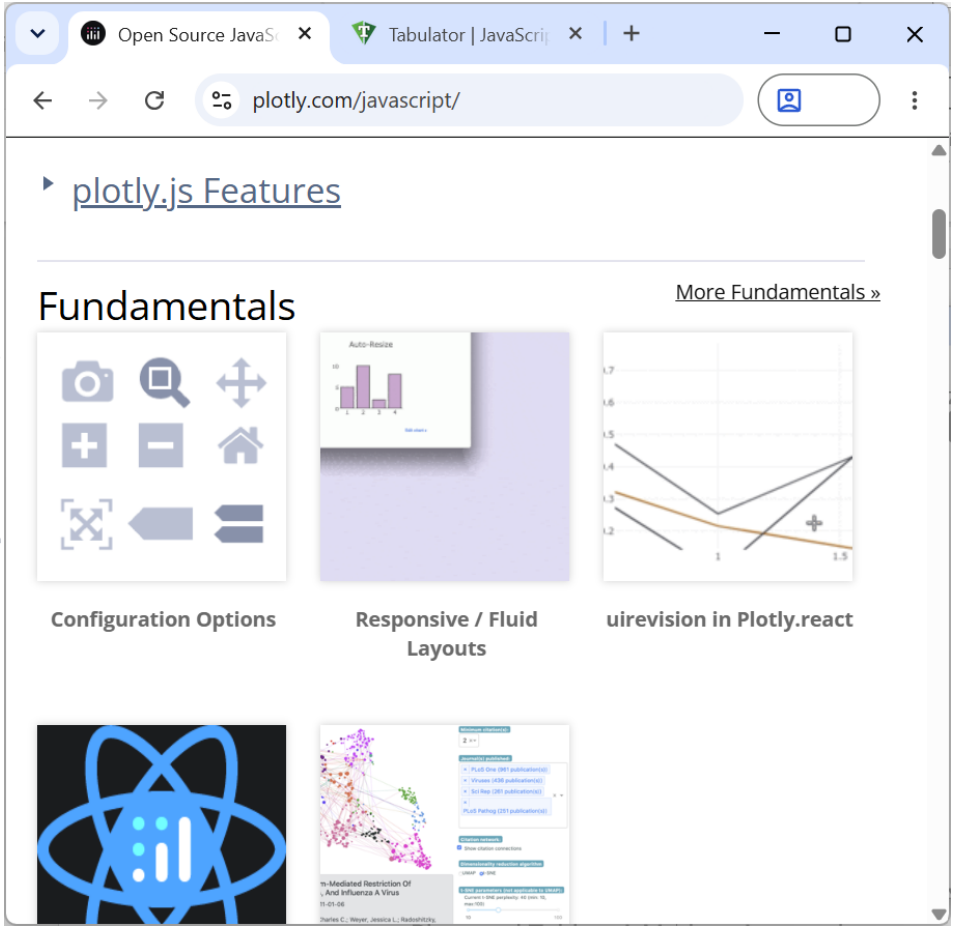


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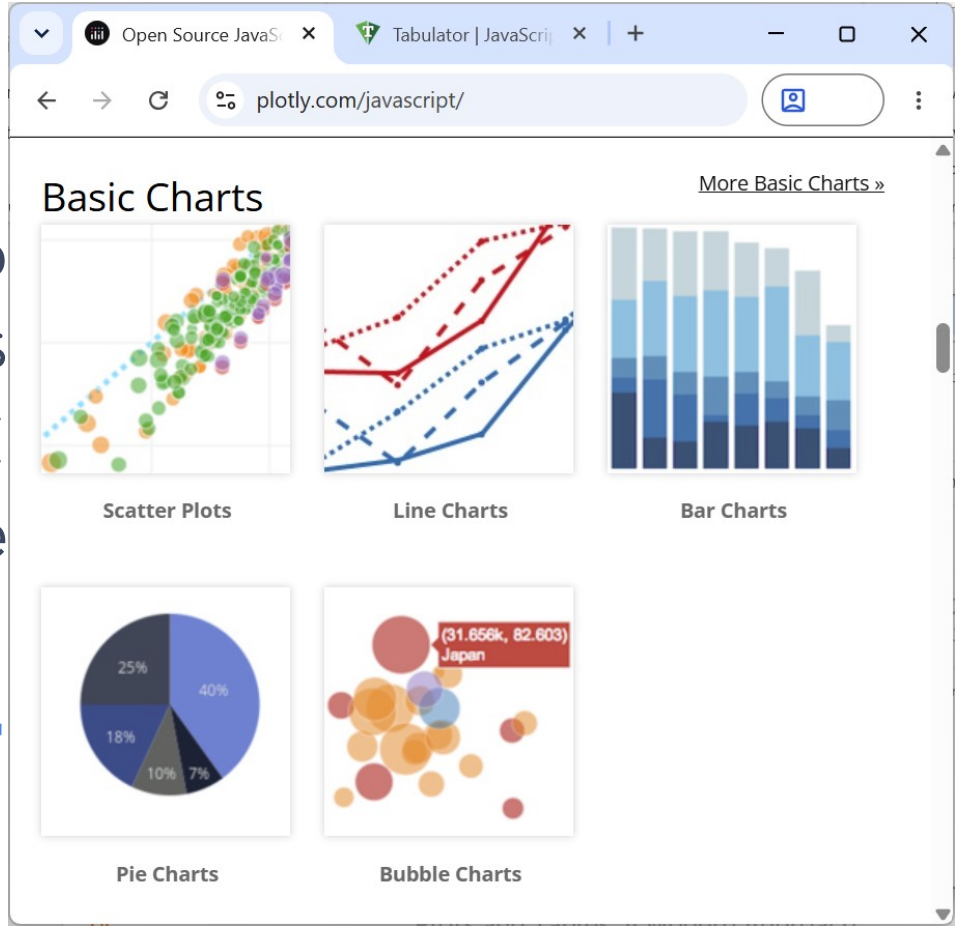


JSON

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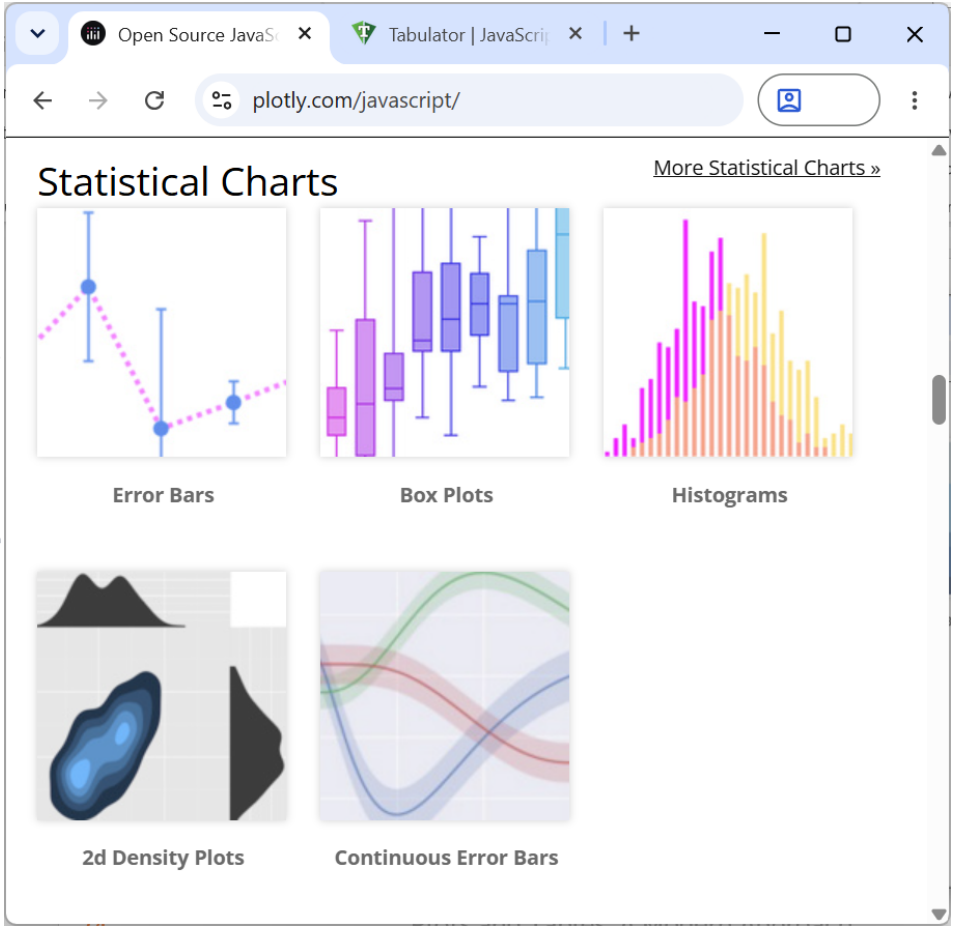
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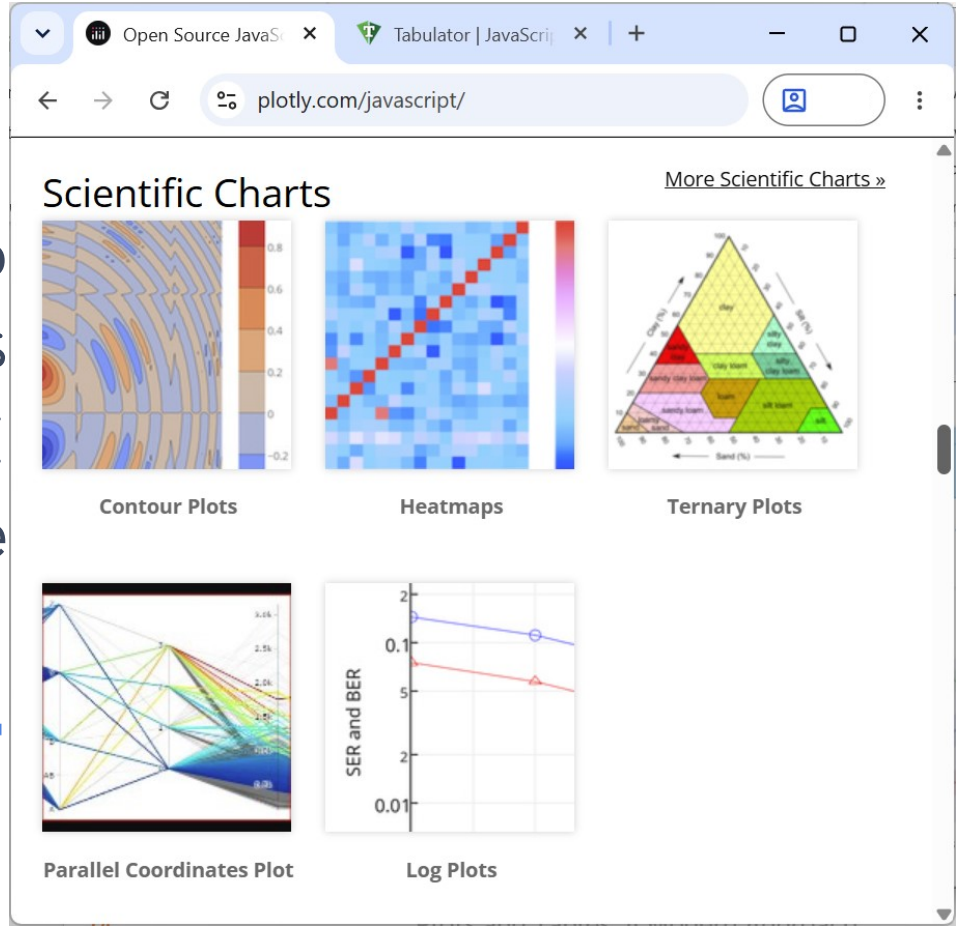


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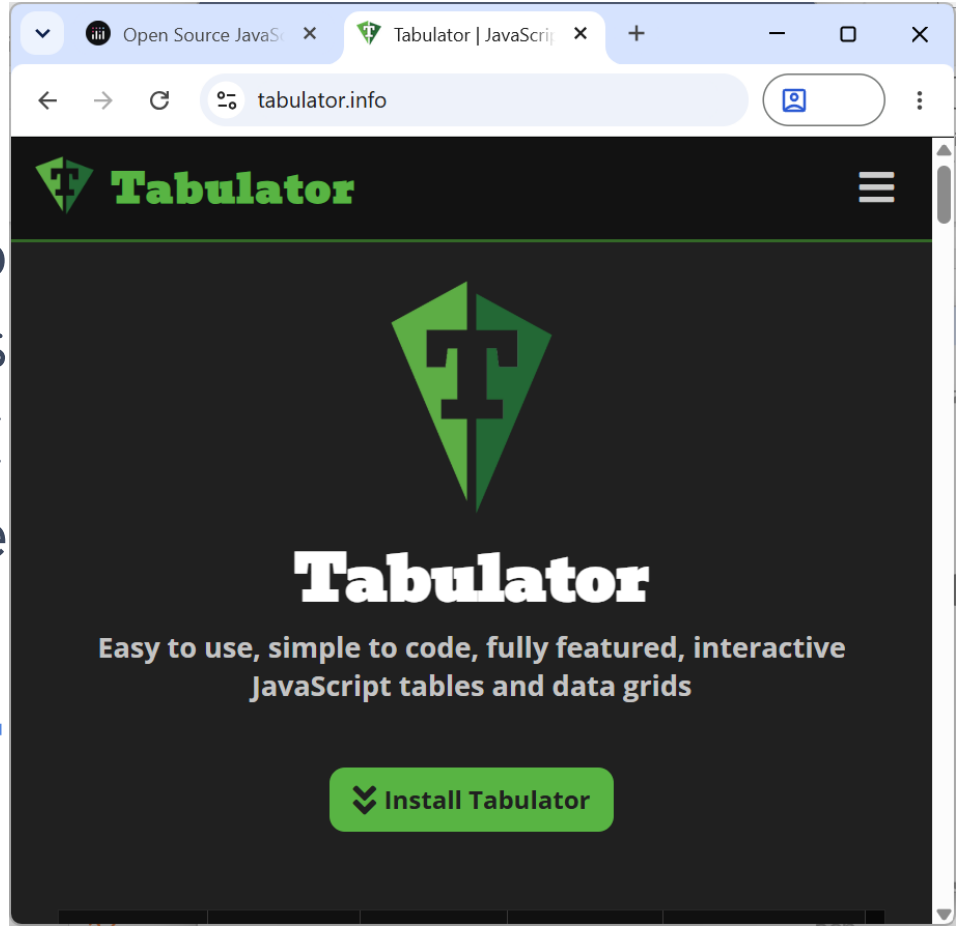


JSON

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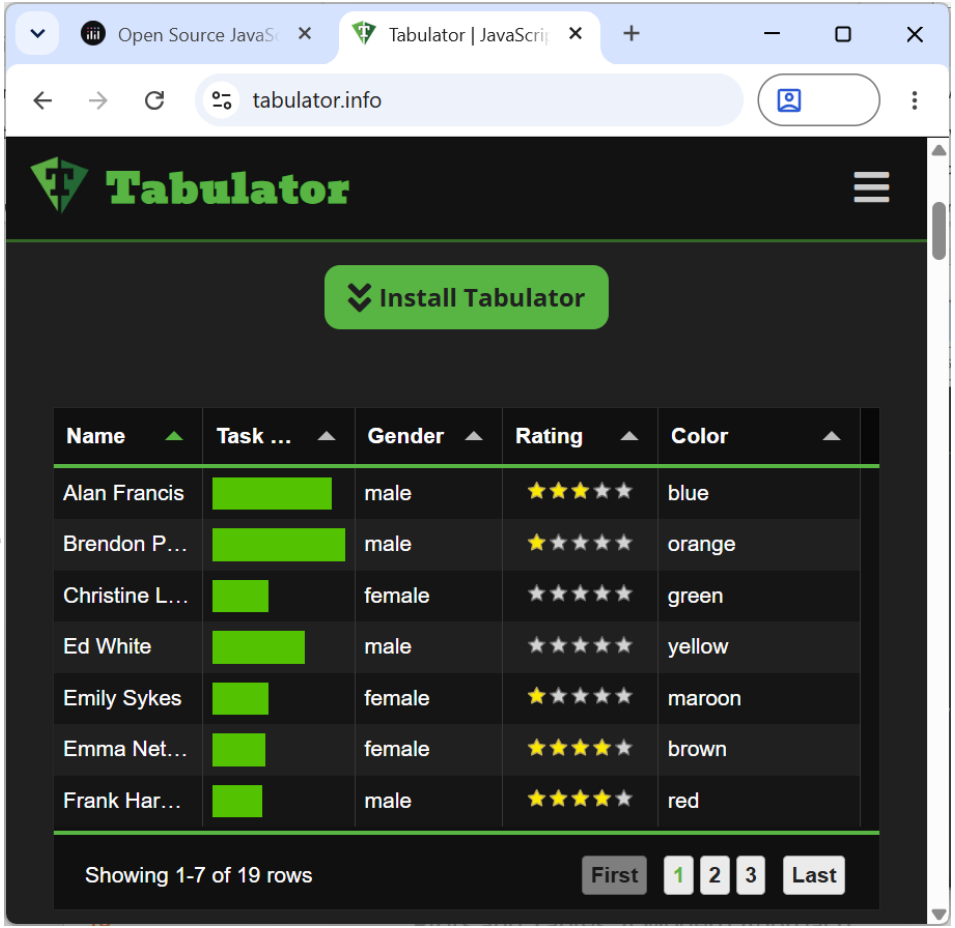
```
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```

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JSON

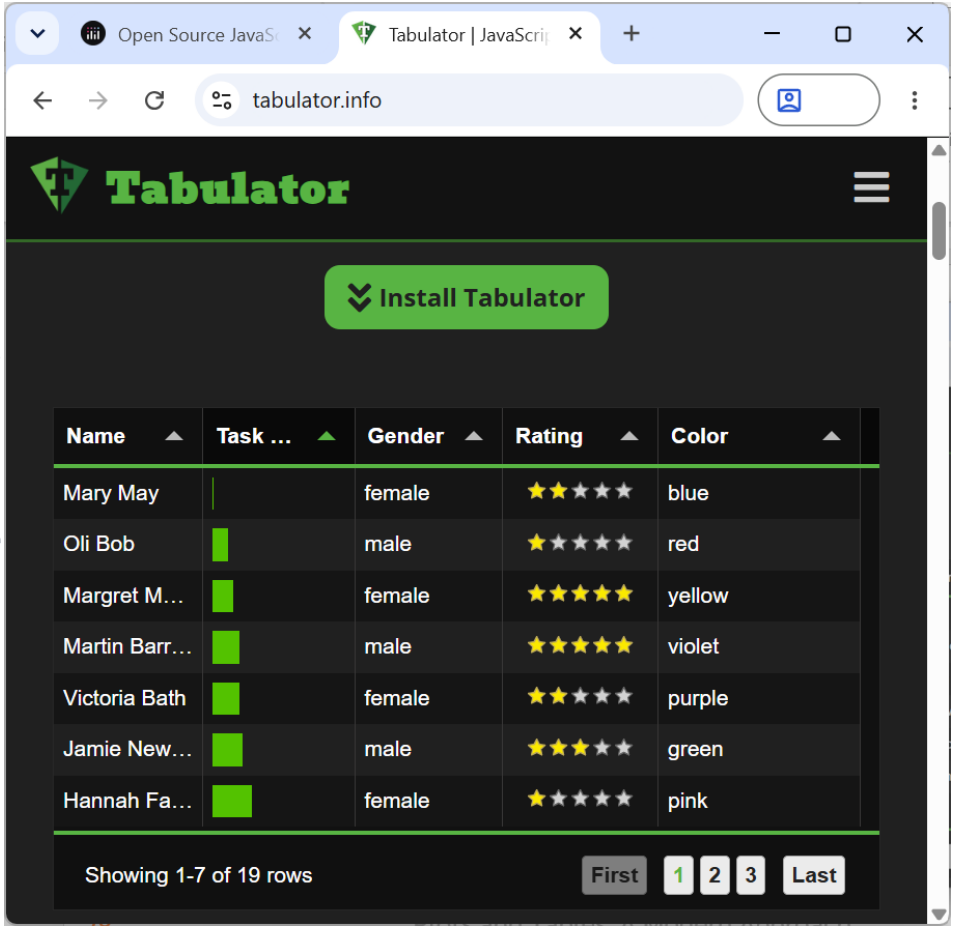
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JSON

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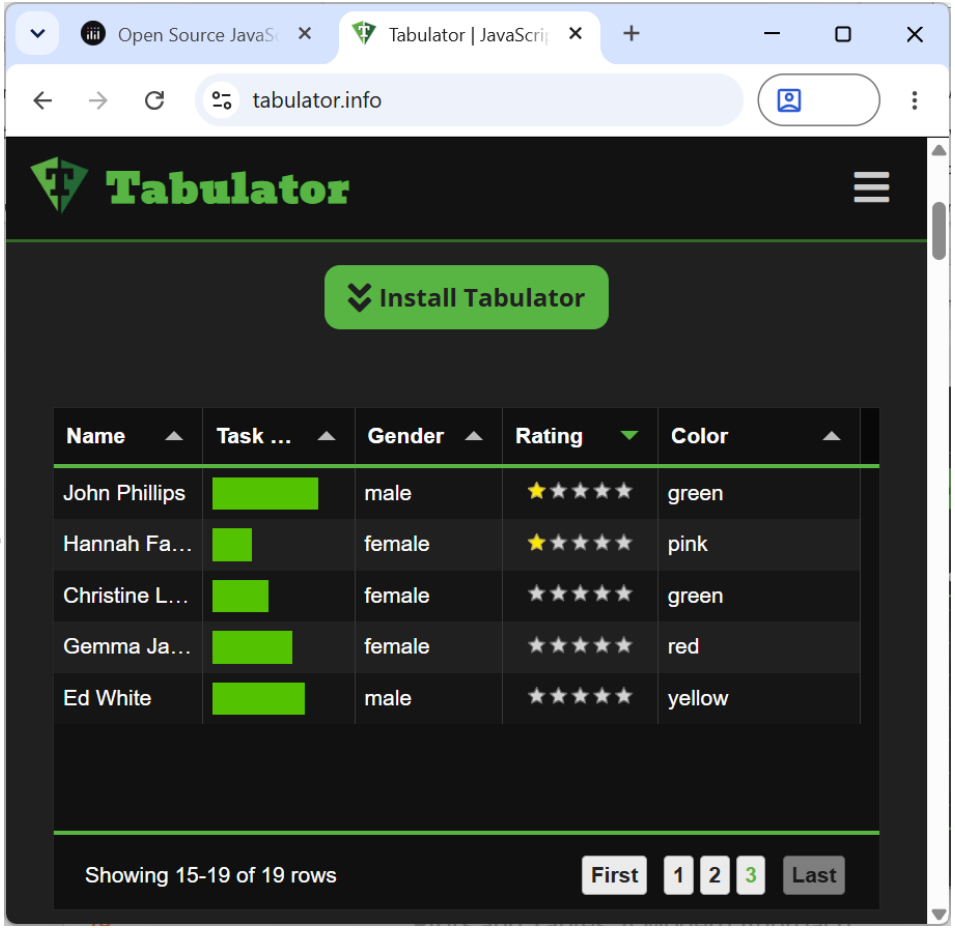
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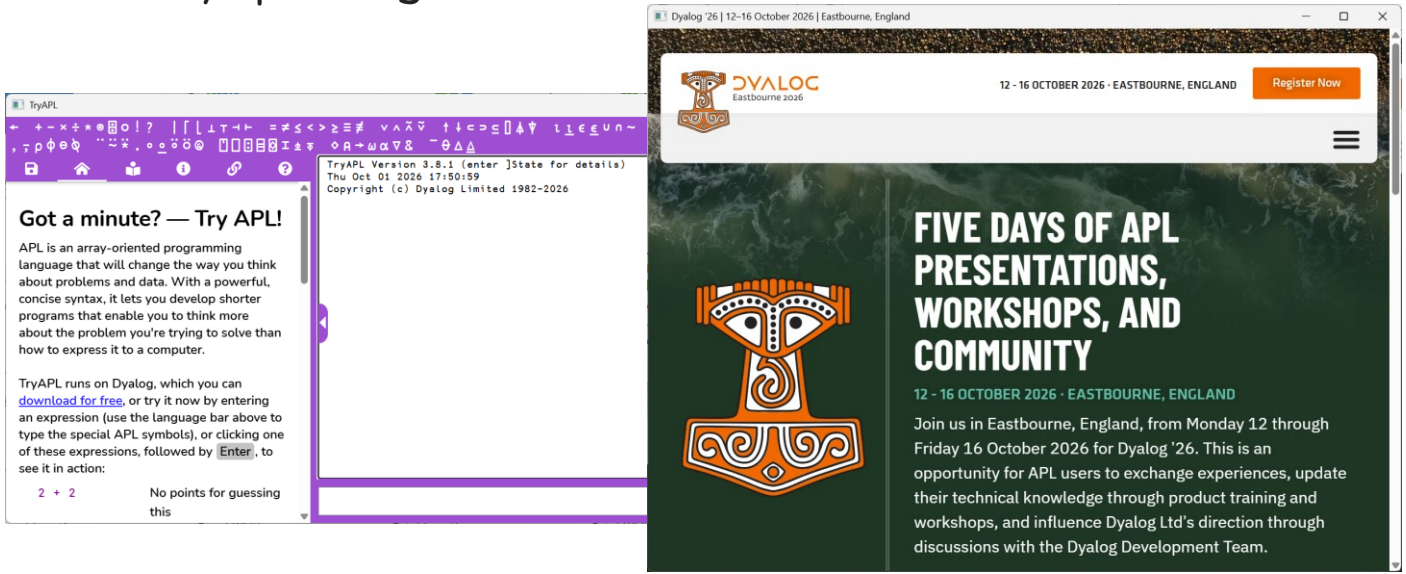
- Conversio
- JS librarie

```
JS
{"size":[
```



HTML Renderer

```
]HTML 'https://usermeeting.dyalog.com/'
]HTML 'tryapl.org'
```



Tatin Packages

- Easy to create and publish packages
- Easy to install packages and their dependencies
- Easy to include user commands

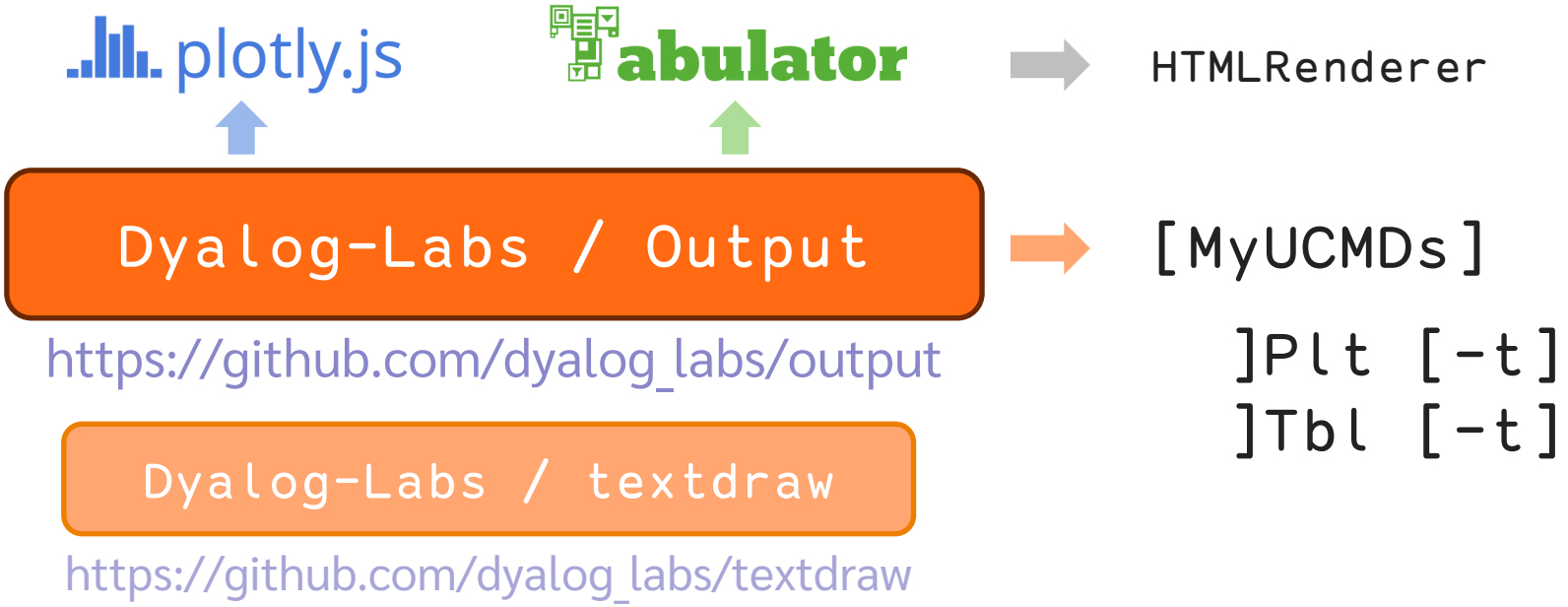


https://tatin.dev/

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Output Package



Output Package: Plt

```
]Plt -???
```

```
]OUT.Plt

Plot data

]Plt <data> [-type={plotly|text|ns}] [-t] [-m] [-config=] [-window=]
<data>        data to plot

-type=plotly  plot using plotly and HTMLRenderer or Ride (default)
-type=text    plot using text
-type=ns      return configuration and data namespaces
-t            equivalent to -type=text
-m            multiple plots from <data> array
-config=      configuration namespace of plot size
-window=      window size (height or height and width)

Examples:
    ]Plt y                  ⍝ values as vertical bars
    ]Plt ⊂y                 ⍝ histogram
    ]Plt ⊂⊂y                ⍝ box plot
    ]Plt y x                ⍝ data series
    ]Plt ⍤⍬⍤1 y x           ⍝ data series as points
    ]Plt labels x           ⍝ horizontal bars
    ]Plt y labels           ⍝ vertical bars
    ]Plt ⍪z                 ⍝ 3D plot
```

```
    ]Plt (y2 x2)(y1 x1)     ⍝ multiple data series
    ]Plt -m (y2 x2)(y1 x1)  ⍝ multiple plots
    ]Plt ⊂(label y1 x1)     ⍝ data series with name
    ]Plt labels(⊂y2)(⊂y1)   ⍝ box plots
    ]Plt labels x2 x1       ⍝ grouped horizontal bars
    ]Plt labels(x2 x1)      ⍝ stacked horizontal bars
    ]Plt y2 y1 labels       ⍝ grouped vertical bars
    ]Plt (y2 y1)labels      ⍝ stacked vertical bars
    ]Plt labels⍪⍬⍤1 y2 y1   ⍝ spark-line by column

    ]Plt -t y x             ⍝ data series as text
    ]Plt -t y labels        ⍝ vertical bars as text

    c←(xaxis:(title:'X'))   ⍝ config namespace
    ]Plt -config=c y x      ⍝ data series with config
    ]Plt -win=1024 y x      ⍝ with window size

    ]ld←Plt -type=ns y x    ⍝ get namespaces
    layout data←ld          ⍝ layout and data
    ]Plt -c=layout ∊data    ⍝ plot
```

See https://plotly.com/javascript/reference/ for more options

Output Package: Plt

```
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```
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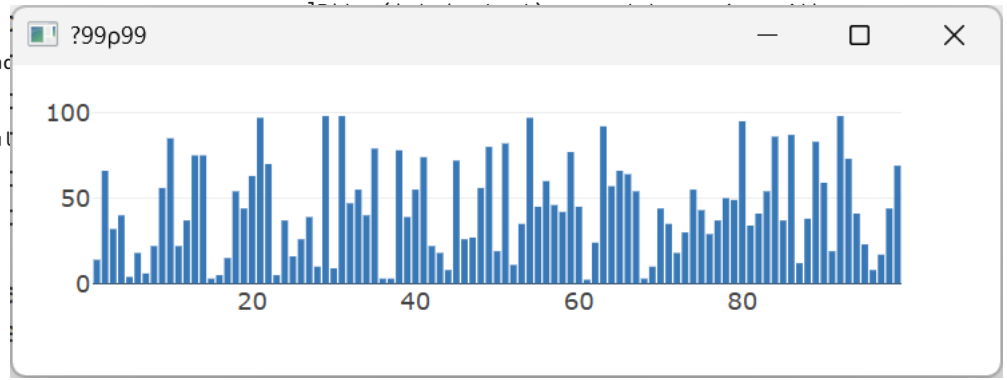
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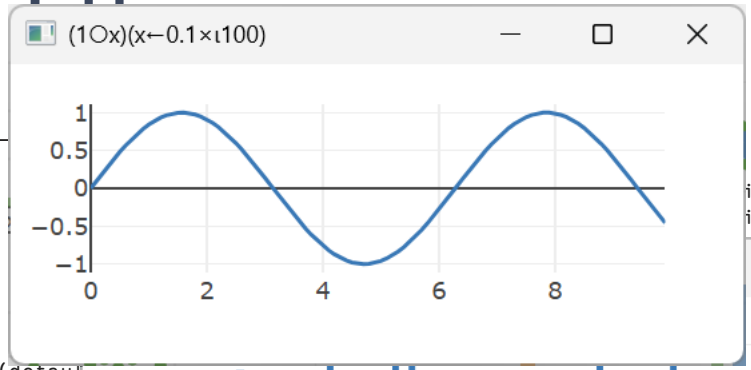
```
]OUT.Plt

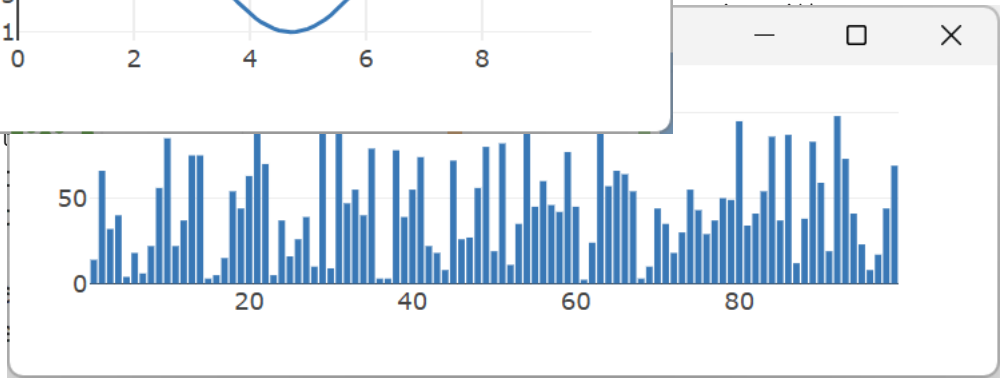
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```
iple data series
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```

```
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layout data←ld          ⍝ layout and data
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```
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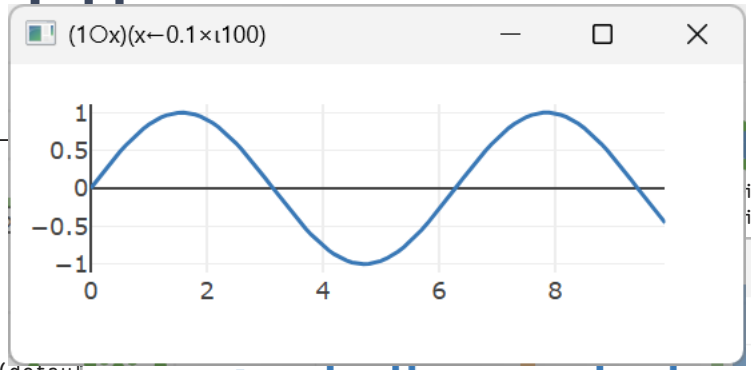
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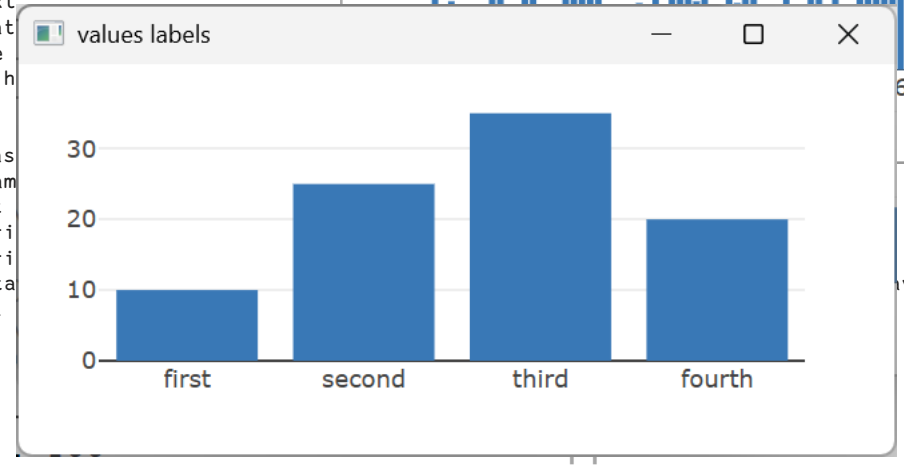
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    ]Plt labels x           ⍝ horizonta
    ]Plt y labels           ⍝ vertical
    ]Plt ⍪z                 ⍝ 3D plot
```



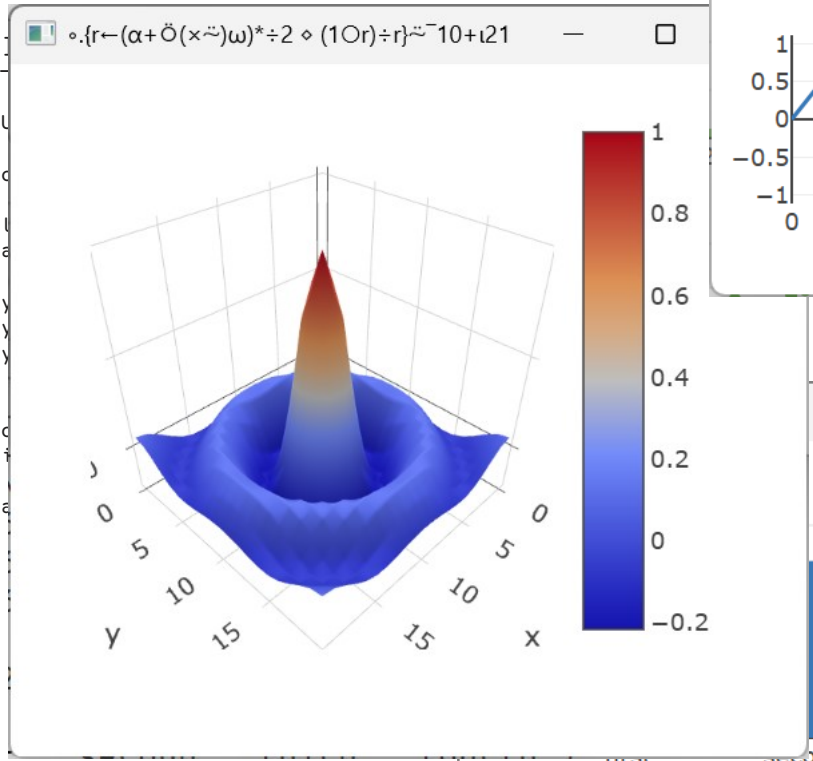


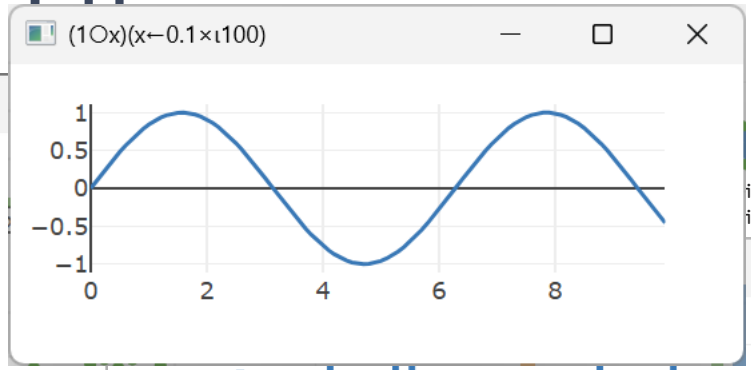

```
iple data series
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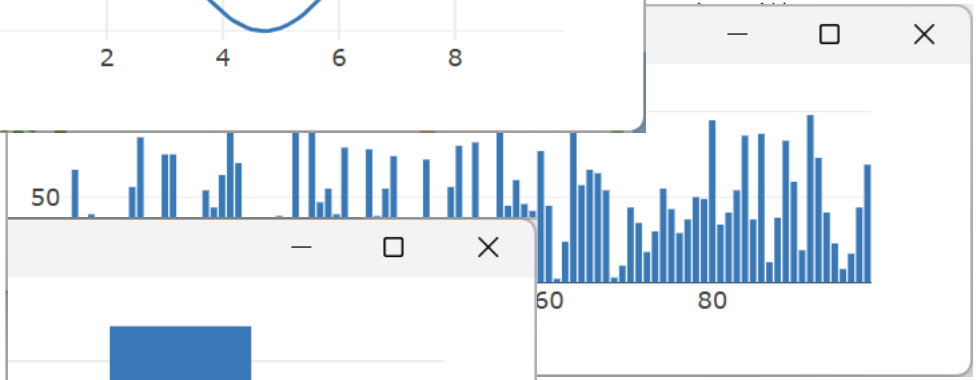
                                                    ⍝ get namespaces
                                                    ⍝ layout and data
                                                    ⍝ plot

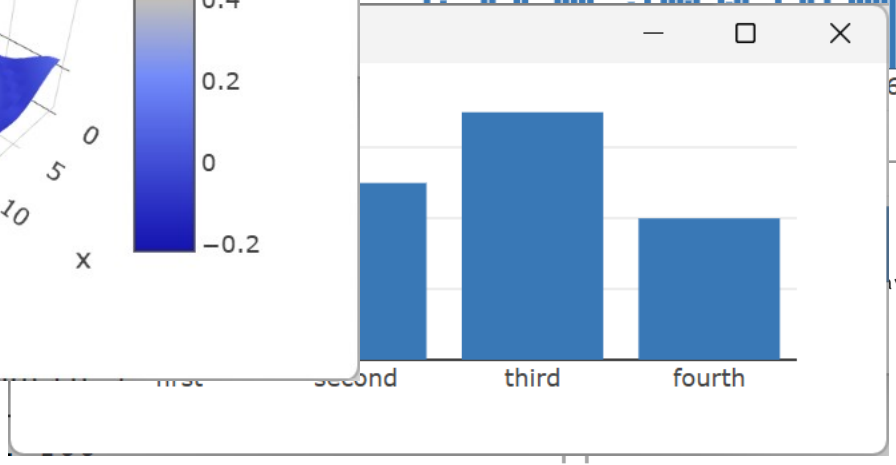
vascript/reference/ for more options
```

Output Package: Plt







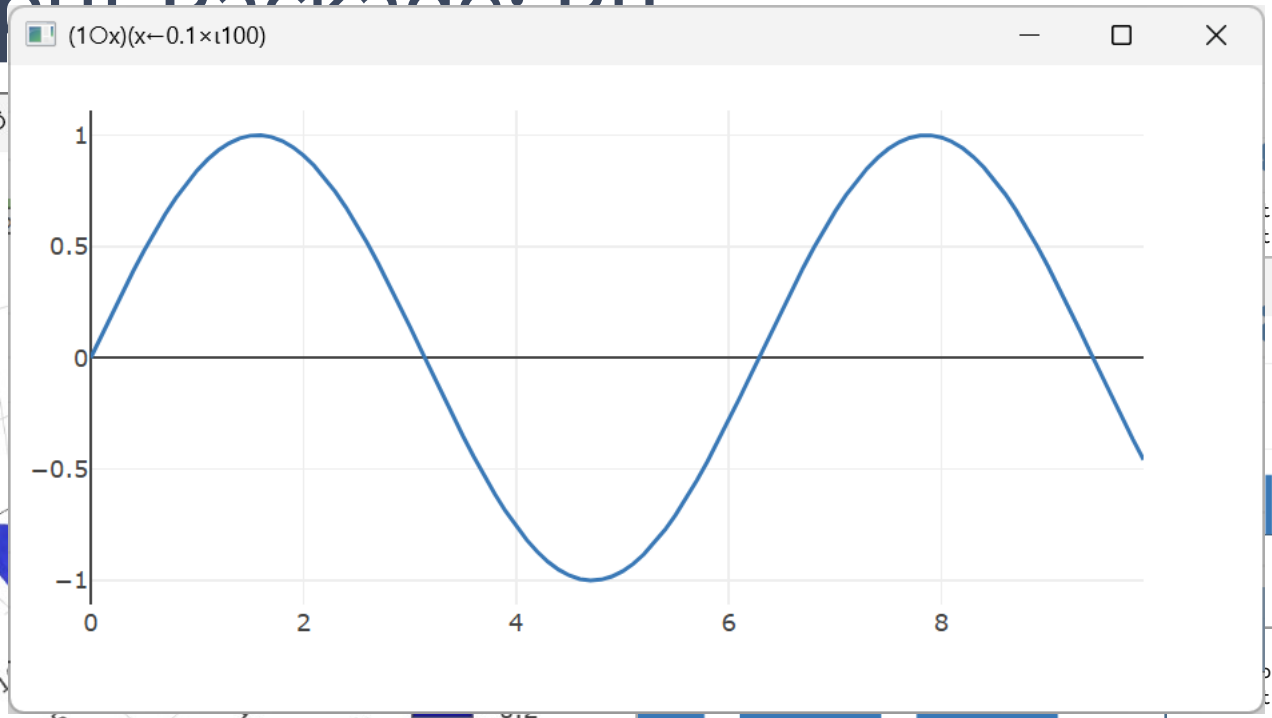


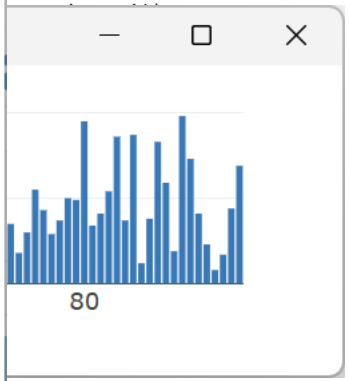
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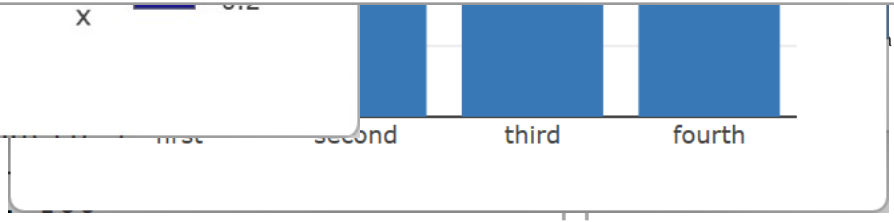
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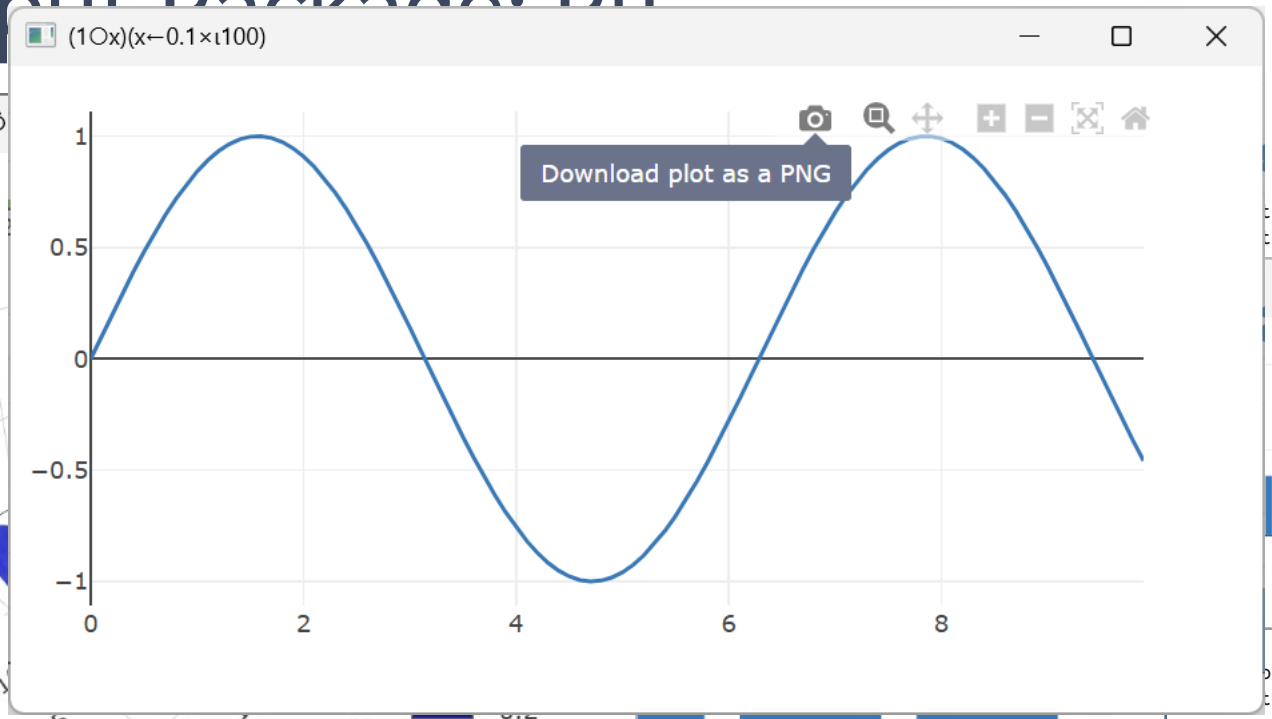


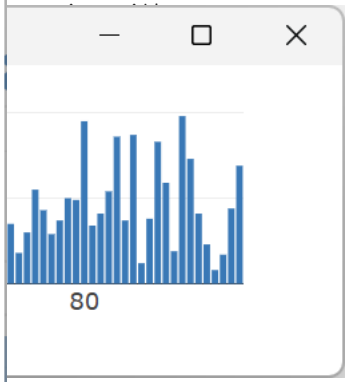


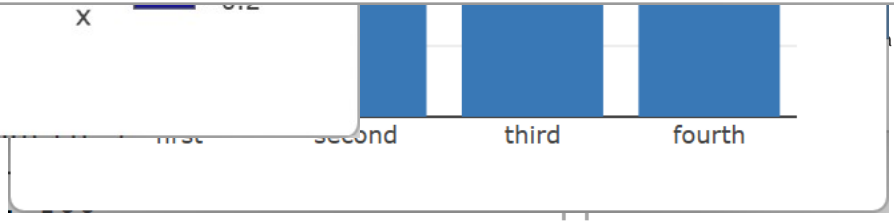


tiple data series
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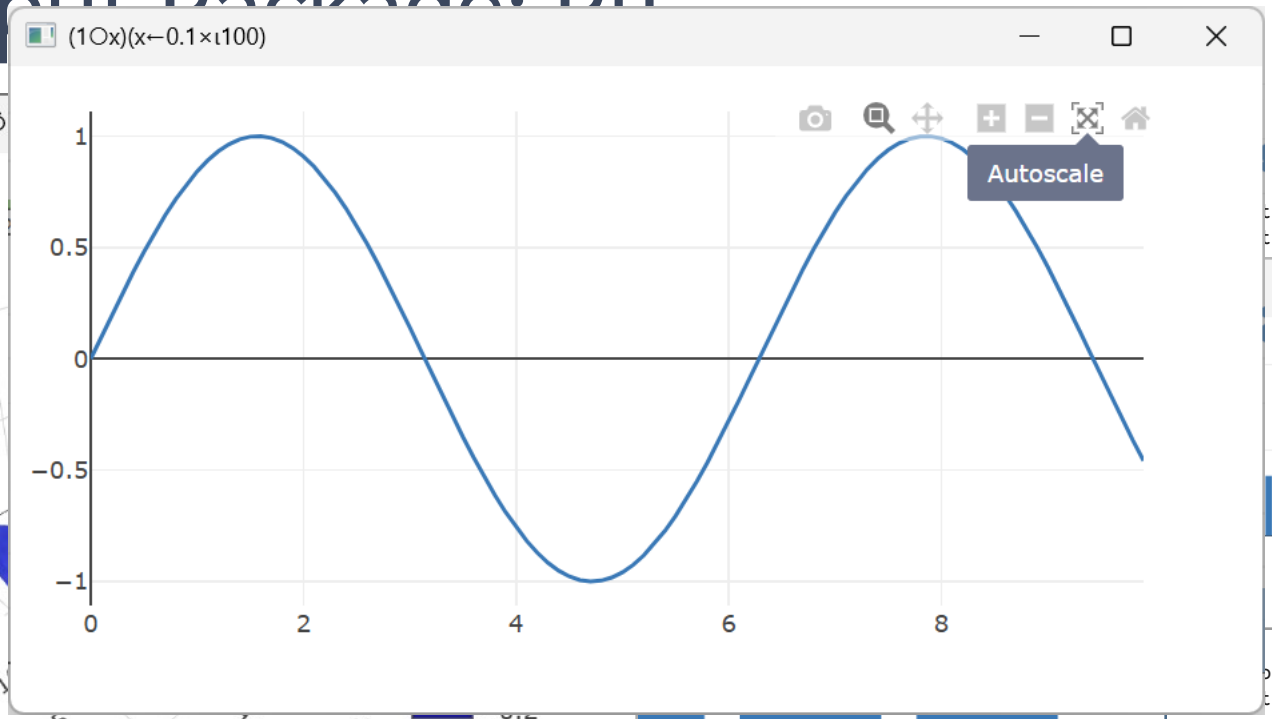


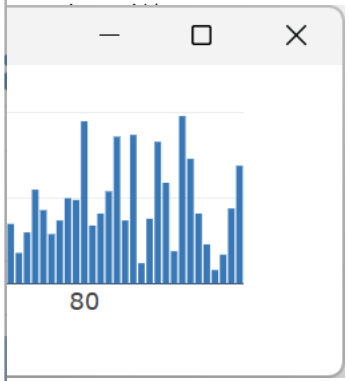


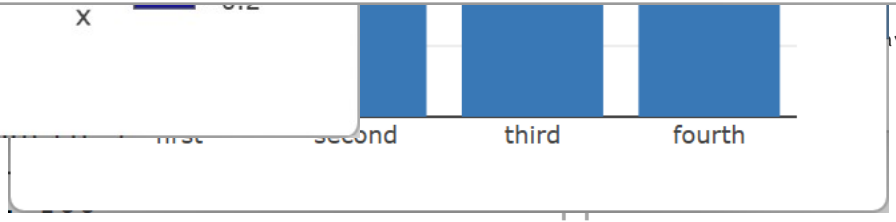


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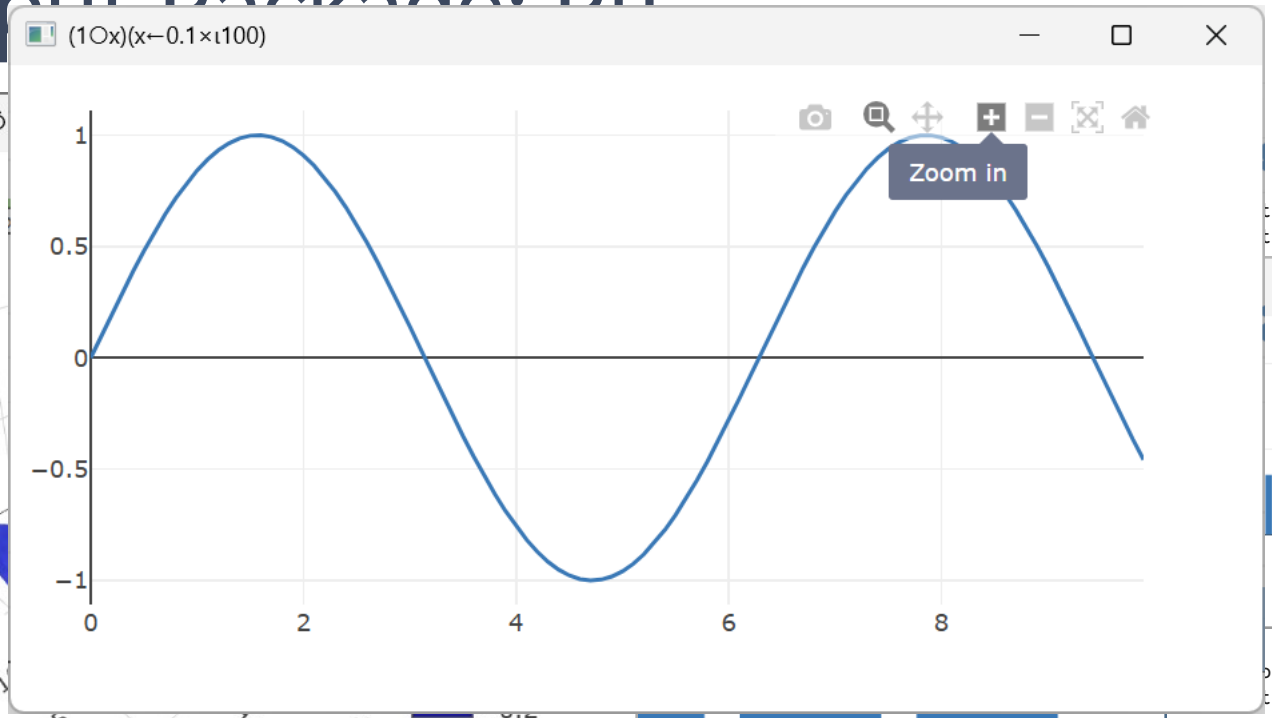


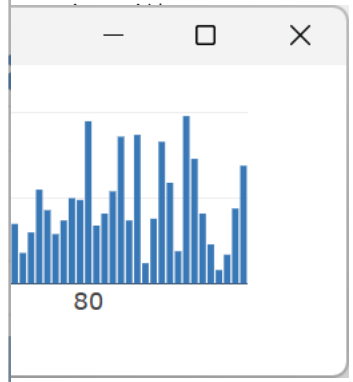


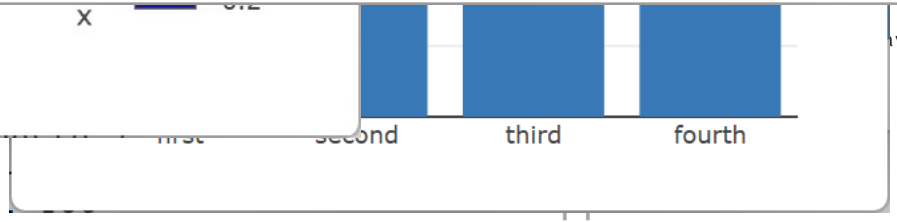


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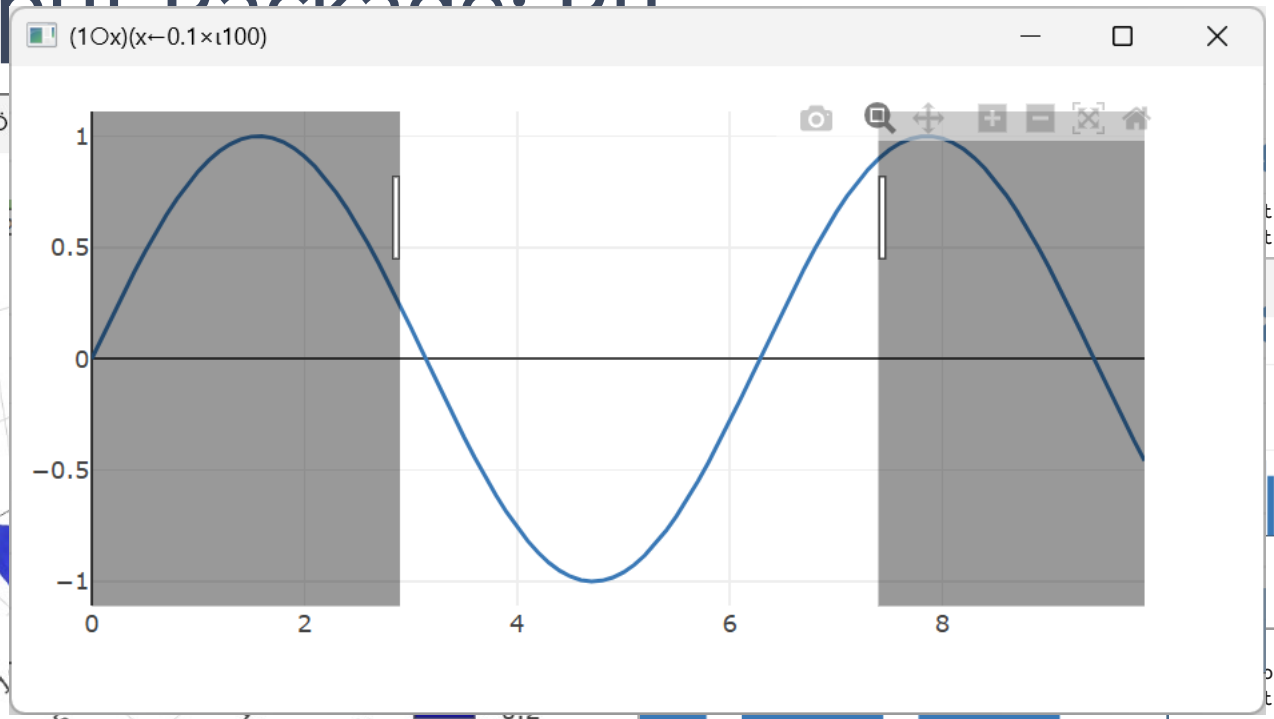
Output Package: Plt

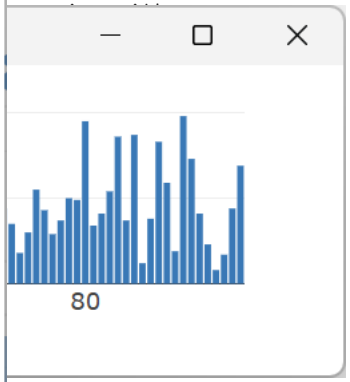


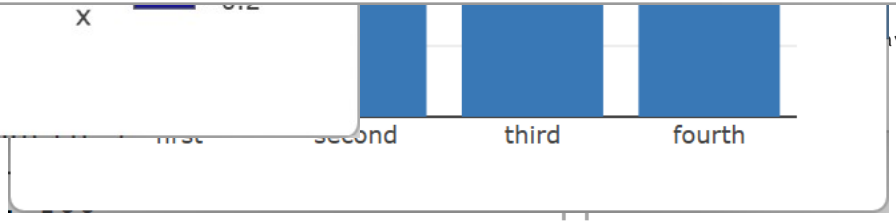




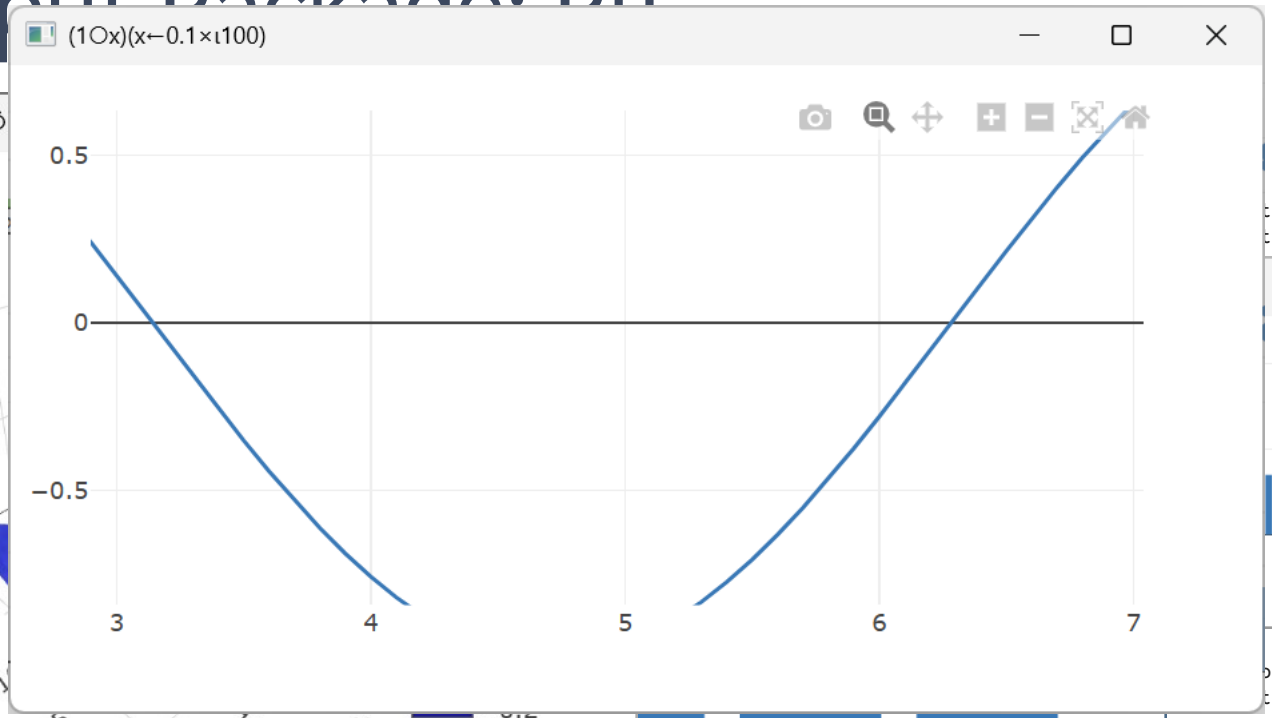
Output Package: Plt

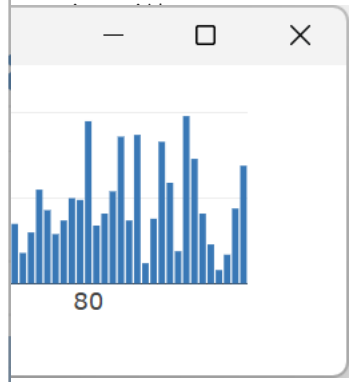






Output Package: Plt





Output Package: Tbl

```
 ]Tbl -???
```

```
]OUT.Tbl

Tabulate data

]Tbl <data> [-type={tabulator|text|ns}] [-t] [-m] [-config=<configuration>]
<data>           data to tabulate (vector of vectors or matrix)

-type=tabulator  tabulate using tabulator and HTMLRenderer or Ride
-type=text       tabulate using text
-type=ns         return namespace
-t               equivalent to -type=text
-m               multiple tables from <data> array
-config=         configuration (or title) for each column
-window=         window size (height or height and width)

Examples:
    ]Tbl y1 y2 y3               ⍝ table from rank-1 arrays
    ]Tbl ⎕CSV 'file.csv'        ⍝ table from rank-2 array
    ]Tbl (one:y1 ⋄ other:y2)    ⍝ table from namespace
```

```
td←() ⋄ td.name←'Alice' 'Bob' 'Jonh' 'Sarah' ⋄ td.age←24 32 10 29
td.dob←'14/05/1982' '22/05/1982' '01/08/1980' '31/01/1999'
columns←(title:'Name' ⋄ field:'name')
columns,←(title:'Age' ⋄ field:'age' ⋄ hozAlign:'left' ⋄ formatter:'progress')
columns,←(title:'Date of Birth' ⋄ field:'dob' ⋄ sorter:'date' ⋄ hozAlign:'center')
]Tbl -c=columns td     ⍝ tabulator table
]Tbl -t -c=columns td  ⍝ text table
]Tbl -t -c=columns.title td.(name age dob)  ⍝ column titles as config
```

See https://tabulator.info/docs/6.4/columns for more options

Output Package: Tbl

```
]Tbl -???
```

```
]OUT.Tbl

Tabulate data

]Tbl <data> [-type={tabulator|text|ns}] [-
<data>           data to tabulate (vector

-type=tabulator  tabulate using tabulator
-type=text       tabulate using text
-type=ns         return namespace
-t
-m
-config=
-window=

Examples:
    ]Tbl y1
    ]Tbl ⍳C
    ]Tbl (o
```

(1 2)(3 4)(5 6)

A	B	C
1	3	5
2	4	6

td

Name	Age	Date of Birth
Alice		14/05/1982
Bob		22/05/1982
Jonh		01/08/1980
Sarah		31/01/1999

```
d.age←24 32 10 29
1/01/1999'

left' ⋄ formatter:'progress')
sorter:'date' ⋄ hozAlign:'center')

]tbl t ⍬columns.title td.(name age dob) ⍝ column titles as config

See https://tabulator.info/docs/6.4/columns for more options
```

Output Package: Tbl

```
]Tbl -???
```

```
]OUT.Tbl

Tabulate data

]Tbl <data> [-type={tabulator|text|ns}] [-
<data>           data to tabulate (vector

-type=tabulator  tabulate using tabulator
-type=text       tabulate using text
-type=ns         return namespace
-t
-m
-config=
-window=

Examples:
    ]Tbl y1
    ]Tbl ⍳C
    ]Tbl (o
```

(1 2)(3 4)(5 6)

A	B	C
1	3	5
2	4	6

td

Name	Age	Date of Birth
Jonh		01/08/1980
Alice		14/05/1982
Sarah		31/01/1999
Bob		22/05/1982

```
d.age←24 32 10 29
1/01/1999'

left' ⋄ formatter:'progress')
sorter:'date' ⋄ hozAlign:'center')

]Tbl t c←columns.title td.(name age dob) ⍝ column titles as config

See https://tabulator.info/docs/6.4/columns for more options
```

Output Package: Tbl

```
]Tbl -???
```

```
]OUT.Tbl

Tabulate data

]Tbl <data> [-type={tabulator|text|ns}] [-
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-type=tabulator  tabulate using tabulator
-type=text       tabulate using text
-type=ns         return namespace
-t
-m
-config=
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Examples:
    ]Tbl y1
    ]Tbl ⍳C
    ]Tbl (o
```

(1 2)(3 4)(5 6)

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Name	Age	Date of Birth
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Sarah		31/01/1999
Alice		14/05/1982
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```
d.age←24 32 10 29
1/01/1999'

left' ⋄ formatter:'progress')
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See https://tabulator.info/docs/6.4/columns for more options
```

Output Package: Tbl

```
]Tbl -???
```

```
]OUT.Tbl

Tabulate data

]Tbl <data> [-type={tabulator|text|ns}] [-
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-type=text       tabulate using text
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-m
-config=
-window=

Examples:
    ]Tbl y1
    ]Tbl ⍳C
    ]Tbl (o
```

(1 2)(3 4)(5 6)

A	B	C
1	3	5
2	4	6

td

Name	Age	Date of Birth
Alice		14/05/1982
Bob		22/05/1982
Jonh		01/08/1980
Sarah		31/01/1999

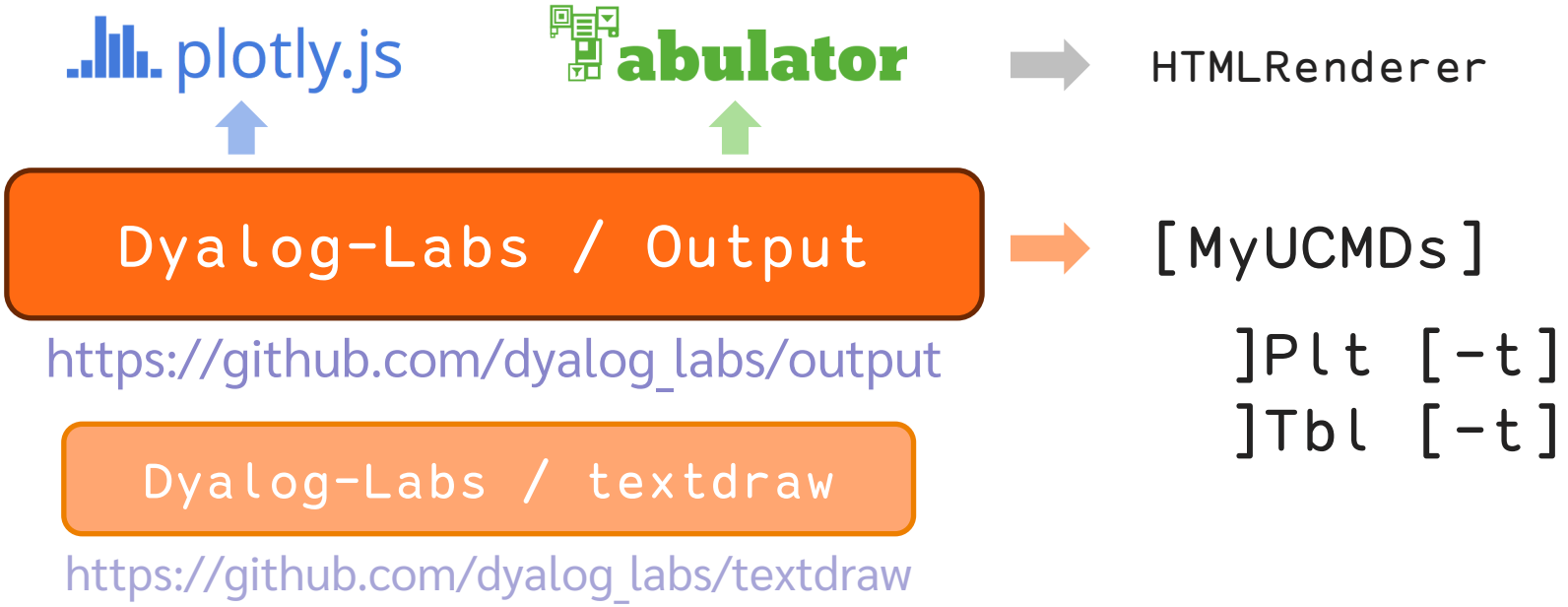
```
d.age←24 32 10 29
1/01/1999'

left' ⋄ formatter:'progress')
sorter:'date' ⋄ hozAlign:'center')

]tbl t ⍬ c.columns.title td.(name age dob) ⍝ column titles as config

See https://tabulator.info/docs/6.4/columns for more options
```

Output Package



Textdraw Package

Dyalog-Labs / textdraw

https://github.com/dyalog_labs/textdraw

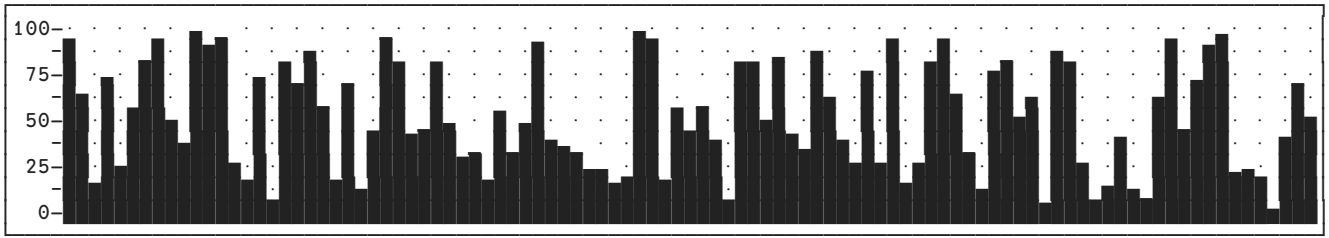
- Plots
- Tables
- etc

Textdraw Package

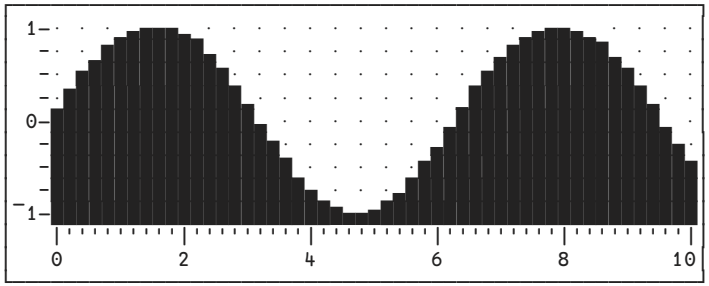
Dyalog-Labs / textdraw

https://github.com/dyalog-labs/textdraw

- Plots
- Tables



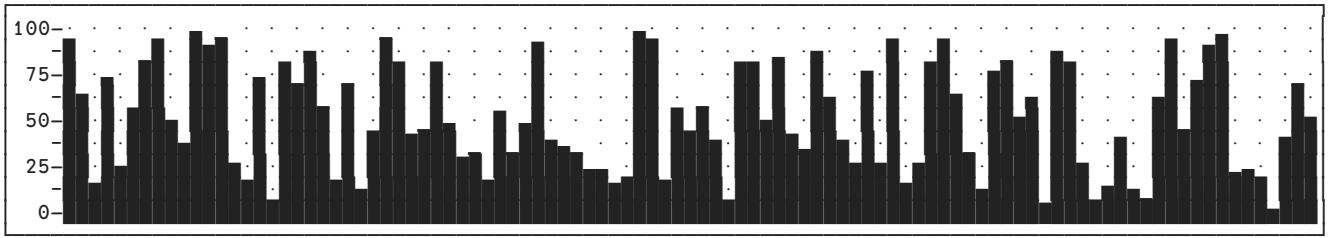
Textdraw Package



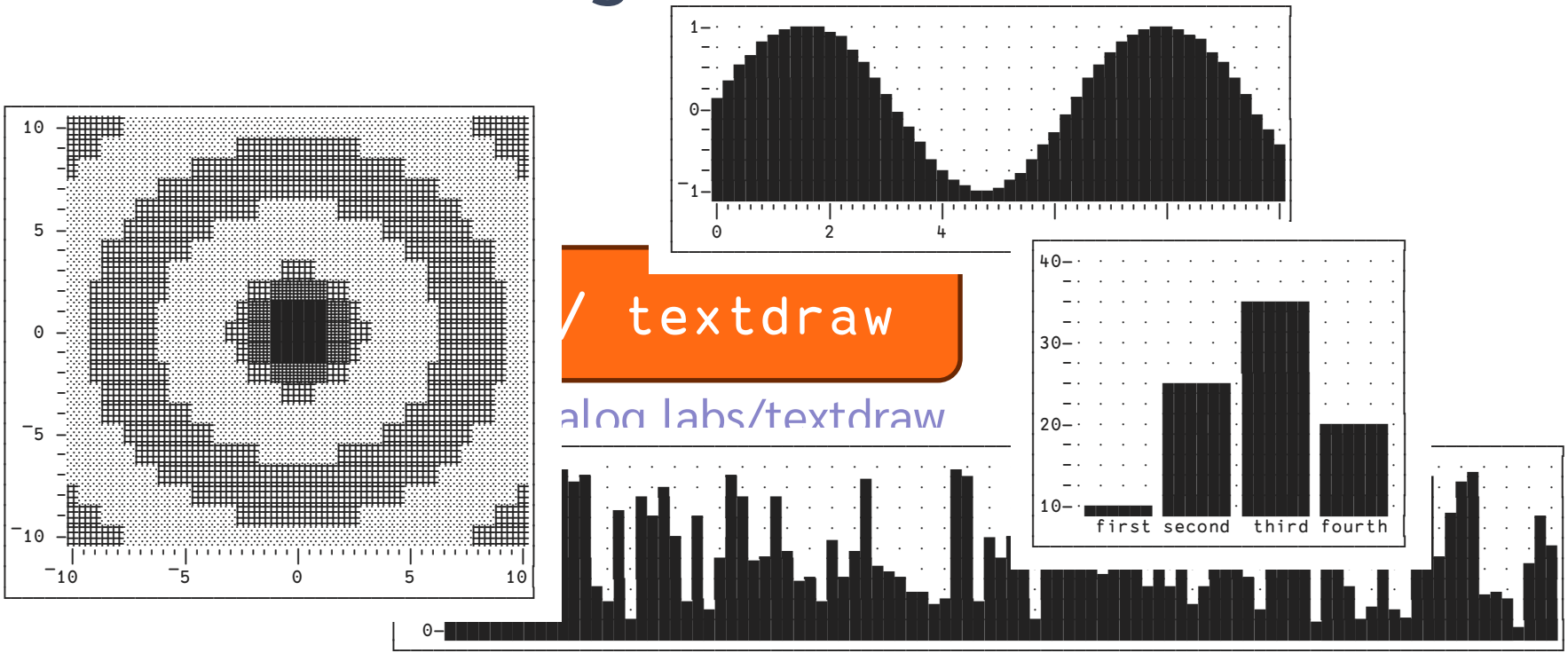
Dyalog-Labs / textdraw

https://github.com/dyalog-labs/textdraw

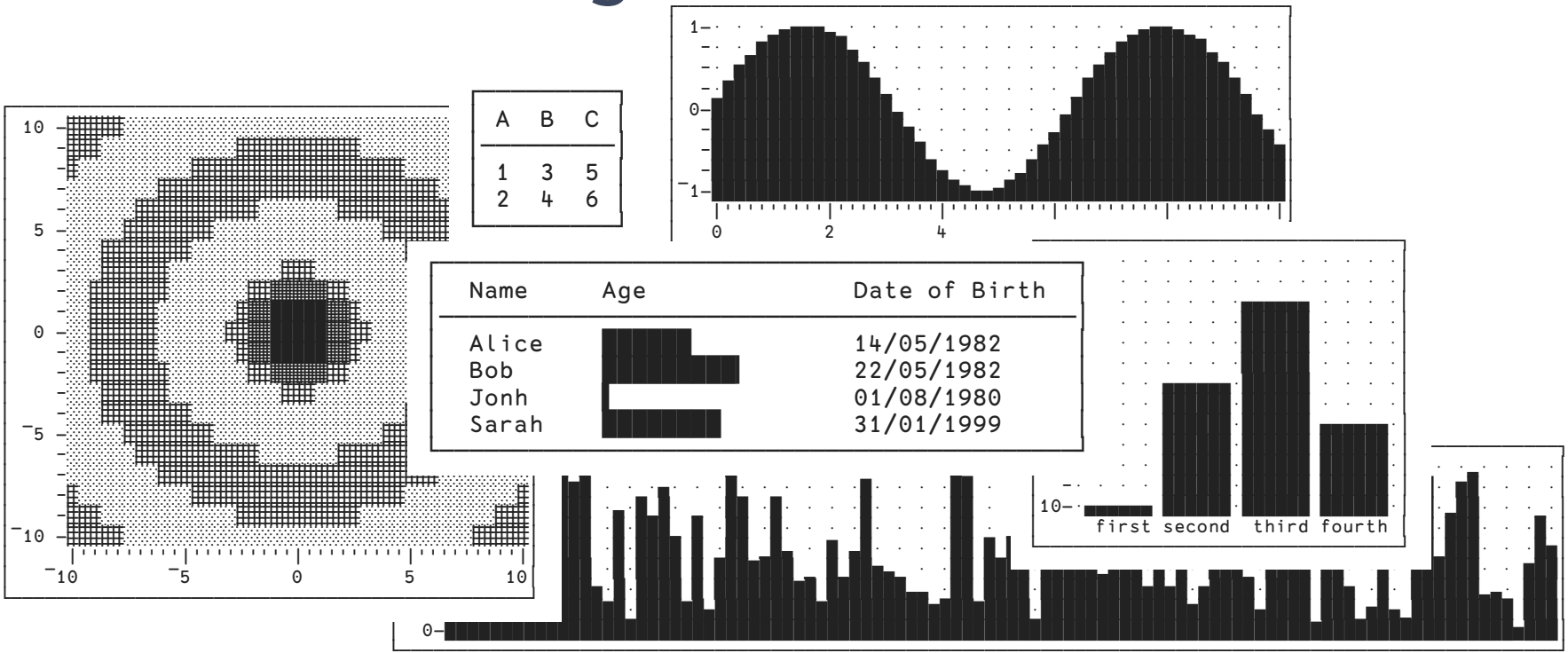
- Plots
- Tables



Textdraw Package



Textdraw Package



Textdraw Package

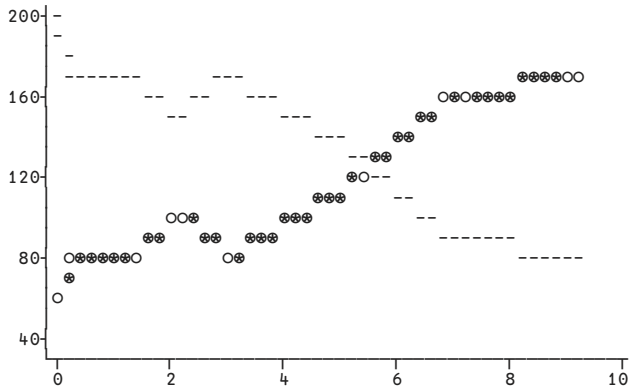


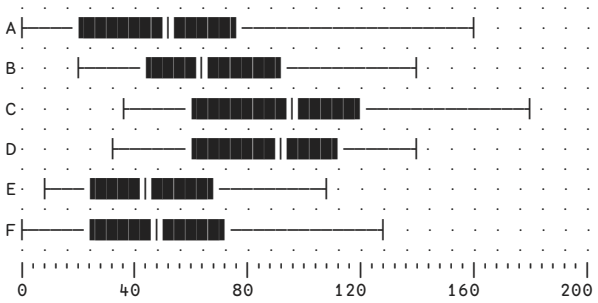


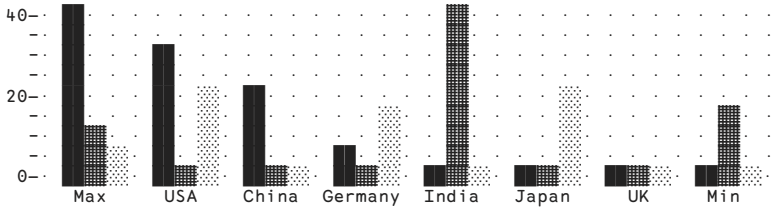


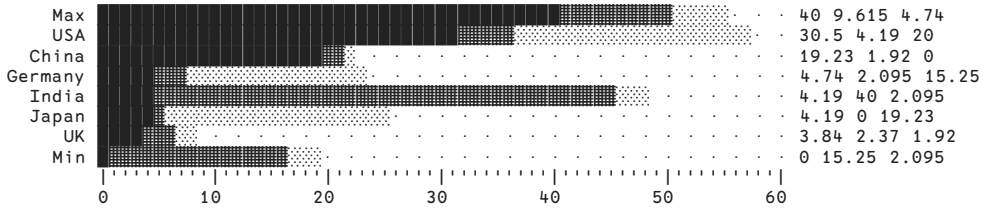


Textdraw Package: Plot types

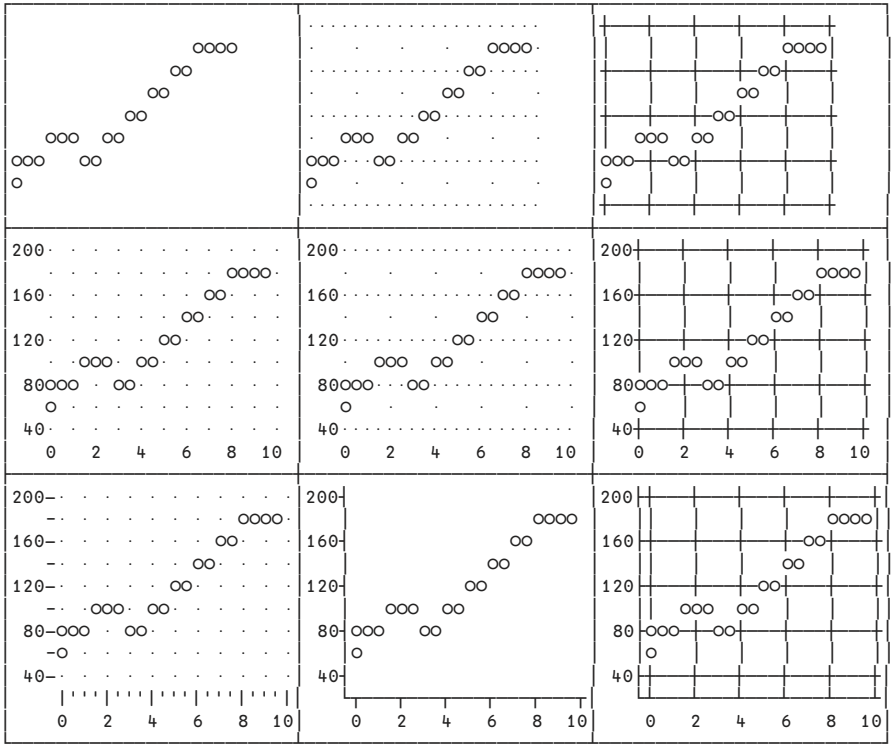








Textdraw Package: Plot styles



Textdraw Package: Tables

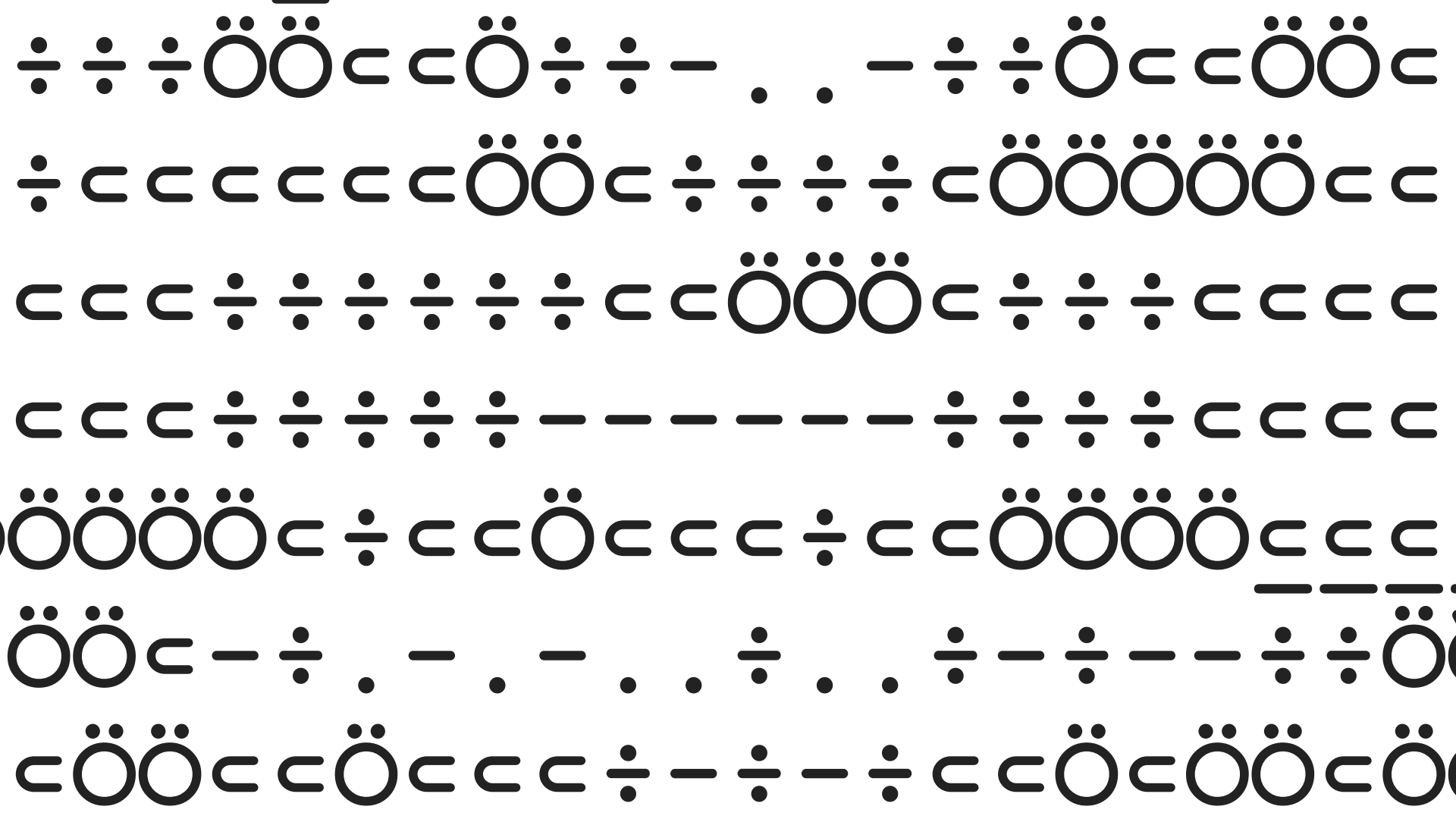
n	x	xh	y	yv	letter	monthly1	monthly2	monthly3
·	0		0		A	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND
2	0.2		0.2197501325		B			
	8.4		71.03889678		C			
	9.6		93.11439724		D			
	6.9		48.58360395		E			
1	2.8		7.896500364		F			
	5.5		30.72238727		G			
	6.4		41.94366394		H			
2	9.4		89.10495258		I			
	3.1		9.966430225		J			
1	0.9		1.775645321		K			
2	3.5		12.54266721		L			
	9.5		91.01978568		M			
	5.4		29.28847366		N			
1	5.5		30.6257468		O			
	1.8		3.706861209		P			
2	4.6		21.4718802		Q			
1	8.6		74.67898616		R			
	9.8		96.73824827		S			
2	8.4		71.06636241		T			
1	0.4		0.607519368		U			
2	5.2		28.00026742		V			
	1.1		1.952238617		W			
1	4.8		23.53009124		X			
2	4		16.77854277		Y			

…51

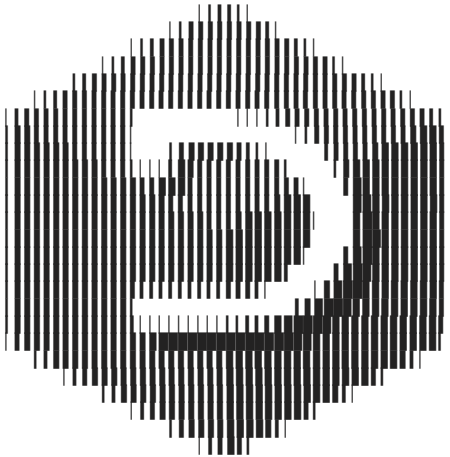
Textdraw Package: Bitmaps

```
⍝ fillings
hlevels←' ▏▎▍▌▋▊▉' ⋄ vlevels←' ▁▂▃▄▅▆▇' ⋄ shades←' ░▒▓' ⋄ shades1←' ·░▒▓'
ascii←' .:-+=*%#@' ⋄ apl←' .-÷⍳⍬⍤⌺⌸' ⋄ braille1←' ⠁⠂⠃⠄⠅⠆⠇⡀⡁⡂⡃⡄⡅⡆⡇'


⍝ block drawing
blocks←' ▗▐▖▄▟▌▙█'
blocks2←' ','▗','▐','▄','▟','▌','▙','▖','▚','▀','▜','▛','▞','▙','▟','▐','▜','▗','▚','▖','▛','▀','▙','▄','▟','▌','▙','▖','▚','▛','▜','▞','▀','▜','▗','▚','▐','▟','▖','▄','▛','▙','▌','▟','▄','▖','▚','▗','▐','▜','▀','▞','▛','▖','▄','▟','▌','▙','▀','▜','▐','▗','▚','▄','▟','▖','▌','▙','▛','▀','▜','▚','▗','▐','▞','▖','▄','▟','▌','▙','▛
```



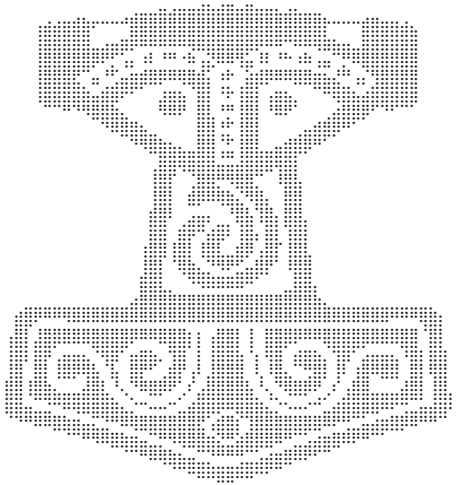
Textdraw Package: Bitmaps



```
hlevels←' ▏▎▍▌▋▊▉'
```



```
apl←' .-÷⊂Ö⊆⍀@⍈⍗'
```

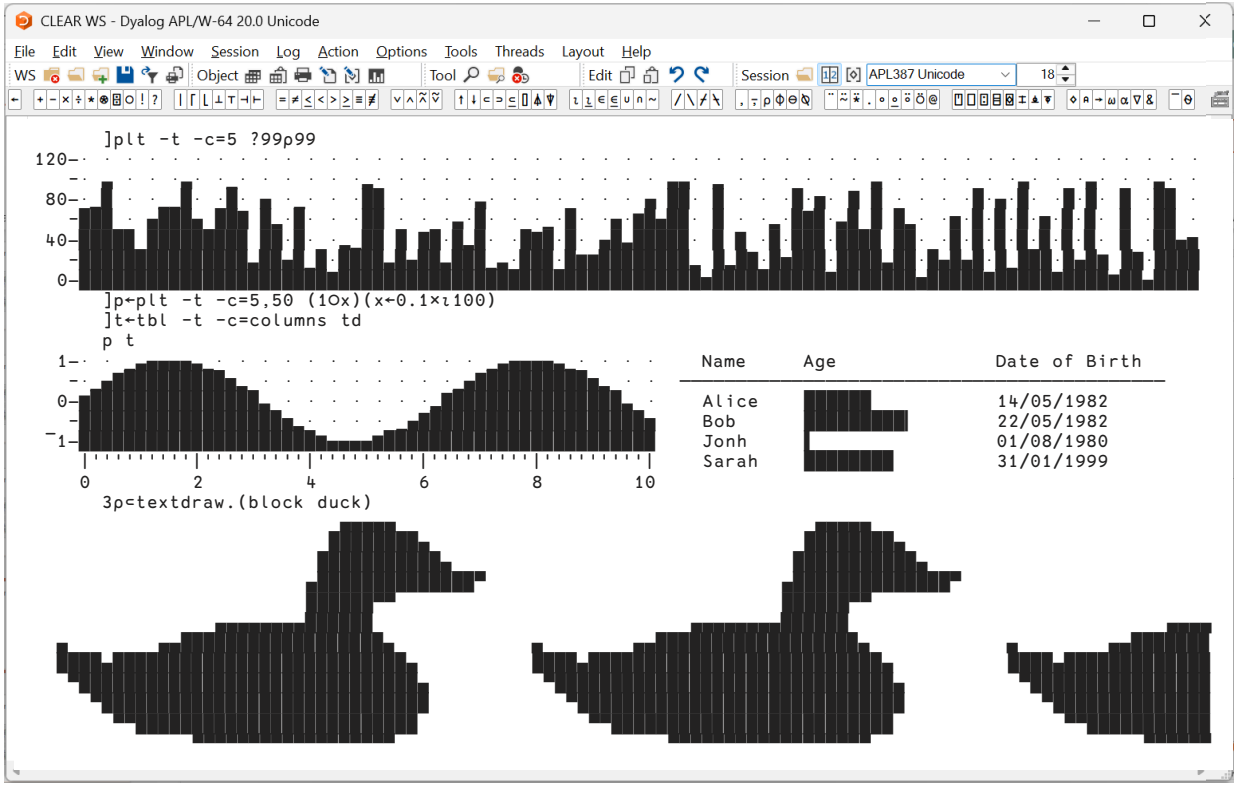


```
braille←⎕UCS(0,⍳255)+⎕UCS' '
```

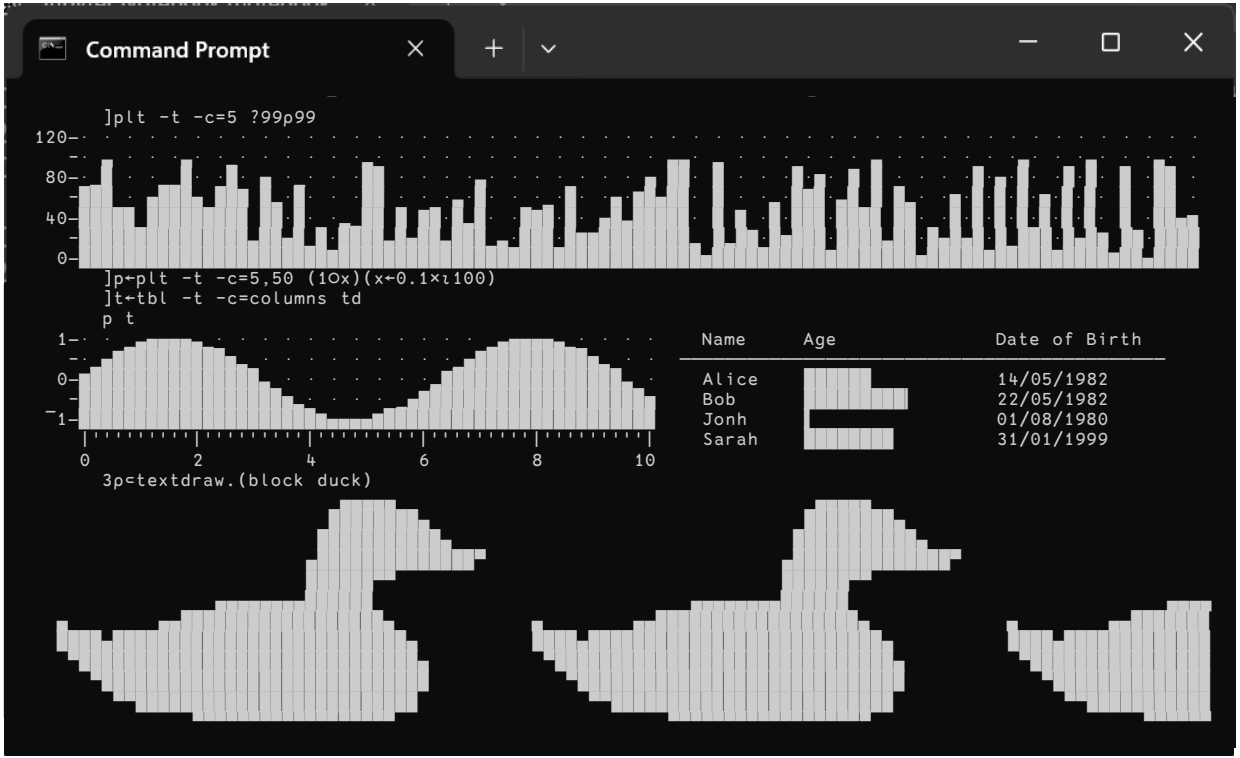
Textdraw Package

- No JavaScript libraries
- No HTMLRenderer
- No dependencies

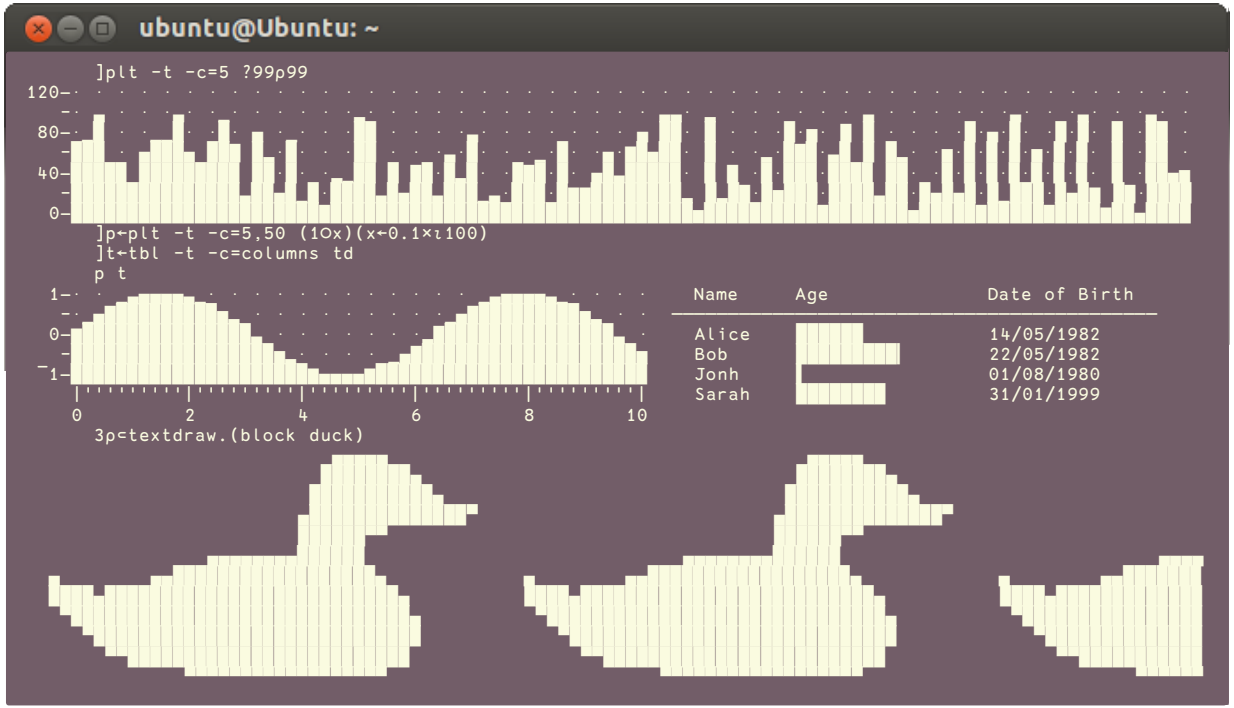
Textdraw Package



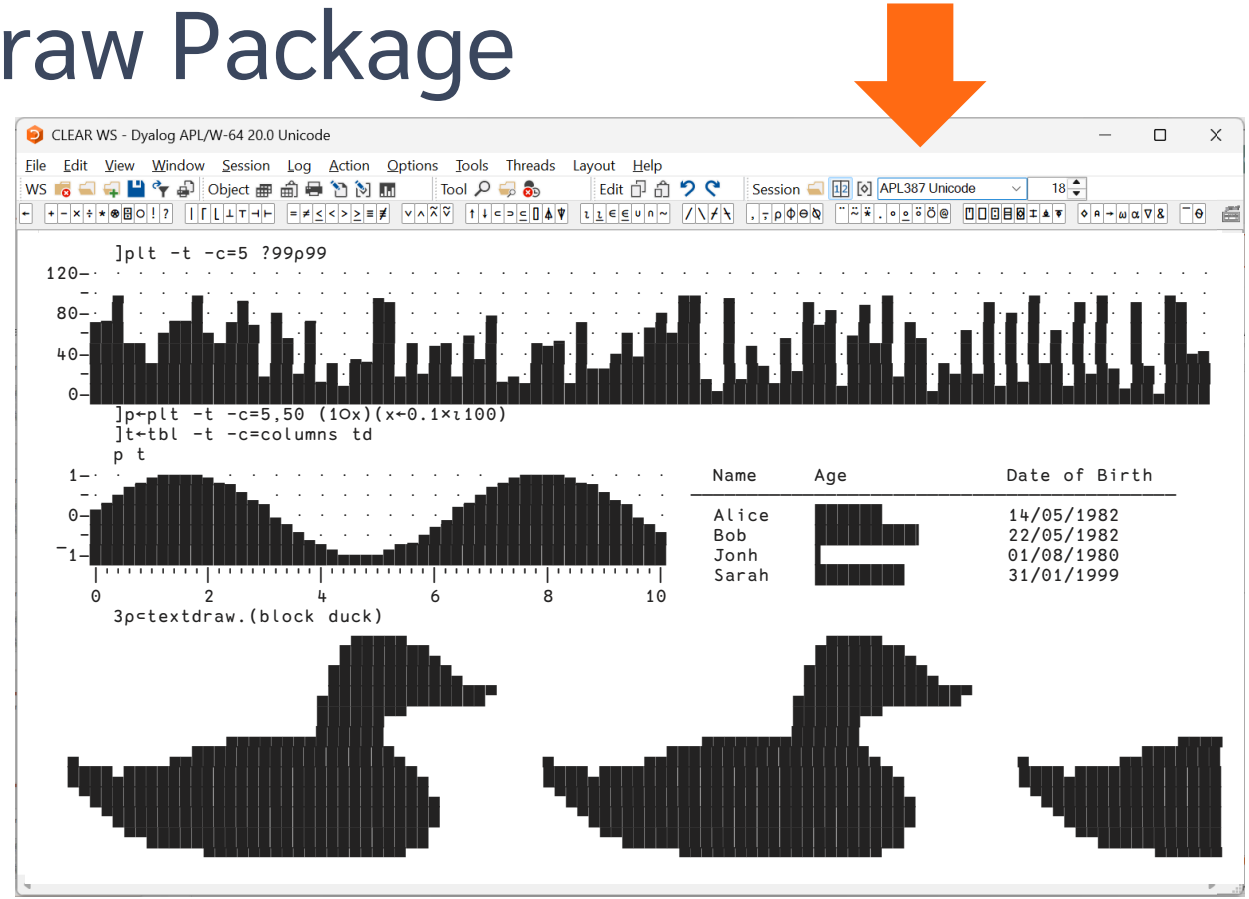
Textdraw Package



Textdraw Package



Textdraw Package

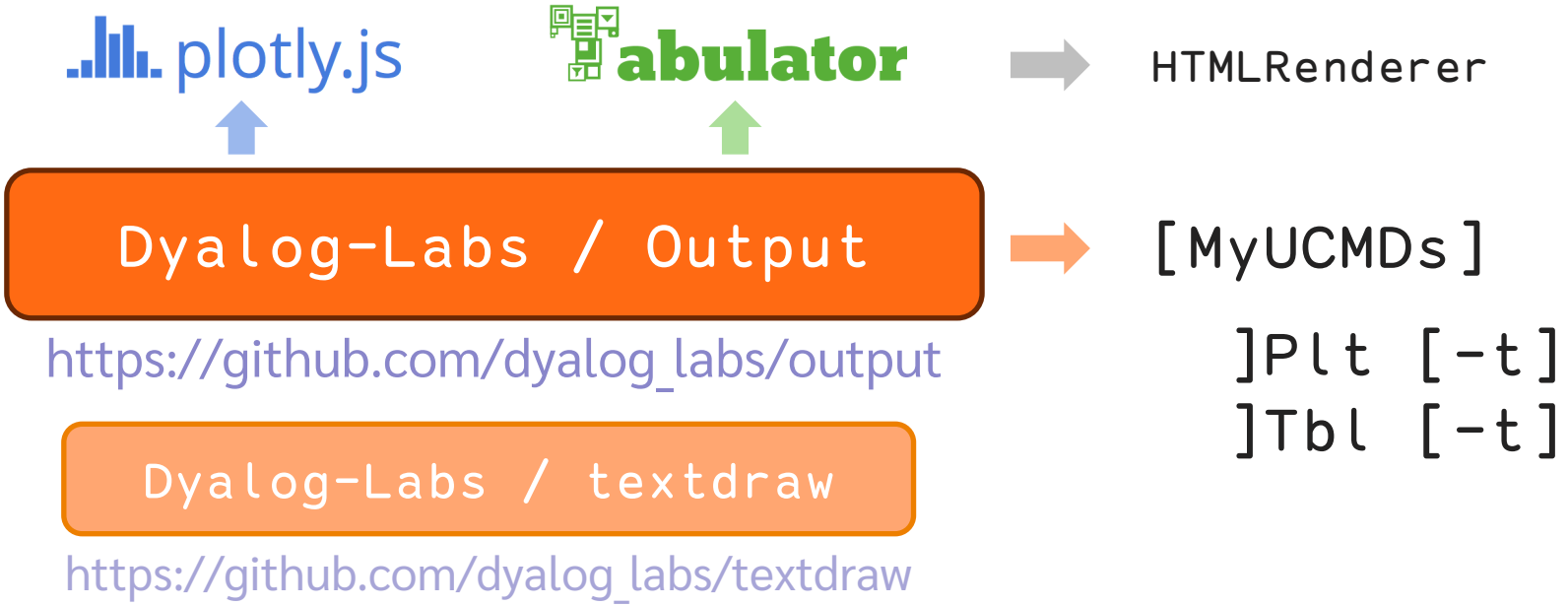


Textdraw Package

Dyalog-Labs / textdraw

https://github.com/dyalog_labs/textdraw

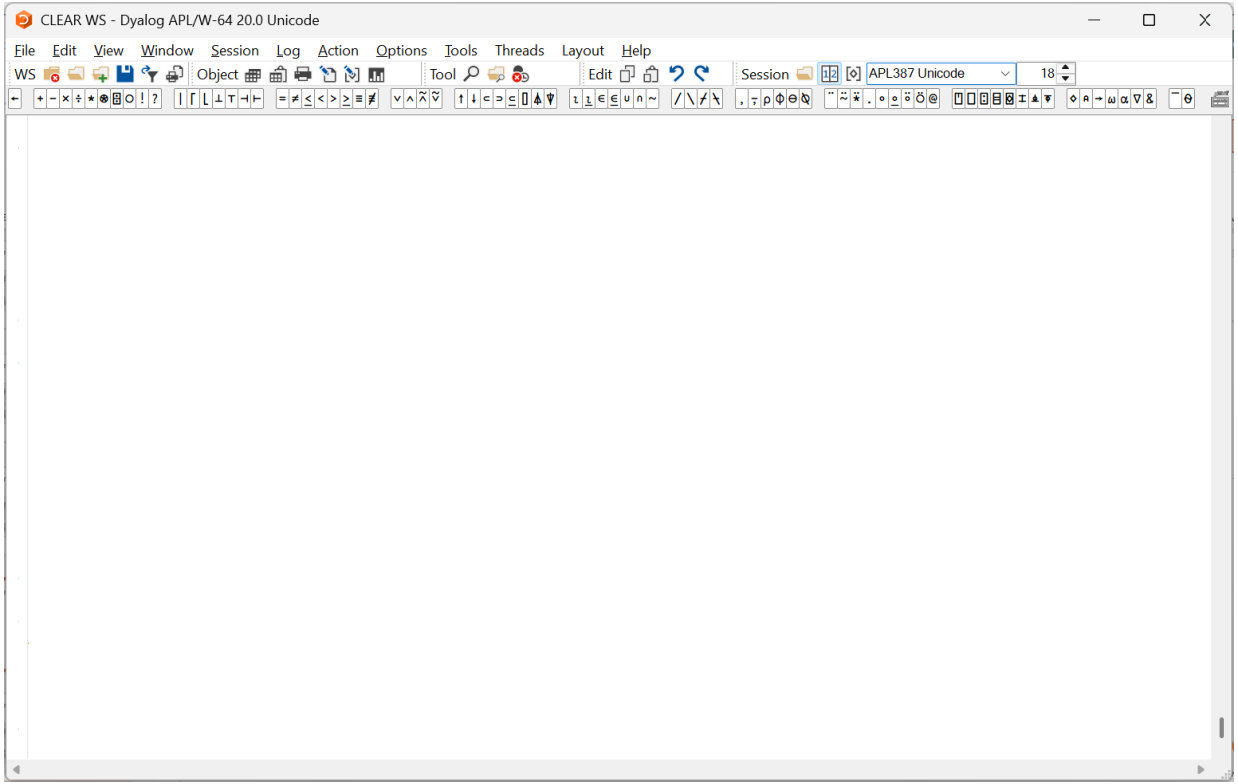
Output Package



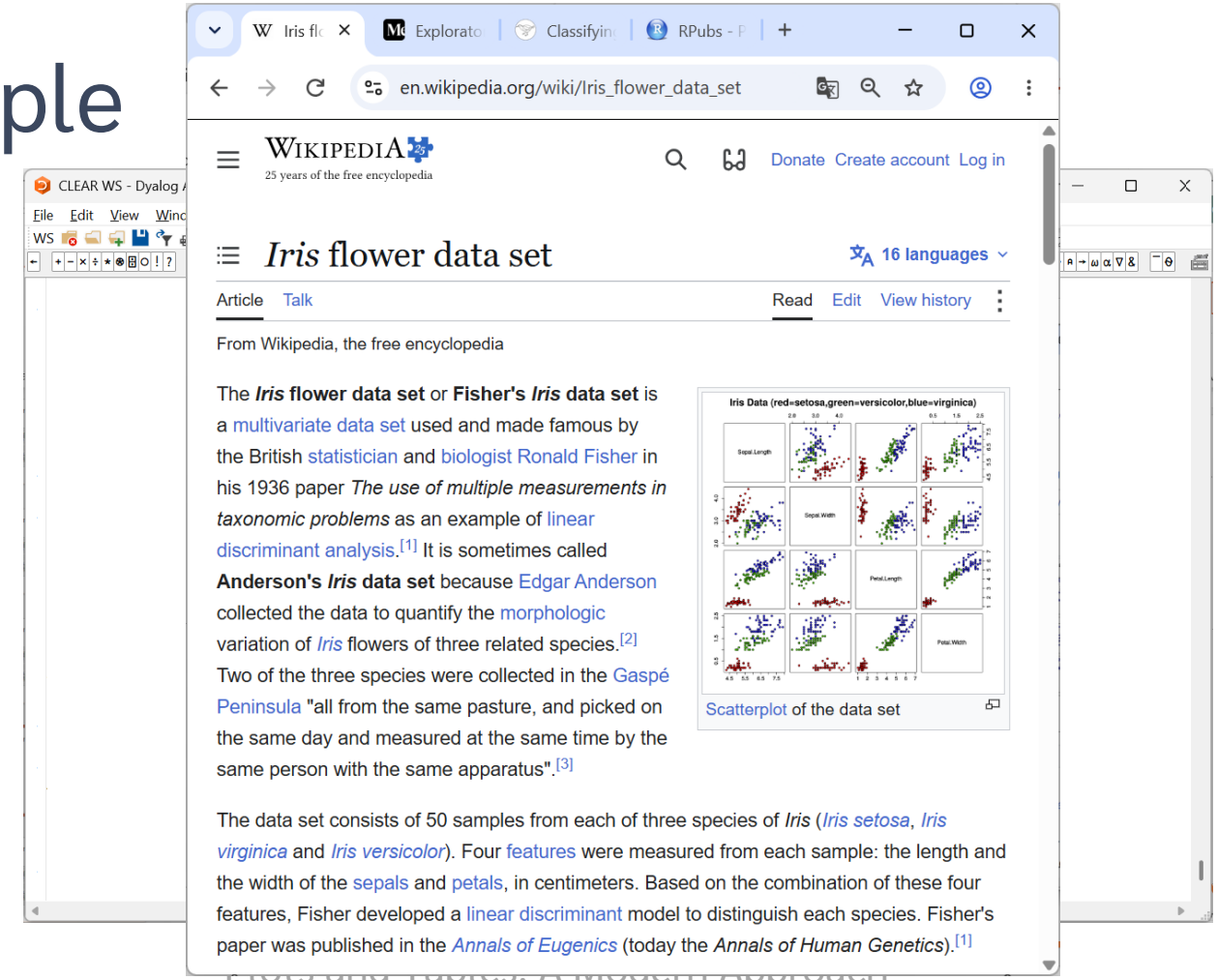
OUTLINE

- Introduction
- Packages
- Example
- Usage

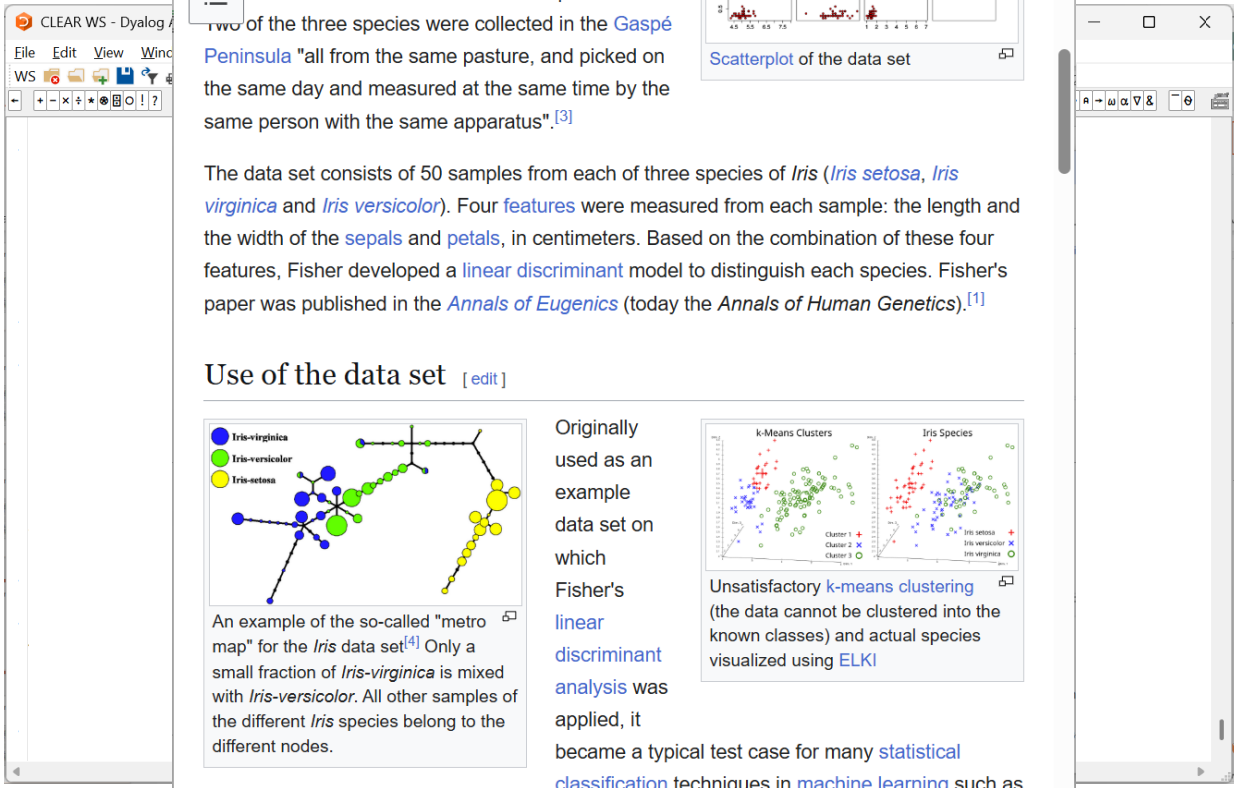
Example


CLEAR WS - Dyalog APL/W-64 20.0 Unicode
File Edit View Window Session Log Action Options Tools Threads Layout Help
WS Object Tool Edit Session APL387 Unicode 18

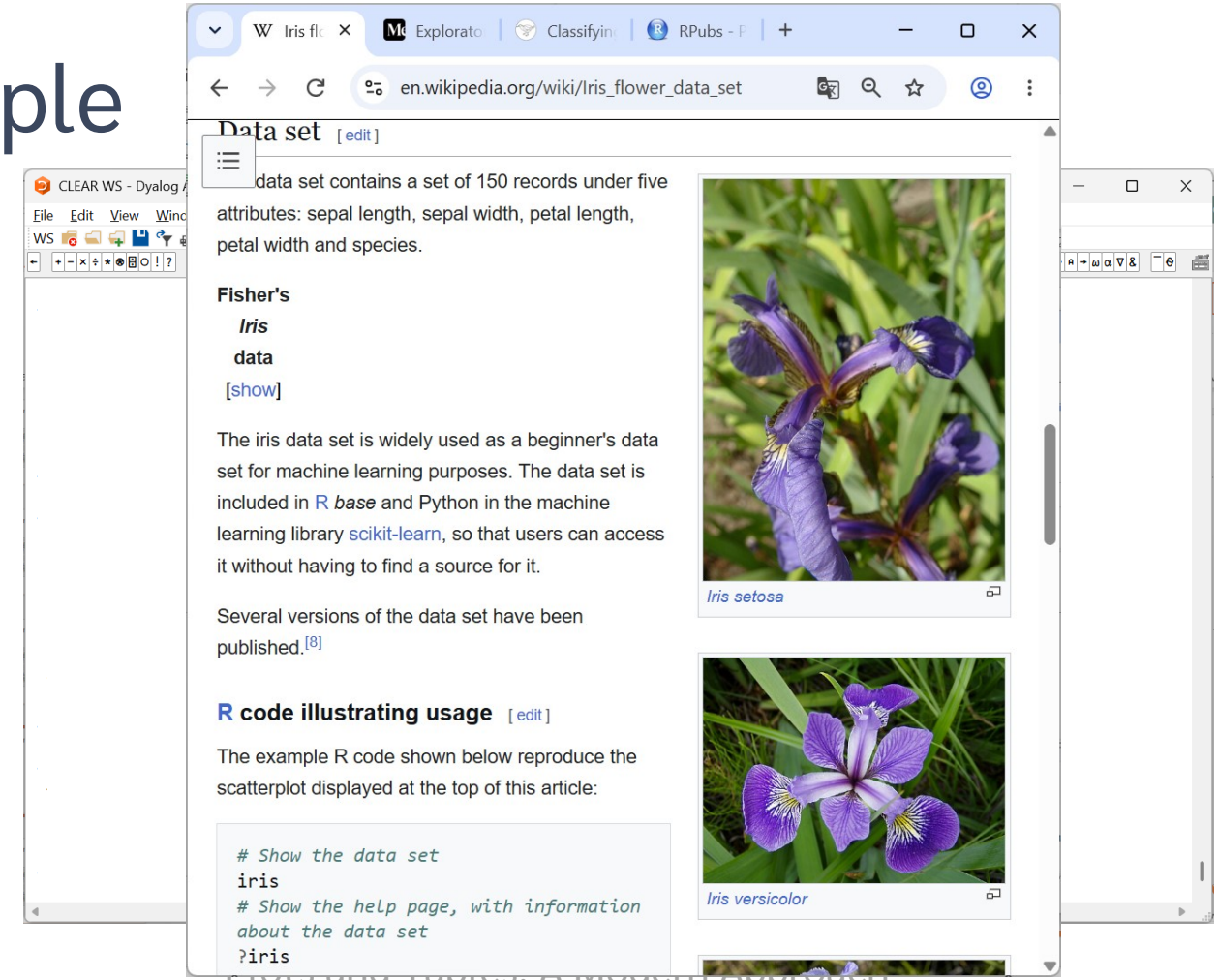
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris flo
Explorato
Classifyin
RPubs - F
en.wikipedia.org/wiki/Iris_flower_data_set
WIKIPEDIA
25 years of the free encyclopedia
Donate Create account Log in
Iris flower data set
16 languages
Article Talk
Read Edit View history
From Wikipedia, the free encyclopedia
The Iris flower data set or Fisher's Iris data set is a multivariate data set used and made famous by the British statistician and biologist Ronald Fisher in his 1936 paper The use of multiple measurements in taxonomic problems as an example of linear discriminant analysis.[1] It is sometimes called Anderson's Iris data set because Edgar Anderson collected the data to quantify the morphologic variation of Iris flowers of three related species.[2] Two of the three species were collected in the Gaspé Peninsula "all from the same pasture, and picked on the same day and measured at the same time by the same person with the same apparatus".[3]
Iris Data (red=setosa,green=versicolor,blue=virginica)
Scatterplot of the data set
The data set consists of 50 samples from each of three species of Iris (Iris setosa, Iris virginica and Iris versicolor). Four features were measured from each sample: the length and the width of the sepals and petals, in centimeters. Based on the combination of these four features, Fisher developed a linear discriminant model to distinguish each species. Fisher's paper was published in the Annals of Eugenics (today the Annals of Human Genetics).[1]

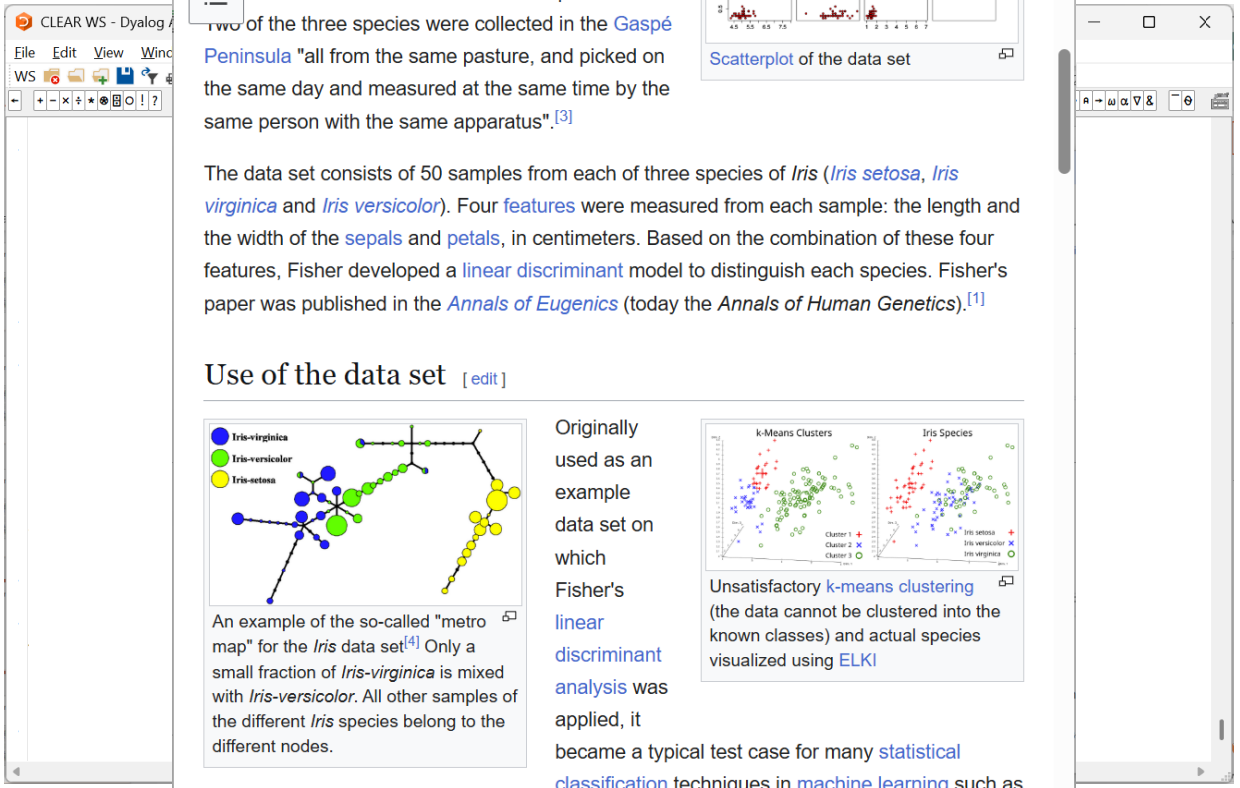
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris fl
Explorato
Classifyin
RPubs - P
en.wikipedia.org/wiki/Iris_flower_data_set
collected the data to quantify the morphologic
tion of Iris flowers of three related species.[2]
Two of the three species were collected in the Gaspé Peninsula "all from the same pasture, and picked on the same day and measured at the same time by the same person with the same apparatus".[3]
Scatterplot of the data set
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Use of the data set [edit]
Iris-virginica
Iris-versicolor
Iris-setosa
An example of the so-called "metro map" for the Iris data set[4] Only a small fraction of Iris-virginica is mixed with Iris-versicolor. All other samples of the different Iris species belong to the different nodes.
Originally used as an example data set on which Fisher's linear discriminant analysis was applied, it became a typical test case for many statistical classification techniques in machine learning such as support vector machines.[5]
k-Means Clusters
Iris Species
Unsatisfactory k-means clustering (the data cannot be clustered into the known classes) and actual species visualized using ELKI

Example


CLEAR WS - Dyalog
File Edit View
WS
en.wikipedia.org/wiki/Iris_flower_data_set
Data set [edit]
data set contains a set of 150 records under five attributes: sepal length, sepal width, petal length, petal width and species.
Fisher's
Iris
data
[show]
The iris data set is widely used as a beginner's data set for machine learning purposes. The data set is included in R base and Python in the machine learning library scikit-learn, so that users can access it without having to find a source for it.
Several versions of the data set have been published.[8]
Iris setosa
Iris versicolor
R code illustrating usage [edit]
The example R code shown below reproduce the scatterplot displayed at the top of this article:
Show the data set
iris
Show the help page, with information about the data set
?iris

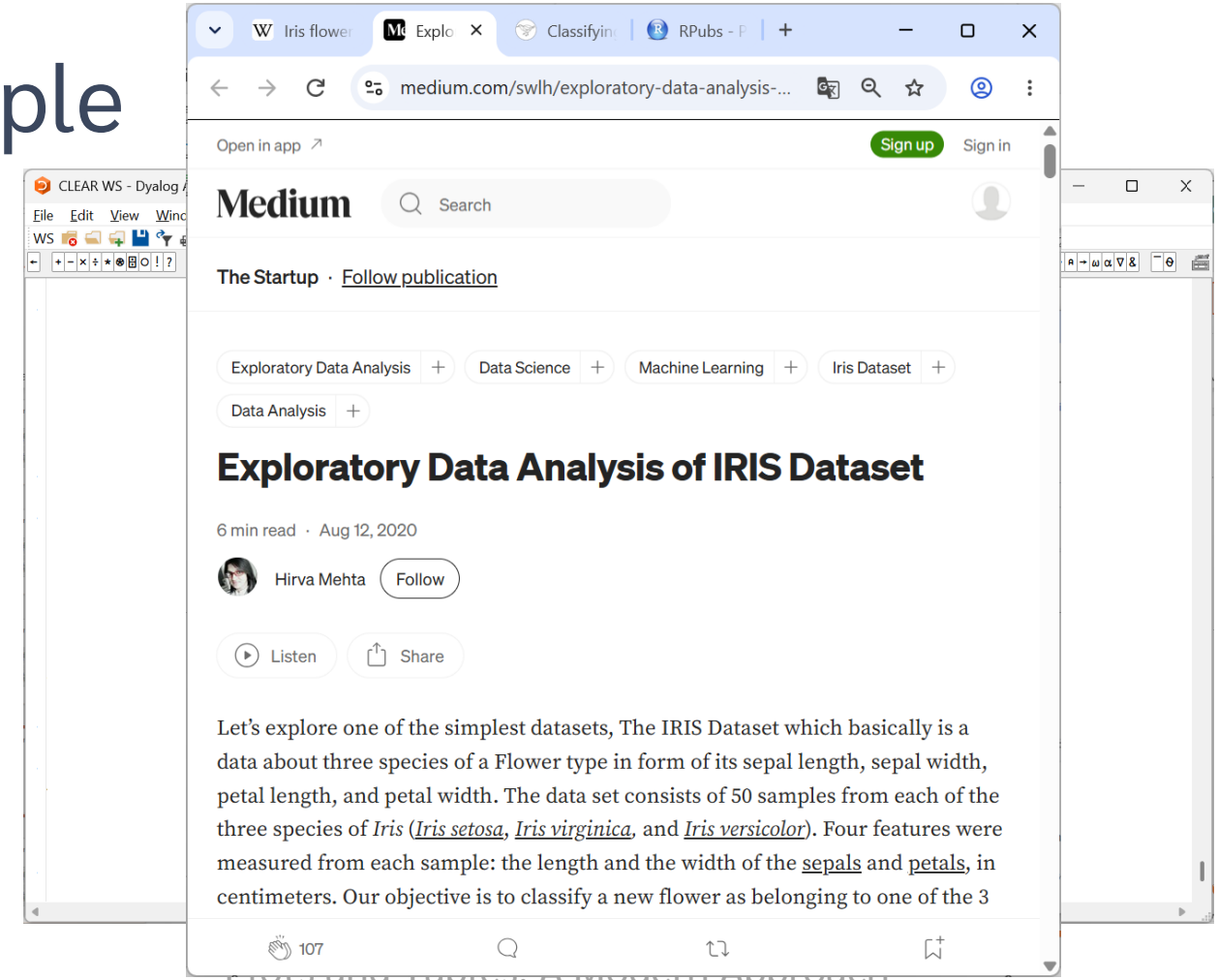
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris fl
Explorato
Classifyin
RPubs - P
en.wikipedia.org/wiki/Iris_flower_data_set
collected the data to quantify the morphologic
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Two of the three species were collected in the Gaspé Peninsula "all from the same pasture, and picked on the same day and measured at the same time by the same person with the same apparatus".[3]
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Use of the data set [edit]
Iris-virginica
Iris-versicolor
Iris-setosa
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Originally used as an example data set on which Fisher's linear discriminant analysis was applied, it became a typical test case for many statistical classification techniques in machine learning such as support vector machines.[5]
k-Means Clusters
Iris Species
Unsatisfactory k-means clustering (the data cannot be clustered into the known classes) and actual species visualized using ELKI

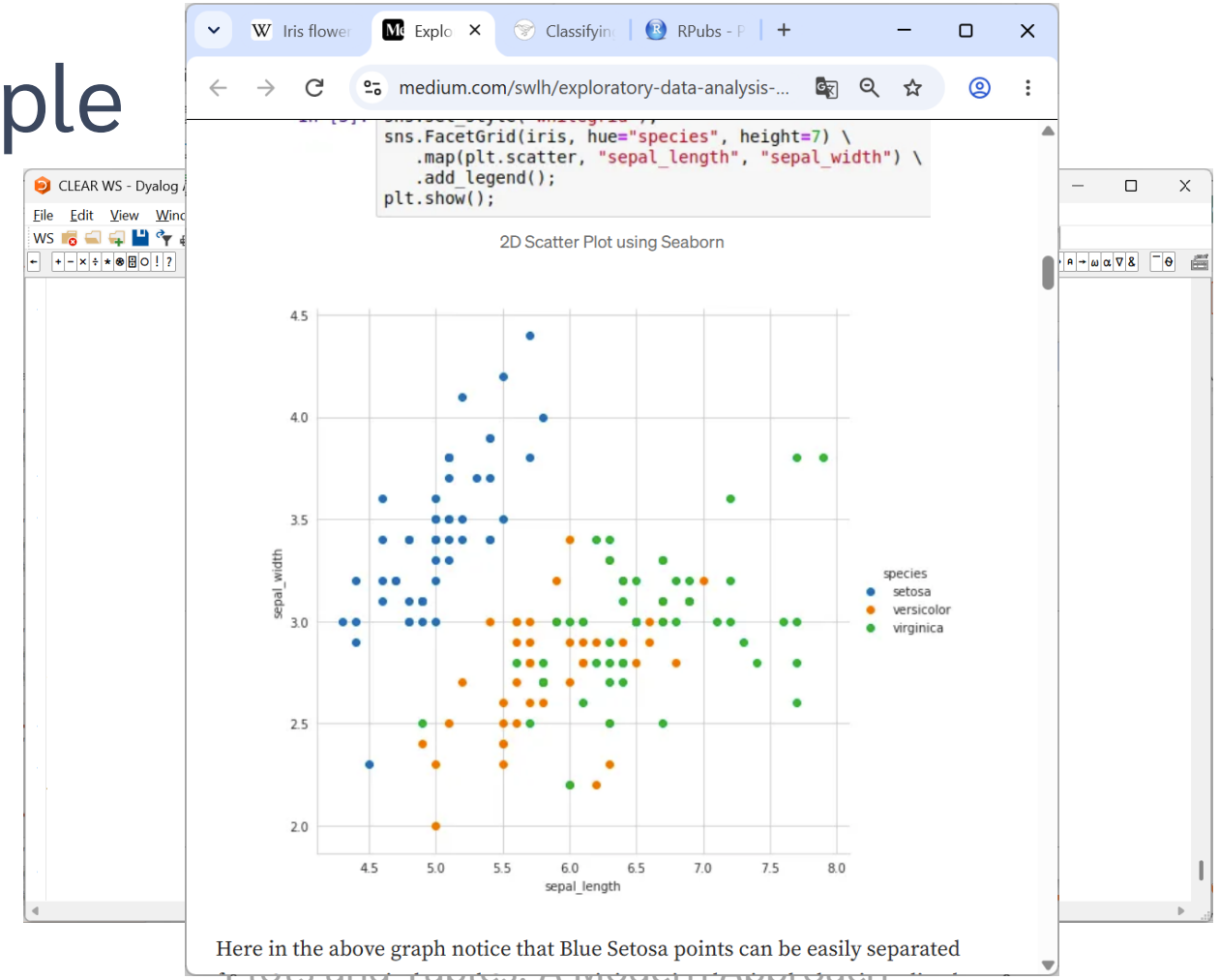
Example


Iris Data (red=setosa,green=versicolor,blue=virginica)
1/7
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
Scatterplot of the data set
More details
Nicoguaro - Own work
CC BY 4.0

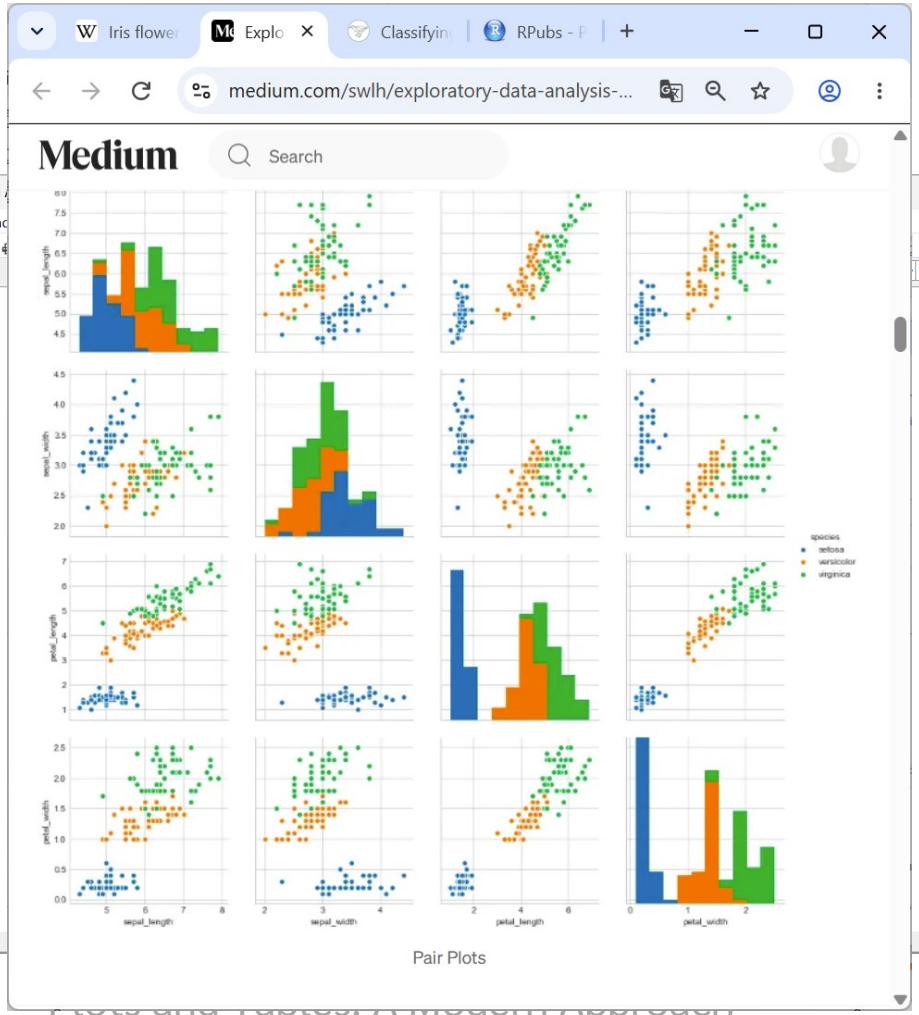
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris flower
Explo
Classifyin
RPubs - F
medium.com/swlh/exploratory-data-analysis-...
Open in app
Sign up
Sign in
Medium
Search
The Startup · Follow publication
Exploratory Data Analysis
Data Science
Machine Learning
Iris Dataset
Data Analysis
Exploratory Data Analysis of IRIS Dataset
6 min read · Aug 12, 2020
Hirva Mehta
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Let's explore one of the simplest datasets, The IRIS Dataset which basically is a data about three species of a Flower type in form of its sepal length, sepal width, petal length, and petal width. The data set consists of 50 samples from each of the three species of Iris (Iris setosa, Iris virginica, and Iris versicolor). Four features were measured from each sample: the length and the width of the sepals and petals, in centimeters. Our objective is to classify a new flower as belonging to one of the 3
107

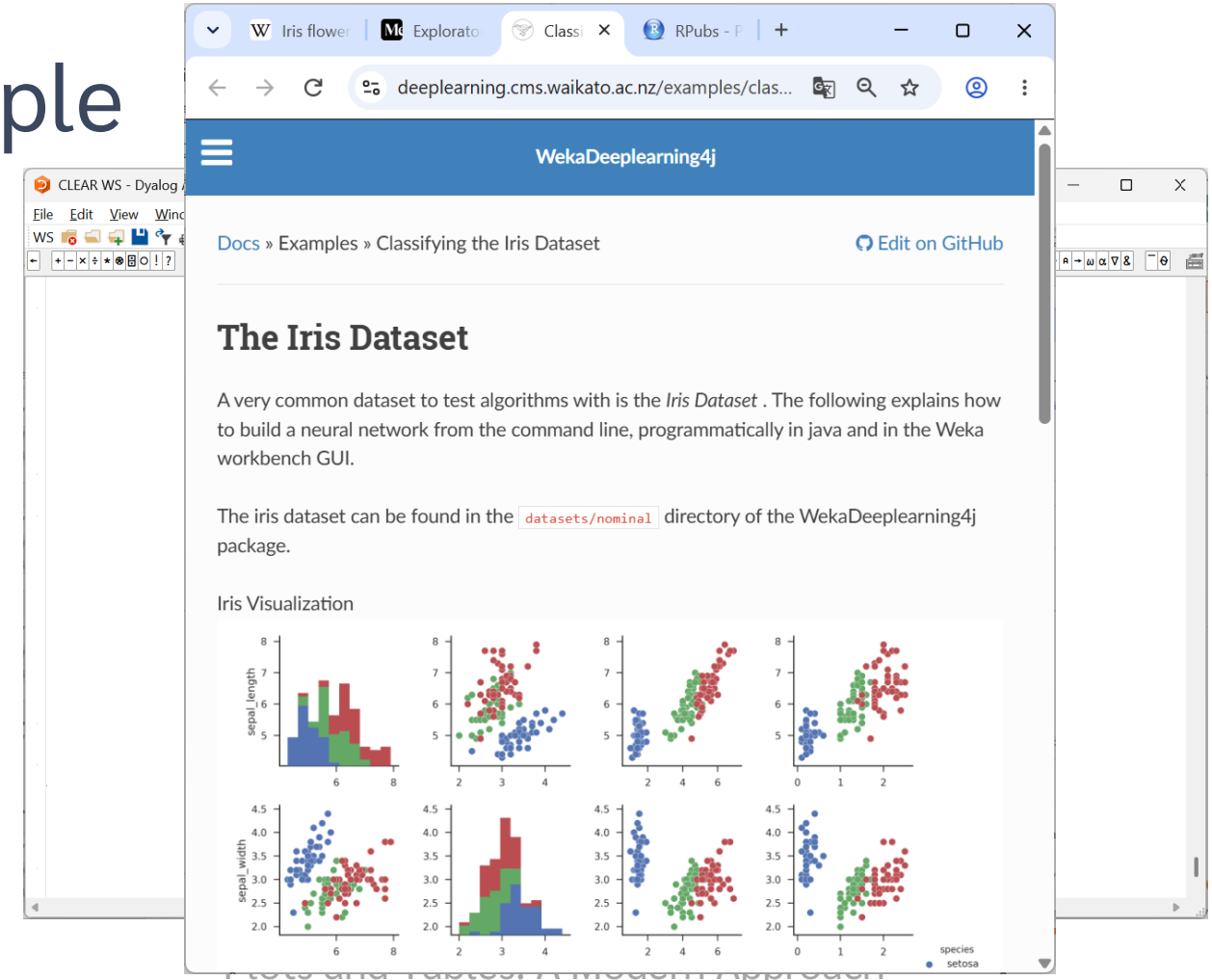
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris flower
Explo
Classifyin
RPubs - P
medium.com/swlh/exploratory-data-analysis-...
sns.FacetGrid(iris, hue="species", height=7) \
.map(plt.scatter, "sepal_length", "sepal_width") \
.add_legend();
plt.show();
2D Scatter Plot using Seaborn
sepal_width
sepal_length
species
setosa
versicolor
virginica
Here in the above graph notice that Blue Setosa points can be easily separated

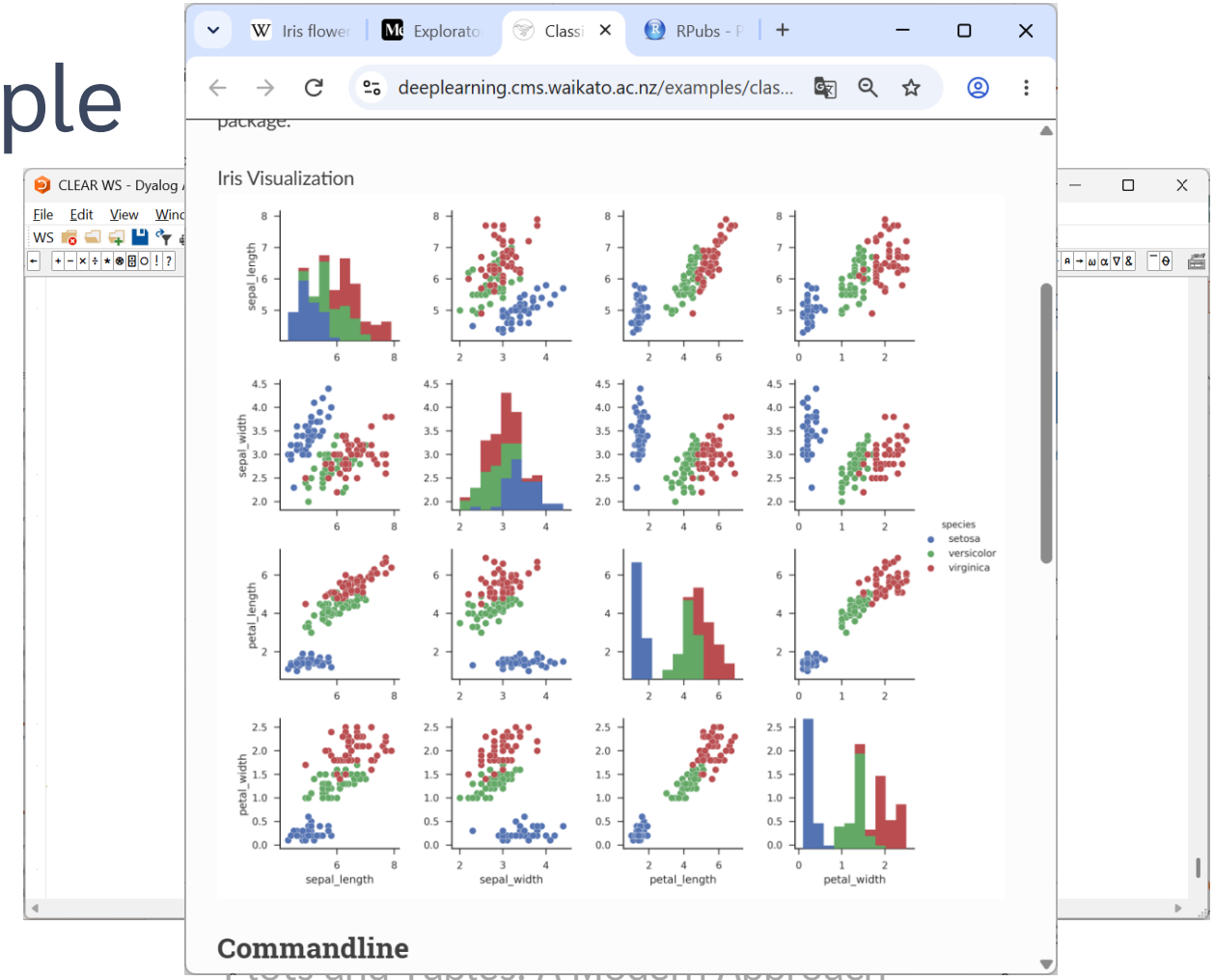
Example


Iris flower
Explo
Classifyin
RPubs - F
medium.com/swlh/exploratory-data-analysis-...
Medium
Search
Pair Plots

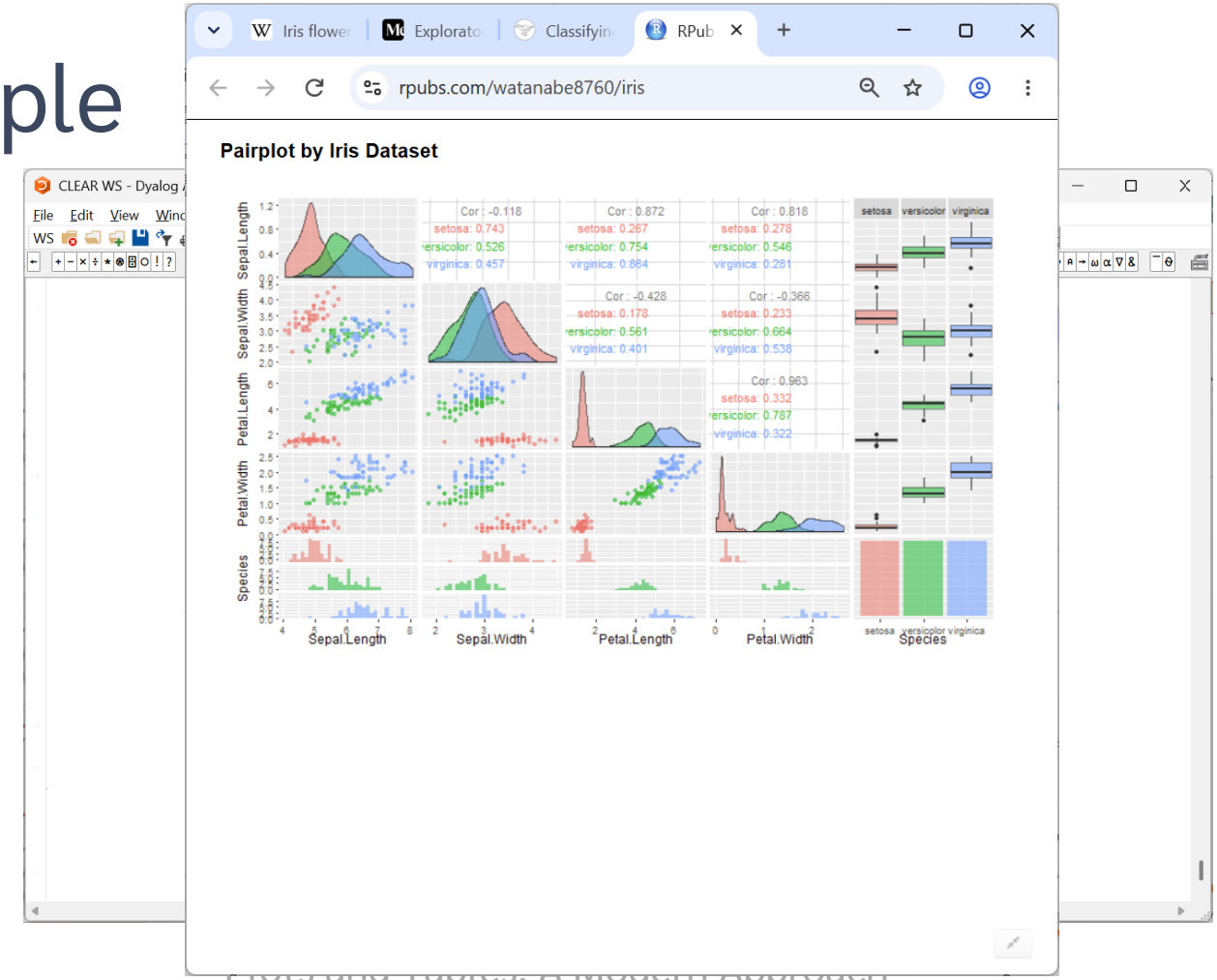
Example


Iris flower
Explorato
Classi
RPubs - F
deeplearning.cms.waikato.ac.nz/examples/clas...
WekaDeeplearning4j
Docs » Examples » Classifying the Iris Dataset
Edit on GitHub
The Iris Dataset
A very common dataset to test algorithms with is the Iris Dataset . The following explains how to build a neural network from the command line, programmatically in java and in the Weka workbench GUI.
The iris dataset can be found in the datasets/nominal directory of the WekaDeeplearning4j package.
Iris Visualization
sepal_length
sepal_width
species
setosa
CLEAR WS - Dyalog
File Edit View

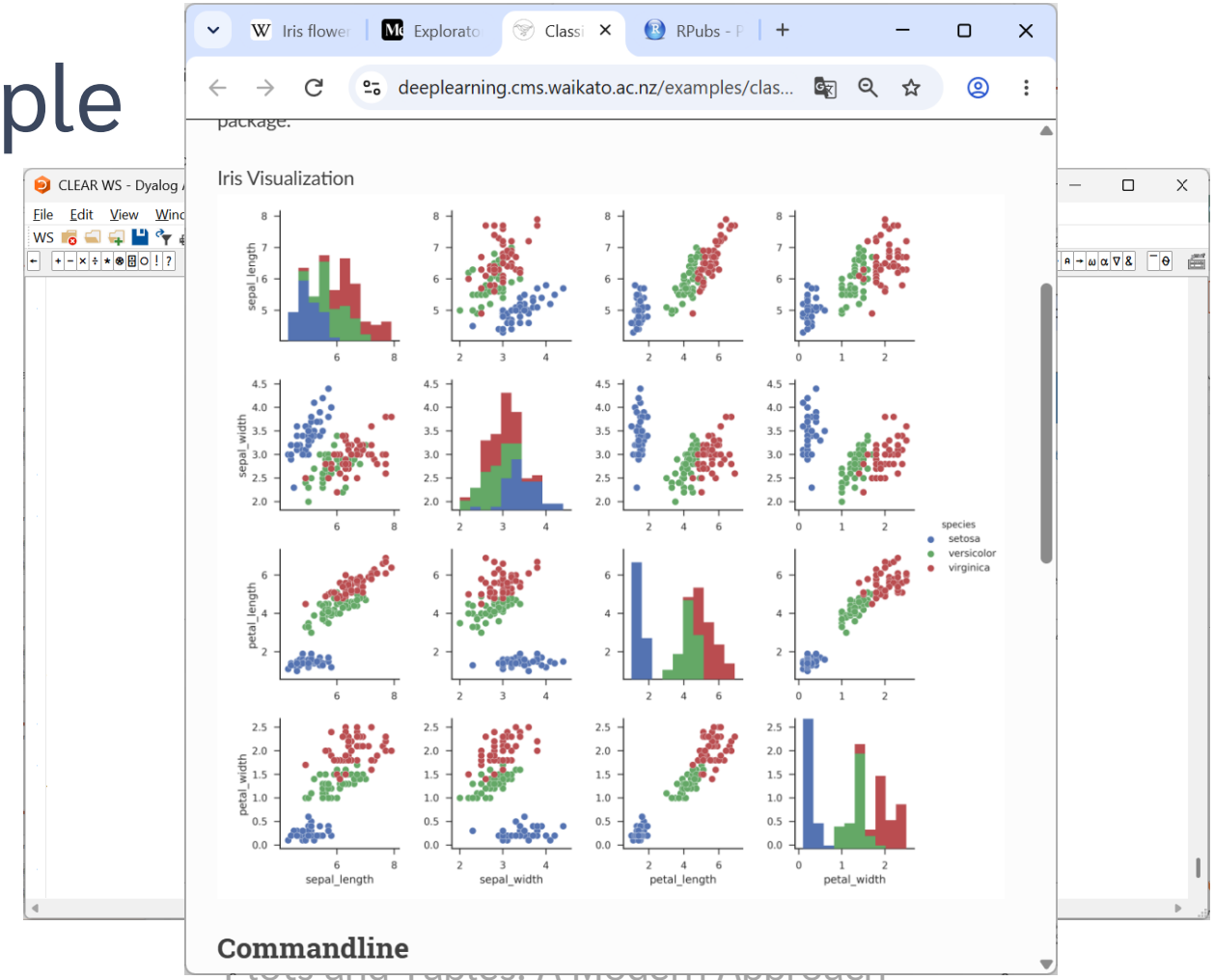
Example


CLEAR WS - Dyalog
File Edit View
WS
deeplearning.cms.waikato.ac.nz/examples/clas...
package.
Iris Visualization
sepal_length
sepal_width
petal_length
petal_width
species
setosa
versicolor
virginica
Commandline

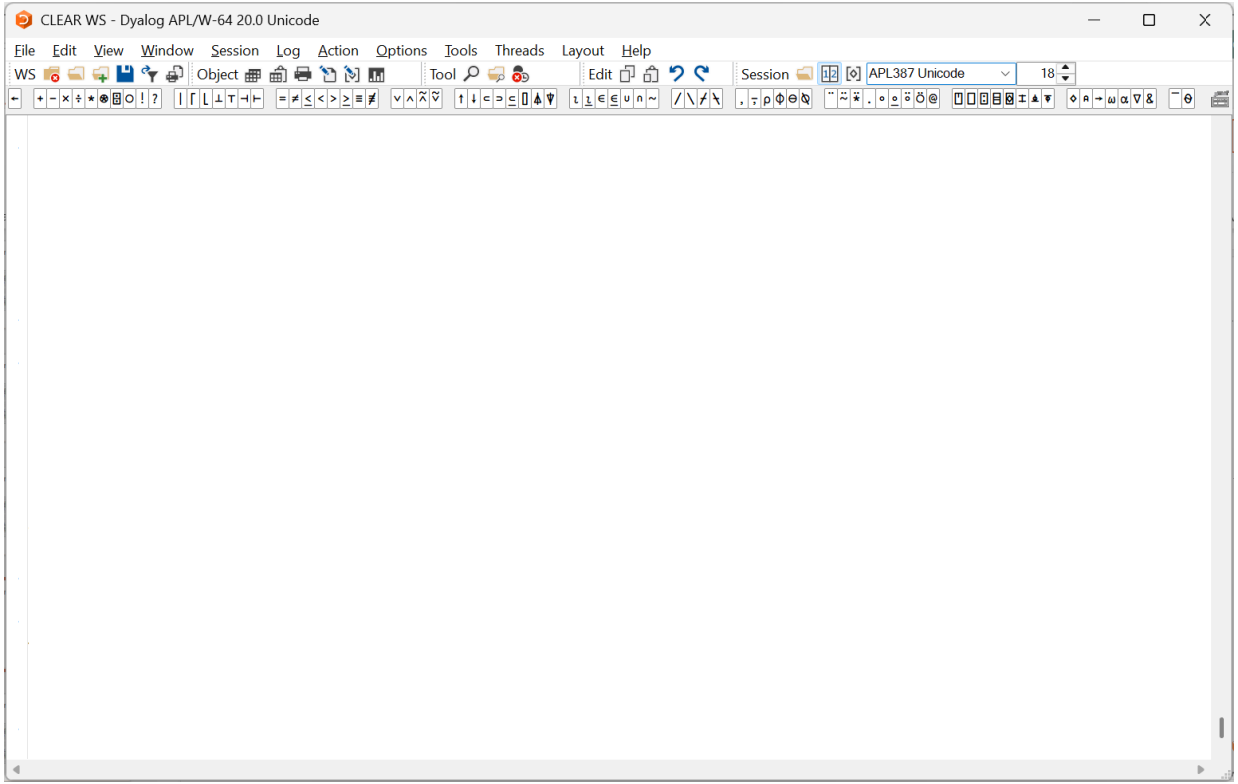
Example


CLEAR WS - Dyalog
File Edit View
WS
Iris flower
Explorato
Classifyin
RPub
rpubs.com/watanabe8760/iris
Pairplot by Iris Dataset
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
Species
Cor : -0.118
setosa: 0.743
versicolor: 0.526
virginica: 0.457
Cor : 0.872
setosa: 0.267
versicolor: 0.754
virginica: 0.864
Cor : 0.818
setosa: 0.278
versicolor: 0.546
virginica: 0.281
Cor : -0.428
setosa: 0.178
versicolor: 0.561
virginica: 0.401
Cor : -0.366
setosa: 0.233
versicolor: 0.664
virginica: 0.538
Cor : 0.963
setosa: 0.332
versicolor: 0.787
virginica: 0.322
setosa
versicolor
virginica

Example


CLEAR WS - Dyalog
File Edit View
WS
deeplearning.cms.waikato.ac.nz/examples/clas...
package.
Iris Visualization
sepal_length
sepal_width
petal_length
petal_width
species
setosa
versicolor
virginica
Commandline

Example


CLEAR WS - Dyalog APL/W-64 20.0 Unicode
File Edit View Window Session Log Action Options Tools Threads Layout Help
WS Object Tool Edit Session APL387 Unicode 18

```
      ⎕IO←0

      pl td←⎕SE.Output.(Plotly Text.draw)  ⍝ plotly and textdraw namespaces

      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris

      ]tbl -t iris
```

```
      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris

      ]tbl -t iris
```

rownames	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa

```
…150
```

```
      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris

      ]tbl -t
  rownames                                                .Width    Species
──────────────────────────────────────────────────────────────────────────
         1                                                   0.2    setosa
         2                                                   0.2    setosa
         3                                                   0.2    setosa
         4                                                   0.2    setosa
         5                                                   0.2    setosa
         6                                                   0.4    setosa
         7                                                   0.3    setosa
         8                                                   0.2    setosa
         9                                                   0.2    setosa
        10                                                   0.1    setosa
        11          5.4           3.7           1.5          0.2    setosa
        12          4.8           3.4           1.6          0.2    setosa
…150
      ]tbl iris
```

iris

rownames	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3	1.4	0.1	setosa
14	4.3	3	1.1	0.1	setosa

```
      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris
      ]tbl -t
  rownames                                                .Width    Species
──────────────────────────────────────────────────────────────────────────
         1                                                   0.2    setosa
         2                                                   0.2    setosa
         3                                                   0.2    setosa
         4                                                   0.2    setosa
         5                                                   0.2    setosa
         6                                                   0.4    setosa
         7                                                   0.3    setosa
         8                                                   0.2    setosa
         9                                                   0.2    setosa
        10                                                   0.1    setosa
        11          5.4          3.7          1.5             0.2    setosa
        12          4.8          3.4          1.6             0.2    setosa
…150
      ]tbl iris
```

iris

41	5	3.5	1.3	0.3	setosa
42	4.5	2.3	1.3	0.3	setosa
43	4.4	3.2	1.3	0.2	setosa
44	5	3.5	1.6	0.6	setosa
45	5.1	3.8	1.9	0.4	setosa
46	4.8	3	1.4	0.3	setosa
47	5.1	3.8	1.6	0.2	setosa
48	4.6	3.2	1.4	0.2	setosa
49	5.3	3.7	1.5	0.2	setosa
50	5	3.3	1.4	0.2	setosa
51	7	3.2	4.7	1.4	versicolor
52	6.4	3.2	4.5	1.5	versicolor
53	6.9	3.1	4.9	1.5	versicolor
54	5.5	2.3	4	1.3	versicolor
55	6.5	2.8	4.6	1.5	versicolor

```
      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris
      ]tbl -t
  rownames                                                .Width    Species
──────────────────────────────────────────────────────────────────────────
         1                                                   0.2    setosa
         2                                                   0.2    setosa
         3                                                   0.2    setosa
         4                                                   0.2    setosa
         5                                                   0.2    setosa
         6                                                   0.4    setosa
         7                                                   0.3    setosa
         8                                                   0.2    setosa
         9                                                   0.2    setosa
        10                                                   0.1    setosa
        11          5.4          3.7          1.5             0.2    setosa
        12          4.8          3.4          1.6             0.2    setosa
…150
      ]tbl iris
```

iris

95	5.6	2.7	4.2	1.3	versicolor
96	5.7	3	4.2	1.2	versicolor
97	5.7	2.9	4.2	1.3	versicolor
98	6.2	2.9	4.3	1.3	versicolor
99	5.1	2.5	3	1.1	versicolor
100	5.7	2.8	4.1	1.3	versicolor
101	6.3	3.3	6	2.5	virginica
102	5.8	2.7	5.1	1.9	virginica
103	7.1	3	5.9	2.1	virginica
104	6.3	2.9	5.6	1.8	virginica
105	6.5	3	5.8	2.2	virginica
106	7.6	3	6.6	2.1	virginica
107	4.9	2.5	4.5	1.7	virginica
108	7.3	2.9	6.3	1.8	virginica
109	6.7	2.5	5.8	1.8	virginica
110	7.2	3.6	6.1	2.5	virginica

```
      ⍝ get data from rdatasets
      ]get https://vincentarelbundock.github.io/Rdatasets/csv/datasets/iris.csv
#.iris

      ]tbl -t iris
```

rownames	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa

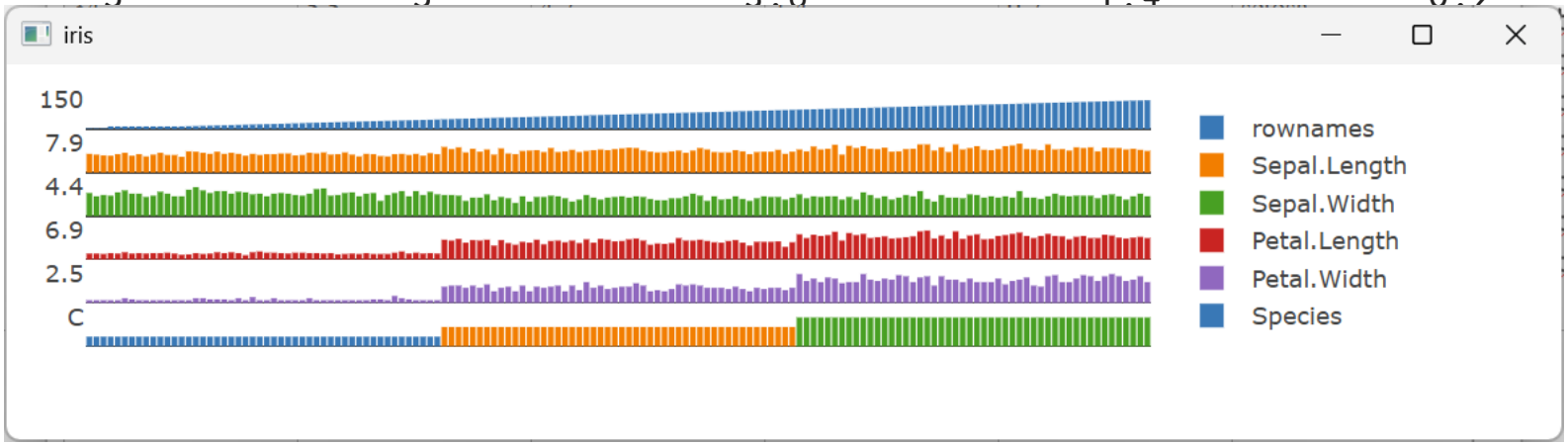
```
…150
      ]tbl iris
```

```
          3          4.7          3.2          1.3          0.2    setosa
          4          4.6          3.1          1.5          0.2    setosa
          5          5            3.6          1.4          0.2    setosa
          6          5.4          3.9          1.7          0.4    setosa
          7          4.6          3.4          1.4          0.3    setosa
          8          5            3.4          1.5          0.2    setosa
          9          4.4          2.9          1.4          0.2    setosa
         10          4.9          3.1          1.5          0.1    setosa
         11          5.4          3.7          1.5          0.2    setosa
         12          4.8          3.4          1.6          0.2    setosa
…150
       ]tbl iris

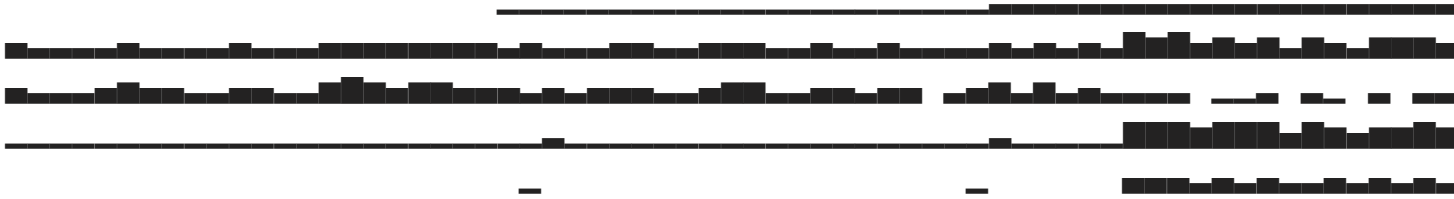
       ]plt -t iris
```


rownames 150
Sepal.Length 7.9
Sepal.Width 4.4
Petal.Length 6.9
Petal.Width 2.5
Species C
AAAA

```
  4          4.6          3.1          1.5          0.2    setosa
  5          5            3.6          1.4          0.2    setosa
                                                           setosa
                                                           setosa
                                                           setosa
                                                           setosa
                                                           setosa
                                                           setosa
…150                                                       setosa
```



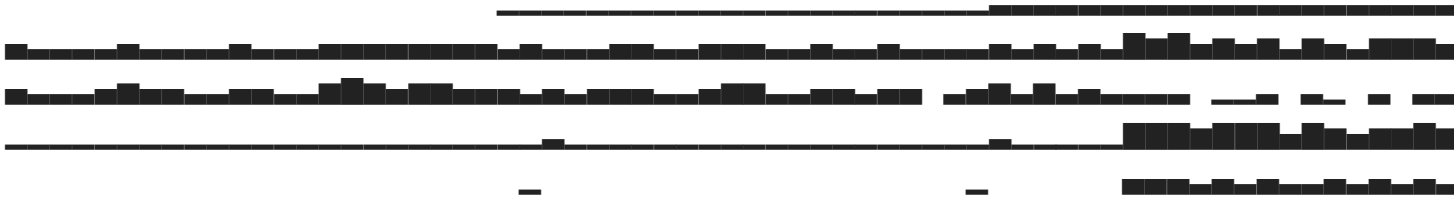

```
]plt -t iris
    rownames 150
Sepal.Length 7.9
 Sepal.Width 4.4
Petal.Length 6.9
 Petal.Width 2.5
     Species   C
]plt iris
```



```
         9              4.4             2.9             1.4             0.2    setosa
        10              4.9             3.1             1.5             0.1    setosa
        11              5.4             3.7             1.5             0.2    setosa
        12              4.8             3.4             1.6             0.2    setosa
…150
      ]tbl iris

      ]plt -t iris
    rownames 150
Sepal.Length 7.9
 Sepal.Width 4.4
Petal.Length 6.9
 Petal.Width 2.5
     Species   C  AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABBBBBBBBBBBBBBB
      ]plt iris

      ⍝ headers, species and data
      H←∈∘⍉⍤A⍤⍥⊂/¨h←iris[0;1+⍳4]
      u←∪s←1↓iris[;5] ⋄ d←1↓iris[;1+⍳4]
      ds←s{↓⍉⍵}⌸d
```



```
        12                                                                    setosa
…150
      ]tbl iris

      ]plt -t iris
    rownames 150
Sepal.Length 7.9
 Sepal.Width 4.4
Petal.Length 6.9
 Petal.Width 2.5
     Species   C  AA                                                          BBBBB
      ]plt iris

      ⍝ headers, spe
      H←∈∘⎕A⍥⍕/¨h←ir
      u←∪s←1↓iris[;5
      ds←s{↓⍵⌸ω}⌸d

      ⍝ data by species
      ]tbl -m H∘,¨(⊂⍵)⍤2↑ds
```

h1∘,¨(⊂⍵)⍤2↑ds

SL	SW	PL	PW	SL	SW	PL	PW	SL	SW	PL	PW
5.1	3.5	1.4	0.2	7	3.2	4.7	1.4	6.3	3.3	6	2.5
4.9	3	1.4	0.2	6.4	3.2	4.5	1.5	5.8	2.7	5.1	1.9
4.7	3.2	1.3	0.2	6.9	3.1	4.9	1.5	7.1	3	5.9	2.1
4.6	3.1	1.5	0.2	5.5	2.3	4	1.3	6.3	2.9	5.6	1.8
5	3.6	1.4	0.2	6.5	2.8	4.6	1.5	6.5	3	5.8	2.2
5.4	3.9	1.7	0.4	5.7	2.8	4.5	1.3	7.6	3	6.6	2.1
4.6	3.4	1.4	0.3	6.3	3.3	4.7	1.6	4.9	2.5	4.5	1.7
5	3.4	1.5	0.2	4.9	2.4	3.3	1	7.3	2.9	6.3	1.8
4.4	2.9	1.4	0.2	6.6	2.9	4.6	1.3	6.7	2.5	5.8	1.8
4.9	3.1	1.5	0.1	5.2	2.7	3.9	1.4	7.2	3.6	6.1	2.5
5.4	3.7	1.5	0.2	5	2	3.5	1	6.5	3.2	5.1	2
4.8	3.4	1.6	0.2	5.9	3	4.2	1.5	6.4	2.7	5.3	1.9
4.8	3	1.4	0.1	6	2.2	4	1	6.8	3	5.5	2.1
4.3	3	1.1	0.1	6.1	2.9	4.7	1.4	5.7	2.5	5	2

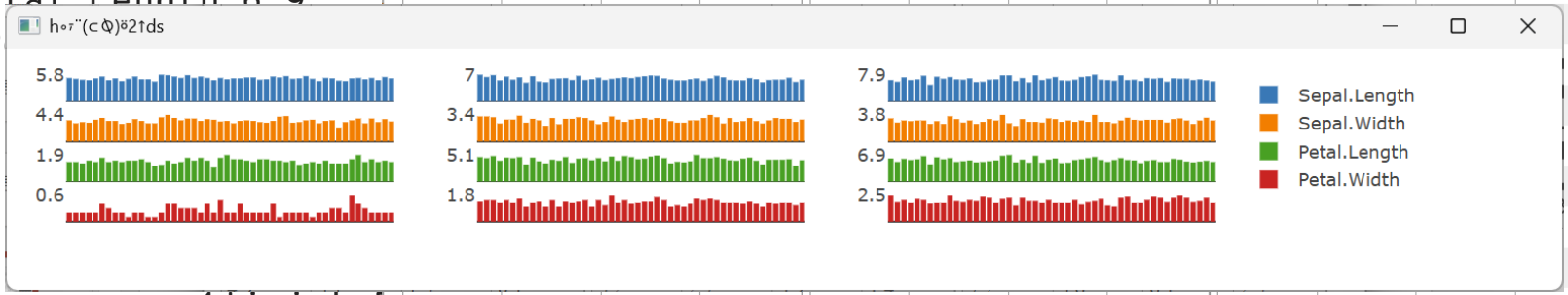
```
…150
      ]tbl iris

      ]plt -t iris
    rownames 150
Sepal.Length 7.9
 Sepal.Width 4.4
Petal.Length 6.9
 P
```

h1∘ᵣ¨(c⍉)ö2↑ds

SL	SW	PL	PW	SL	SW	PL	PW	SL	SW	PL	PW
5.1	3.5	1.4	0.2	7	3.2	4.7	1.4	6.3	3.3	6	2.5
4.9	3	1.4	0.2	6.4	3.2	4.5	1.5	5.8	2.7	5.1	1.9
4.7	3.2	1.3	0.2	6.9	3.1	4.9	1.5	7.1	3	5.9	2.1
4.6	3.1	1.5	0.2	5.5	2.3	4	1.3	6.3	2.9	5.6	1.8
5	3.6	1.4	0.2	6.5	2.8	4.6	1.5	6.5	3	5.8	2.2
4.8	3	1.4	0.1	6	2.2	4	1	6.8	3	5.5	2.1
4.3	3	1.1	0.1	6.1	2.9	4.7	1.4	5.7	2.5	5	2

h∘ᵣ¨(c⍉)ö2↑ds




```
      u←∪s←1↓iris[;5
      ds←s{↓⍉⍵}⌸d

      ⍝ data by species
      ]tbl -m H∘.¨(c⍉)ö2↑ds
      ]plt -m h∘.¨(c⍉)ö2↑ds
```

```
      ]plt -t iris
    rownames 150
Sepal.Length 7.9
 Sepal.Width 4.4
Petal.Length 6.9
 Petal.Width 2.5
     Species   C  AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABBBBBBBBBBBBBBB
      ]plt iris

      ⍝ headers, species and data
      H←∈∘⎕A⍥⍕¨h←iris[0;1+⍳4]
      u←∪s←1↓iris[;5] ⋄ d←1↓iris[;1+⍳4]
      ds←s{↓⍵⌸⍵}⍤⊣d

      ⍝ data by species
      ]tbl -m H∘⍪¨(⊂⍒)⍤2↑ds
      ]plt -m h∘⍪¨(⊂⍒)⍤2↑ds

      ⍝ crossed-data
      xd←∘.{j i←⍺ ⍵ ⋄ {(name:⍵⊃u ⋄ x:⊃ds[⍵;i] ⋄ y:⊃ds[⍵;j])}¨⍳≠u}⍨⍳≠⍒ds
```

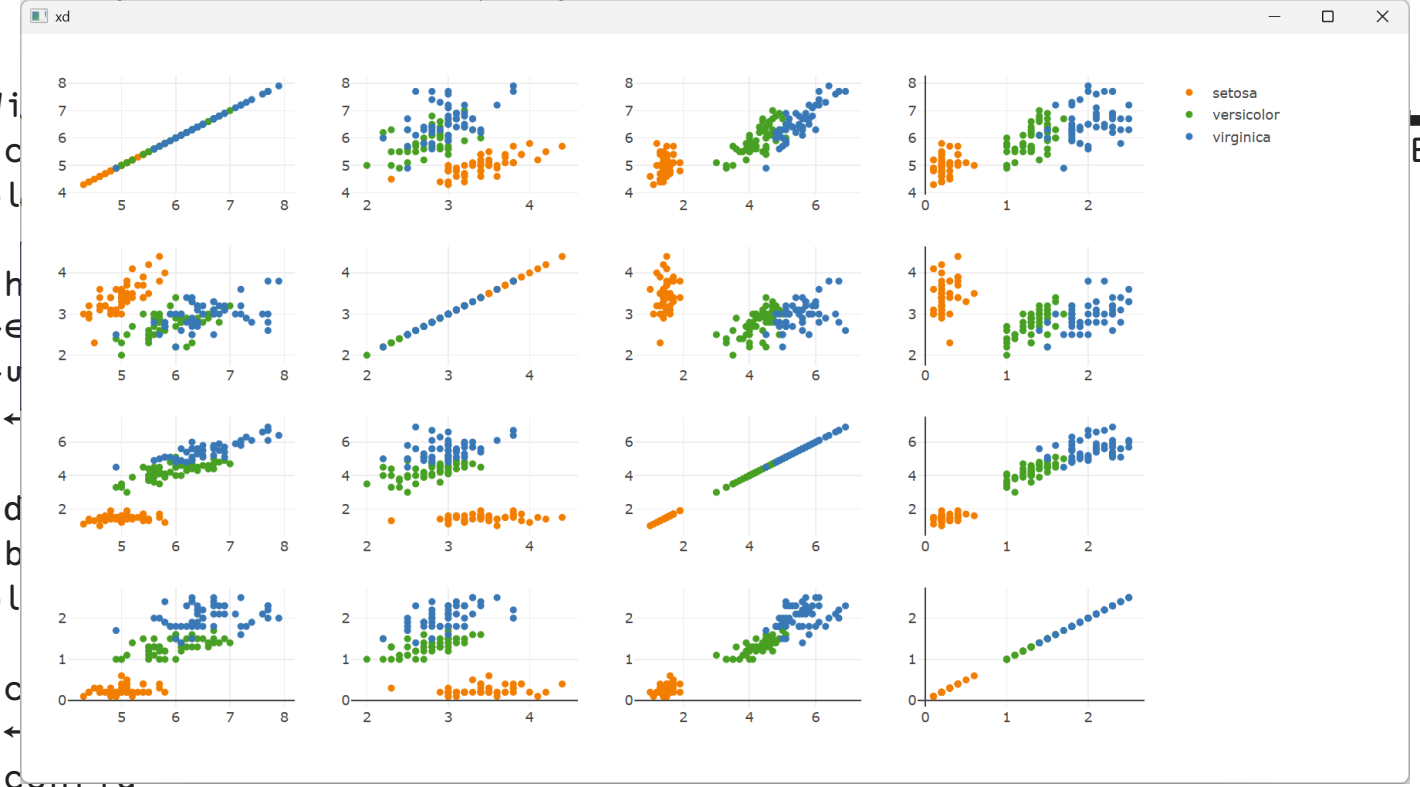
```
Petal.Length 6.9  ▁▁▁
```

```
Petal.Wi
     Spec
      ]pl

      ⍝ h
      H←e
      u←u
      ds←

      ⍝ d
      ]tb
      ]pl

      ⍝ c
      xd←
      ⍝ config
      xd.mode←⊂⊂'markers'
      xd.showlegend←⊂⊂⊂'false' ⋄ (⊃xd).showlegend←⊂⊂'true'
      xd.marker←⊂colors←pl.colors[1⌽⍳3]
      ]plt -m xd
```

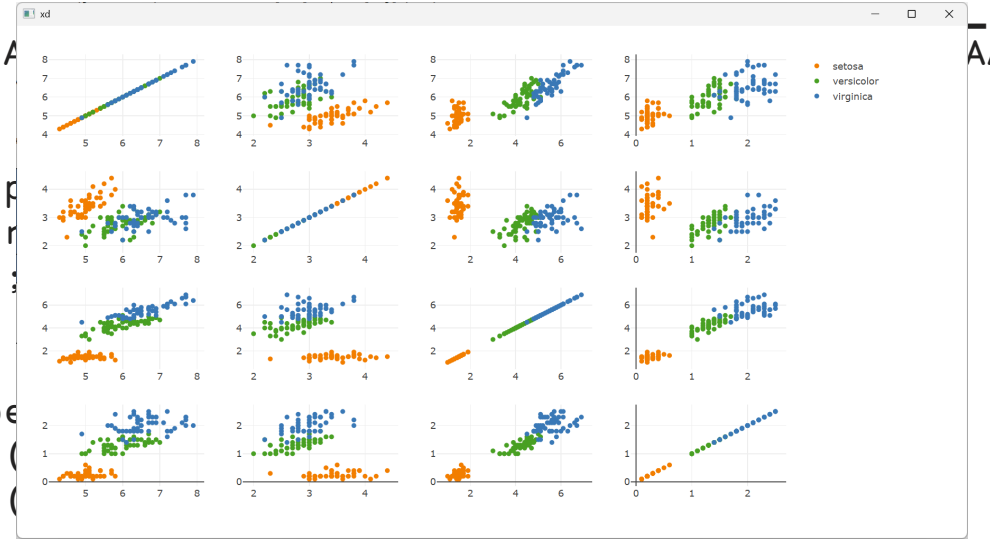


```
Petal.Width 2.5
    Species   C  A                                                    AAAAAAABBBBBBBBBBBBBBB
     ]plt iris

     ⍝ headers, sp
     H←∈∘⎕A⍥⍁/¨h←ir
     u←∪s←1↓⍉iris[;
     ds←s{↓⍵⌸ω}⌸d

     ⍝ data by spe
     ]tbl -m H∘⍪¨(
     ]plt -m h∘⍪¨(

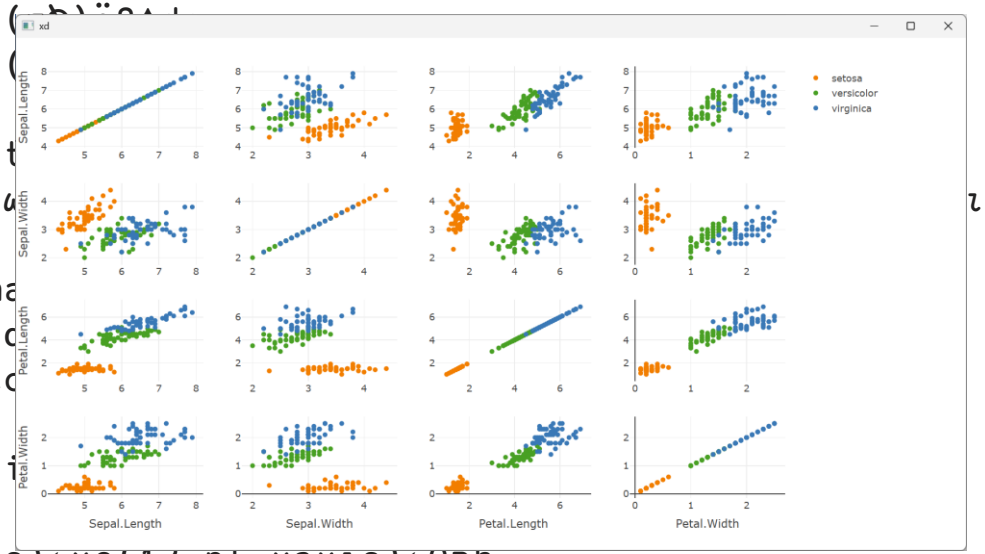
     ⍝ crossed-data
     xd←∘.{j i←⍺ ⍵ ⋄ {(name:ω⊃u ⋄ x:⊃ds[ω;i] ⋄ y:⊃ds[ω;j])}¨⍳≠u}⍨⍳≠⌸ds
     ⍝ config
     xd.mode←⊂⊂'markers'
     xd.showlegend←⊂⊂⊂'false' ⋄ (⊃xd).showlegend←⊂⊂'true'
     xd.marker←⊂colors←pl.colors[1⌽⍳3]
     ]plt -m xd
```



```
]tbl -m H⍤⍪¨(
]plt -m h⍤⍪¨(

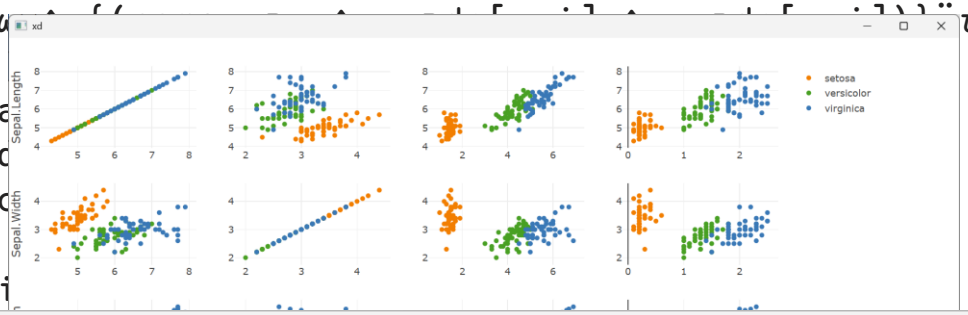
⍝ crossed-dat
xd←⍤.{j i←⍺ ⍵
⍝ config
xd.mode←⊂⊂'ma
xd.showlegend
xd.marker←⊂⊂c
]plt -m xd
⍝ add axis ti
xc←()
xc(1 pl.yaxis)←xc(13 pl.xaxis)←0⊃h
xc(5 pl.yaxis)←xc(14 pl.xaxis)←1⊃h
xc(9 pl.yaxis)←xc(15 pl.xaxis)←2⊃h
xc(13 pl.yaxis)←xc(16 pl.xaxis)←3⊃h
]plt -m -c=xc xd

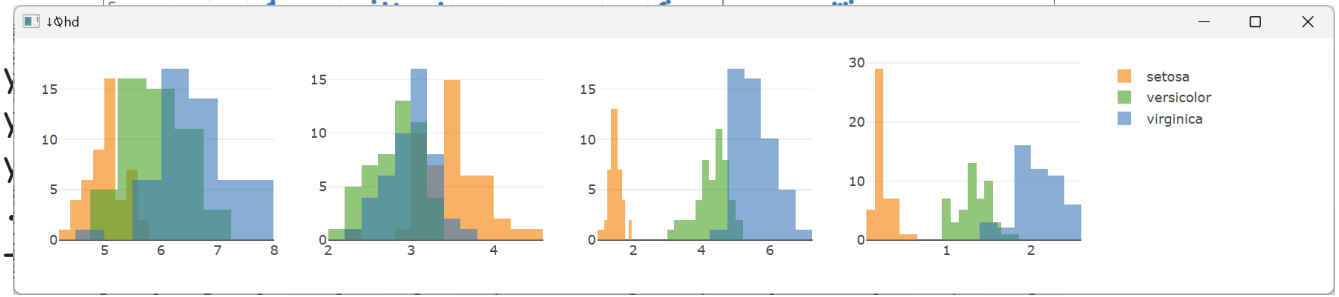
⍝ histograms
hd←⍉u{(name:⍺ ⋄ y:⍵)}¨⍤1⍉ds
```




```
ι≠u}¨ι≠⍉ds
```

```
xd←⍤.{j i←⍺ ⍵
⍝ config
xd.mode←⊂'ma
xd.showlegend
xd.marker←⊂⊂
]plt -m xd
⍝ add axis ti
xc←()
xc(1 pl.y
xc(5 pl.y
xc(9 pl.y
xc(13 pl.
]plt -m -
```



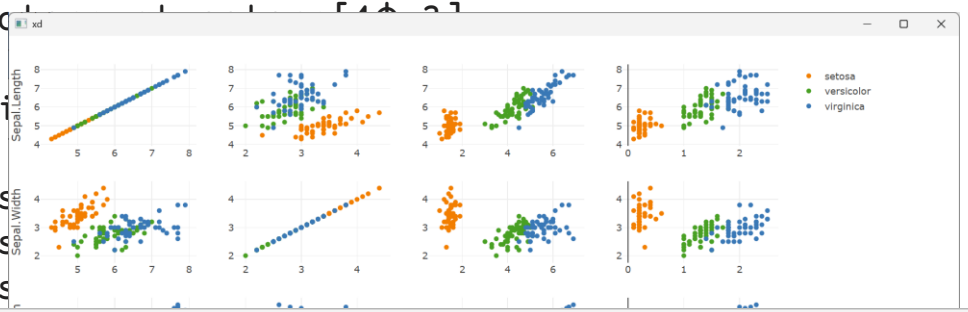


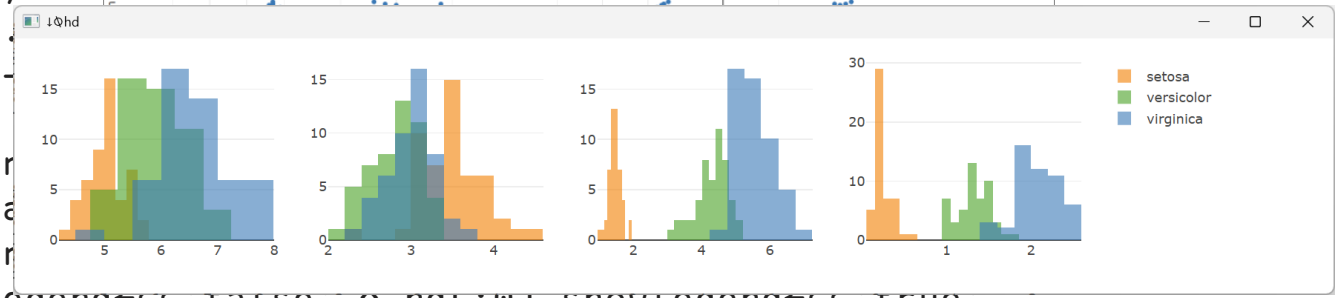

```
⍝ histograms
hd←⍬u{(name:⍺ ⋄ x:⍵)}¨⍤1⍬ds
(⍬hd).marker←(⍴⍬hd)⍴colors ⋄ hd.opacity←0.6
hd.showlegend←⊂⊂'false' ⋄ hd[;0].showlegend←⊂⊂'true'
hc←(type:'histogram' ⋄ barmode:'overlay')
]plt -c=hc -m ↓⍬hd
```

```
xd.marker←⊂co
]plt -m xd
⍝ add axis ti
xc←⍬
xc,(1 pl.yaxis
xc,(5 pl.yaxis
xc,(9 pl.yaxis
xc,(13 pl.
]plt -m -

⍝ histogr
hd←⍉↑(na
(⍉hd).mar
hd.showlegend←⊂ false ⋄ hd[;0].showlegend←⊂ true
hc←(type:'histogram' ⋄ barmode:'overlay')
]plt -c=hc -m ↓⍉hd

⍝ histograms at diagonal
]xn←plt -m -type=ns -c=xc xd
]hn←plt -m -type=ns -c=hc ↓⍉hd
```

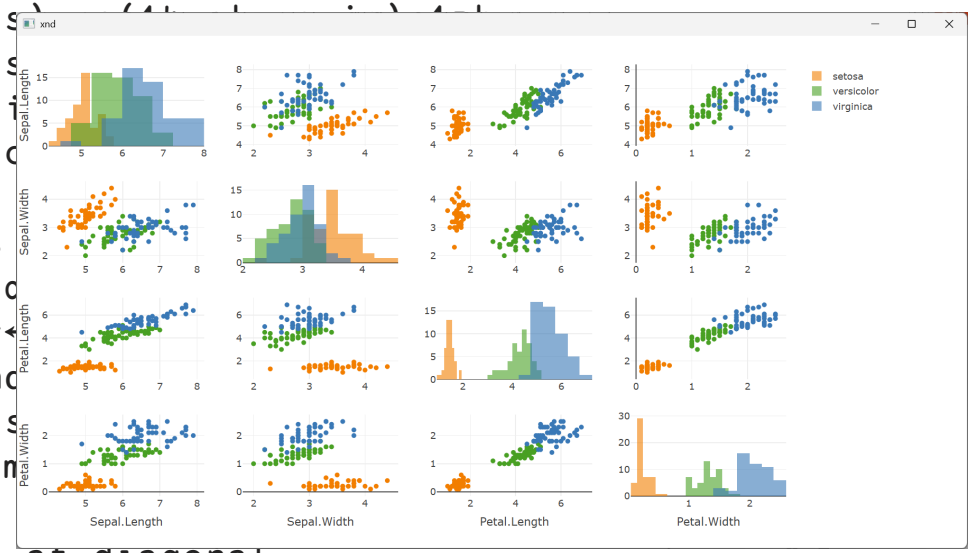


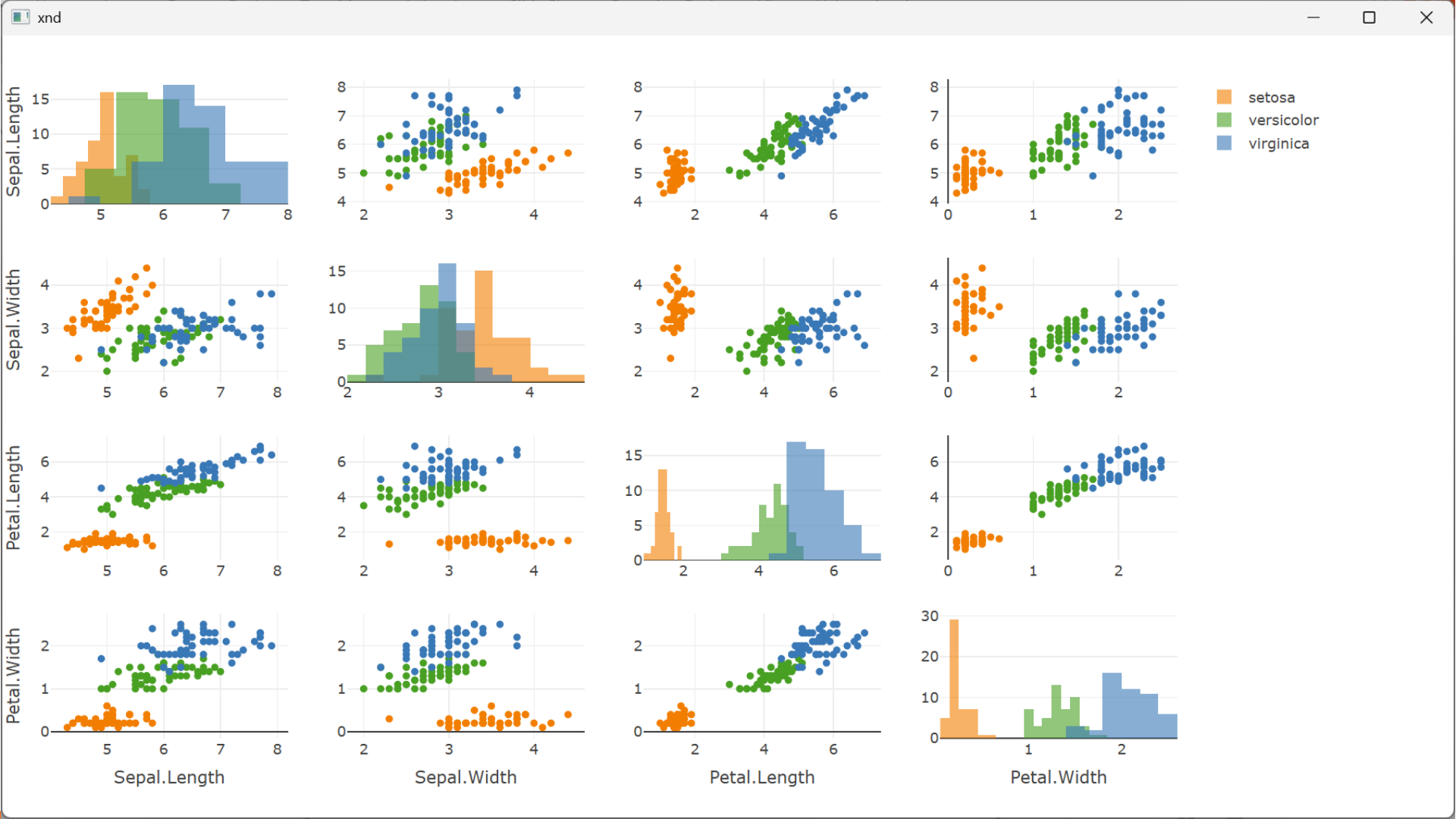


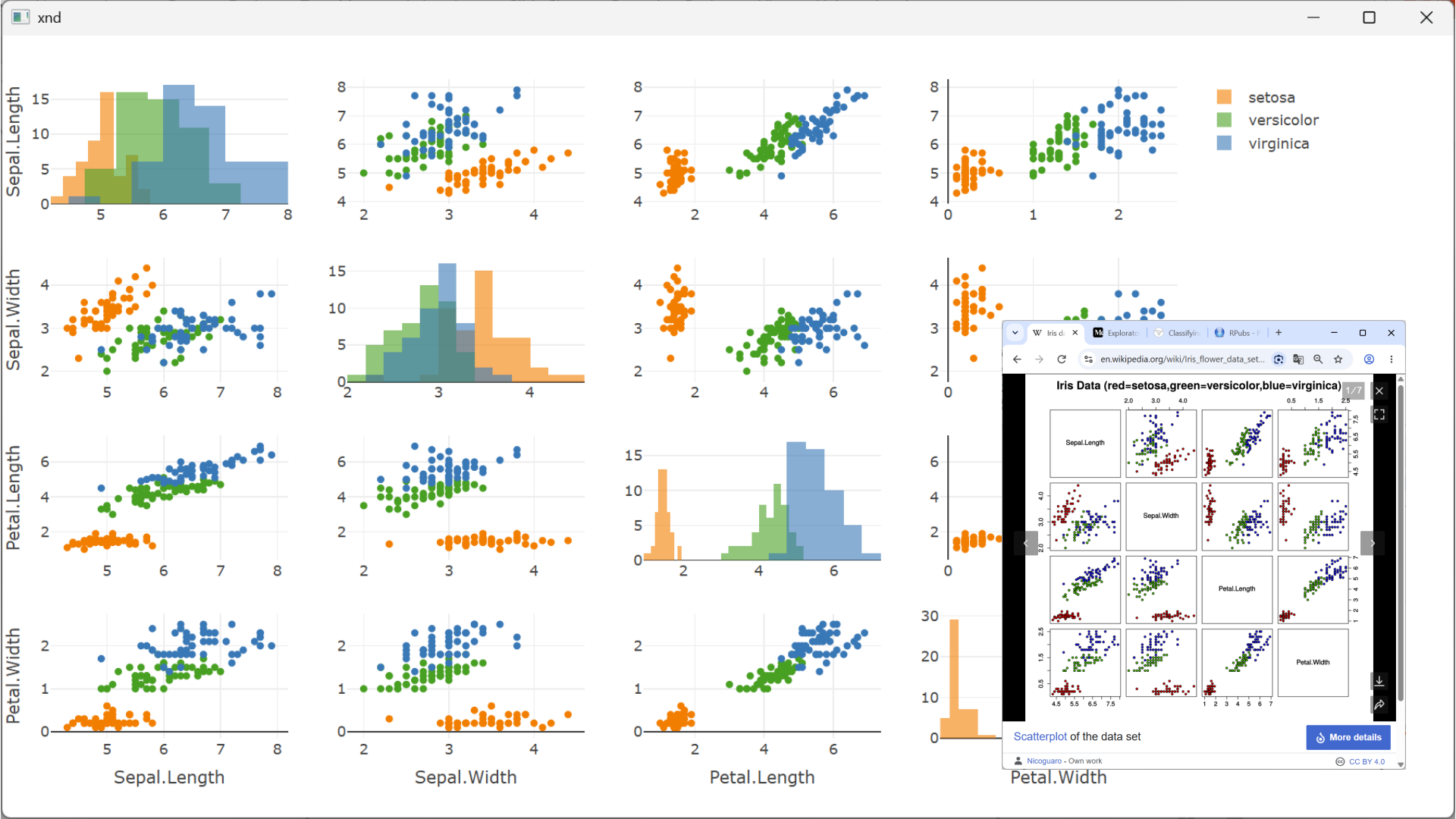
```
xc(5 pl.yaxis
xc(9 pl.yaxis
xc(13 pl.yaxi
]plt -m -c=xc

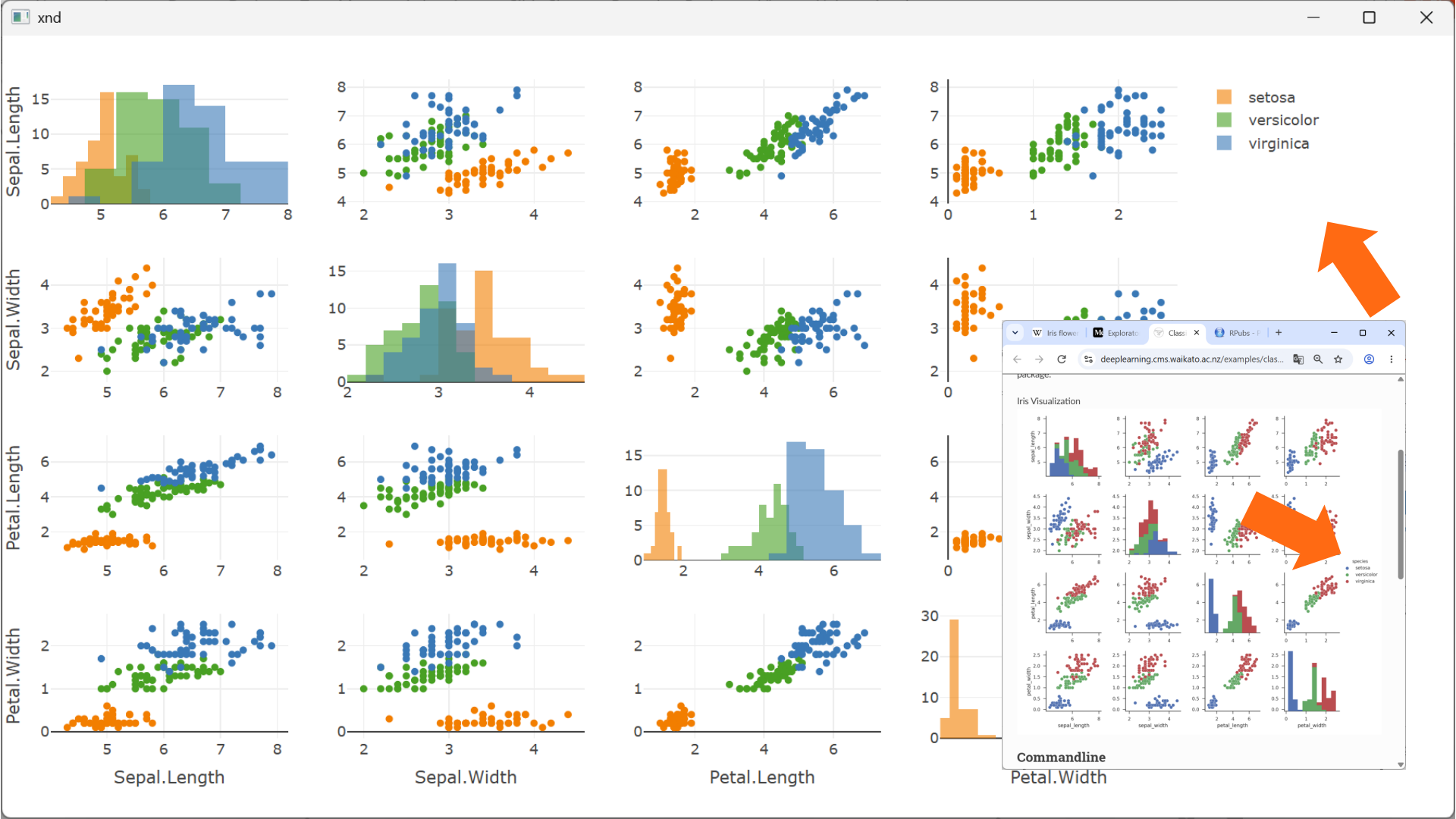
⍝ histograms
hd←⍉u{(name:d
(⍉hd).marker←
hd.showlegend
hc←(type:'his
]plt -c=hc -m

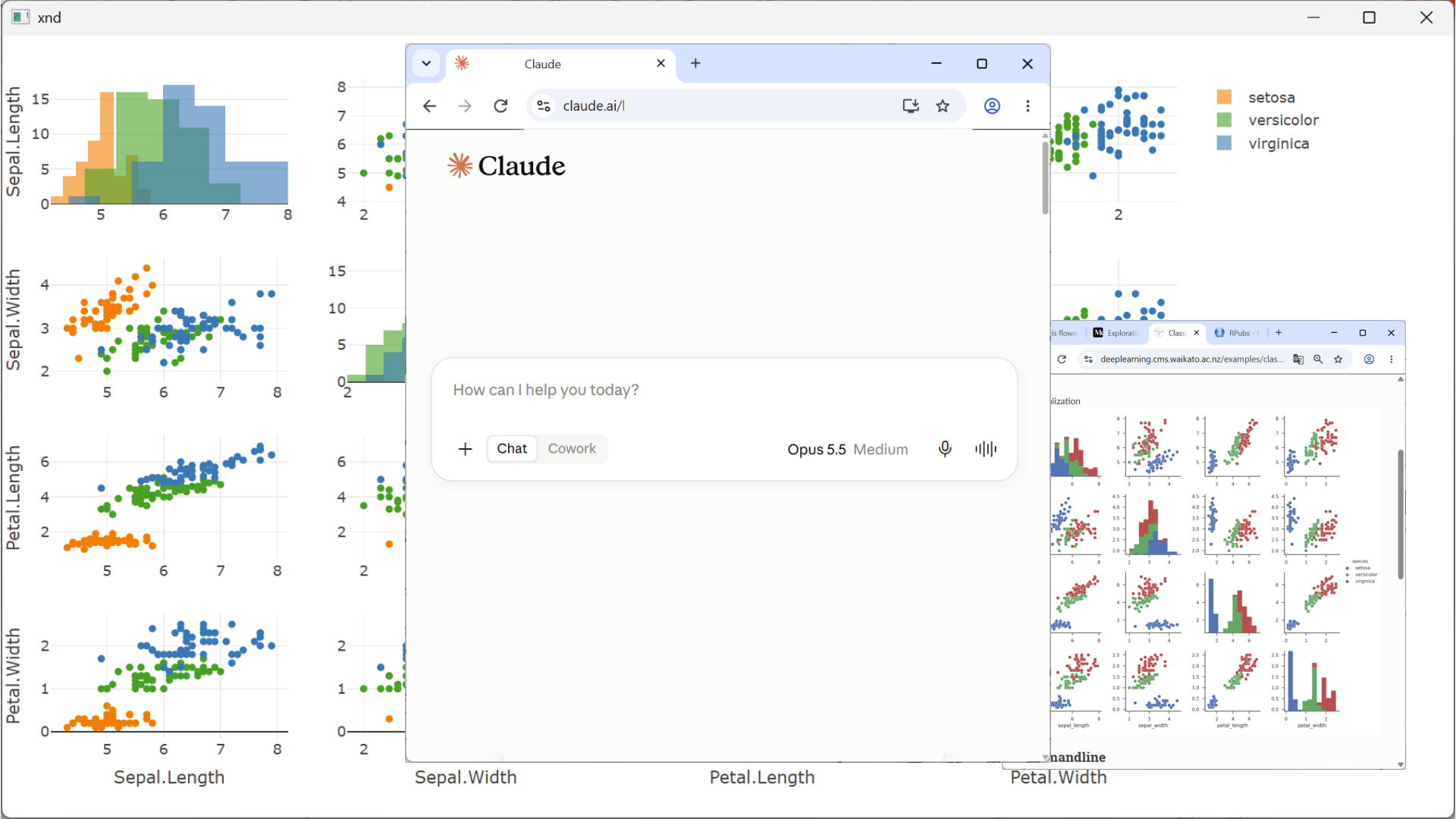
⍝ histograms at diagonal
]xn←plt -m -type=ns -c=xc xd
]hn←plt -m -type=ns -c=hc ↓⍉hd
mc←⊃⊃xn ⋄ md←⊃⌽xn ⋄ hnd←⊃⌽hn
hnd.xaxis←(0 0⍉md).xaxis
hnd.yaxis←(0 0⍉md).yaxis
(0 0⍉md)←hnd ⋄ mc.barmode←'overlay'
]plt -m -c=mc md
```

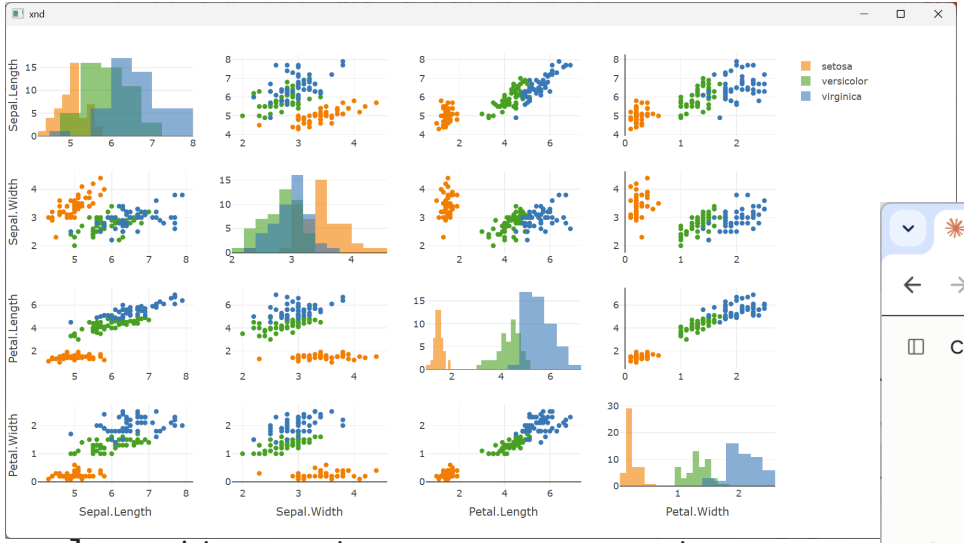



xnd
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
setosa
versicolor
virginica


xnd
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
setosa
versicolor
virginica
Iris Data (red=setosa,green=versicolor,blue=virginica)
Scatterplot of the data set
More details
Nicoguaro - Own work
CC BY 4.0


xnd
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
setosa
versicolor
virginica
Iris Visualization
Commandline


xnd
Claude
claude.ai/l
Claude
How can I help you today?
Chat
Cowork
Opus 5.5 Medium
deeplearning.cms.waikato.ac.nz/examples/clas...
setosa
versicolor
virginica
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
nandline




```
]xn←plt -m -type=ns -c=xc xd
]hn←plt -m -type=ns -c=hc ↓⍉hd
mc←⊃⊃xn ⋄ md←⊃⌽xn ⋄ hnd←⊃⌽hn
hnd.xaxis←(0 0⍉md).xaxis
hnd.yaxis←(0 0⍉md).yaxis
(0 0⍉md)←hnd ⋄ mc.barmode←'overlay'
]plt -m -c=mc md

mc.legend←(y:0.5 ⋄ yanchor:'middle')
```

Claude

claude.ai/

Centering legend vertically in plotly.js

Share

How do I center the legend, vertically, in plotly.js?

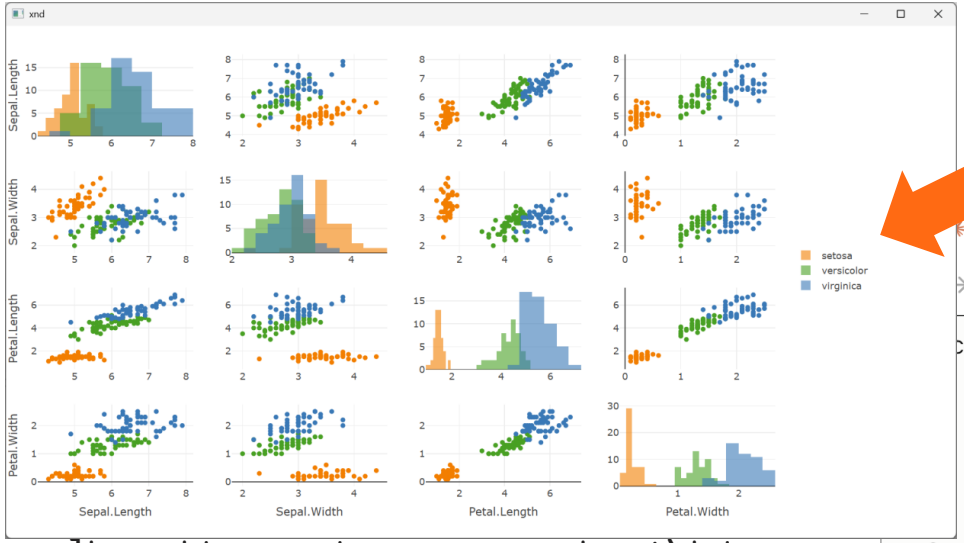
1 minute ago

Set the legend's `y` position to the middle of the plot area and anchor it at its own middle:

```javascript
const layout = {
  legend: {
    y: 0.5,            // halfway up the plotting area (paper coordi
    yanchor: 'middle'  // align the legend's vertical center to that
  }
};

Plotly.newPlot('myDiv', data, layout);
```

Write a message...




```
]hn←plt -m -type=ns -c=hc ↓⍀hd
mc←⊃⊃xn ⋄ md←⊃⌽xn ⋄ hnd←⊃⌽hn
hnd.xaxis←(0 0⍀md).xaxis
hnd.yaxis←(0 0⍀md).yaxis
(0 0⍀md)←hnd ⋄ mc.barmode←'overlay'
]plt -m -c=mc md

mc.legend←(y:0.5 ⋄ yanchor:'middle')
]plt -m -c=mc md
```

Claude

claude.ai/

Centering legend vertically in plotly.js

Share

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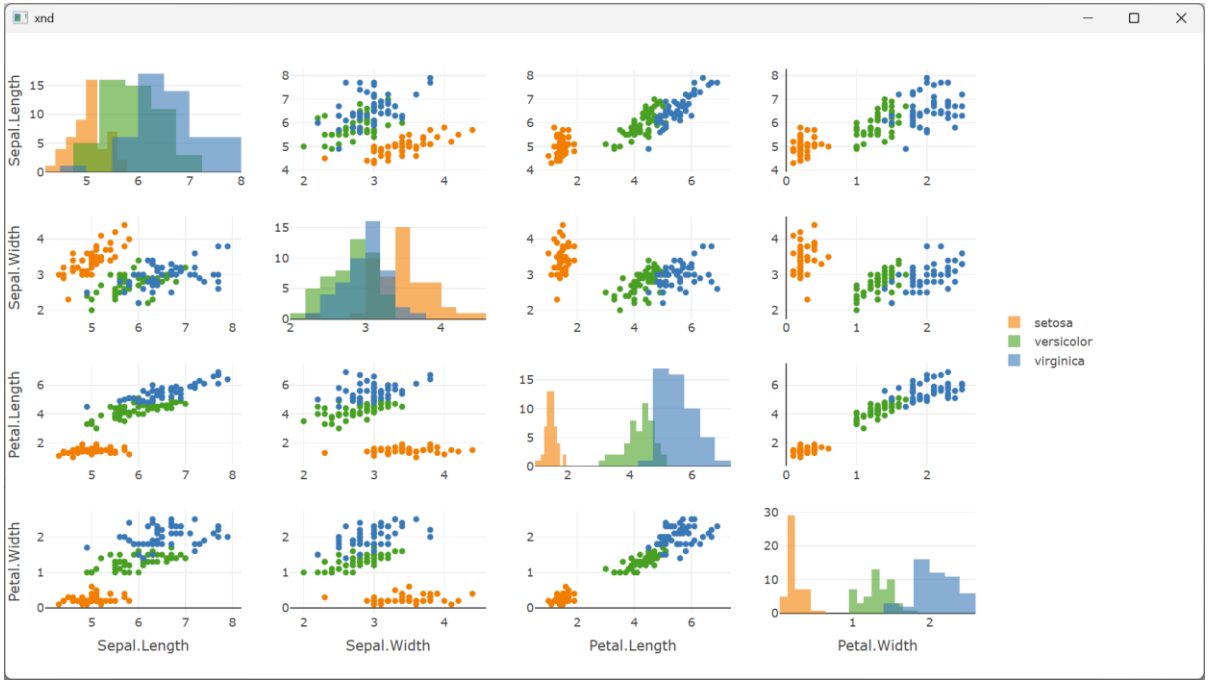
1 minute ago

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Write a message...

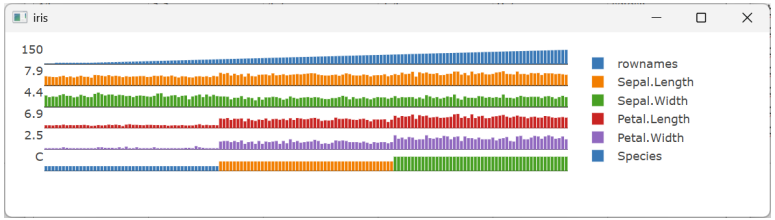


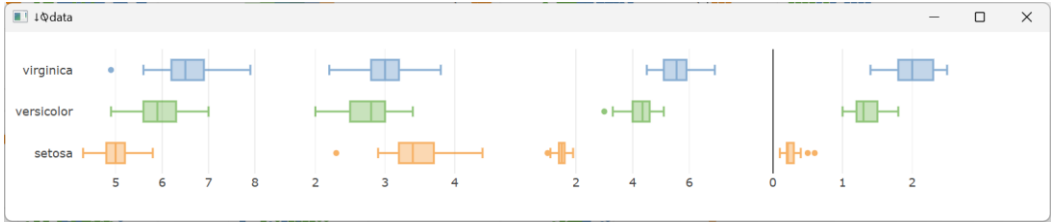
iris

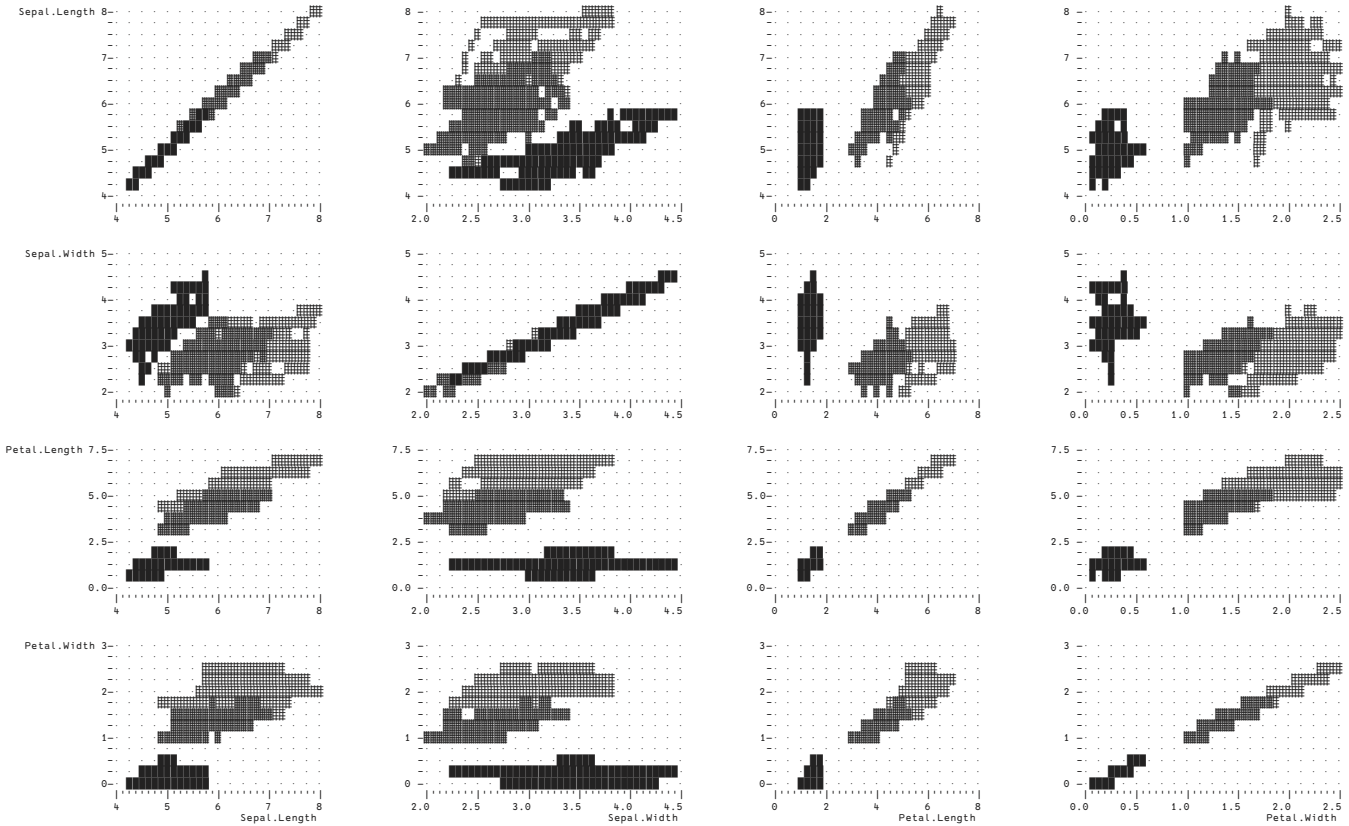
rownames	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3	1.4	0.1	setosa
14	4.3	3	1.1	0.1	setosa

h1+√(c⊗)²2fds

SL	SW	PL	PW	SL	SW	PL	PW	SL	SW	PL	PW
5.1	3.5	1.4	0.2	7	3.2	4.7	1.4	6.3	3.3	6	2.5
4.9	3	1.4	0.2	6.4	3.2	4.5	1.5	5.8	2.7	5.1	1.9
4.7	3.2	1.3	0.2	6.9	3.1	4.9	1.5	7.1	3	5.9	2.1
4.6	3.1	1.5	0.2	5.5	2.3	4	1.3	6.3	2.9	5.6	1.8
5	3.6	1.4	0.2	6.5	2.8	4.6	1.5	6.5	3	5.8	2.2
5.4	3.9	1.7	0.4	5.7	2.8	4.5	1.3	7.6	3	6.6	2.1
4.6	3.4	1.4	0.3	6.3	3.3	4.7	1.6	4.9	2.5	4.5	1.7
5	3.4	1.5	0.2	4.9	2.4	3.3	1	7.3	2.9	6.3	1.8
4.4	2.9	1.4	0.2	6.6	2.9	4.6	1.3	6.7	2.5	5.8	1.8
4.9	3.1	1.5	0.1	5.2	2.7	3.9	1.4	7.2	3.6	6.1	2.5
5.4	3.7	1.5	0.2	5	2	3.5	1	6.5	3.2	5.1	2
4.8	3.4	1.6	0.2	5.9	3	4.2	1.5	6.4	2.7	5.3	1.9
4.8	3	1.4	0.1	6	2.2	4	1	6.8	3	5.5	2.1
4.3	3	1.1	0.1	6.1	2.9	4.7	1.4	5.7	2.5	5	2







rownames	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa

…150

SL	SW	PL	PW
5.1	3.5	1.4	0.2
4.9	3	1.4	0.2
4.7	3.2	1.3	0.2
4.6	3.1	1.5	0.2
5	3.6	1.4	0.2
5.4	3.9	1.7	0.4
4.6	3.4	1.4	0.3
5	3.4	1.5	0.2
4.4	2.9	1.4	0.2
4.9	3.1	1.5	0.1
5.4	3.7	1.5	0.2
4.8	3.4	1.6	0.2

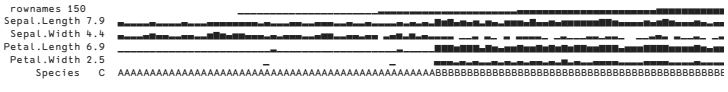
…50

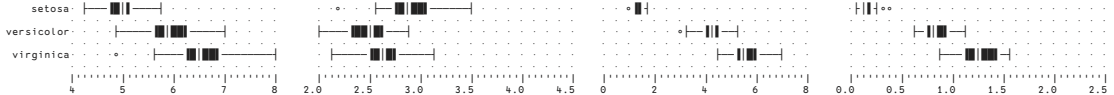
SL	SW	PL	PW
7	3.2	4.7	1.4
6.4	3.2	4.5	1.5
6.9	3.1	4.9	1.5
5.5	2.3	4	1.3
6.5	2.8	4.6	1.5
5.7	2.8	4.5	1.3
6.3	3.3	4.7	1.6
4.9	2.4	3.3	1
6.6	2.9	4.6	1.3
5.2	2.7	3.9	1.4
5	2	3.5	1
5.9	3	4.2	1.5

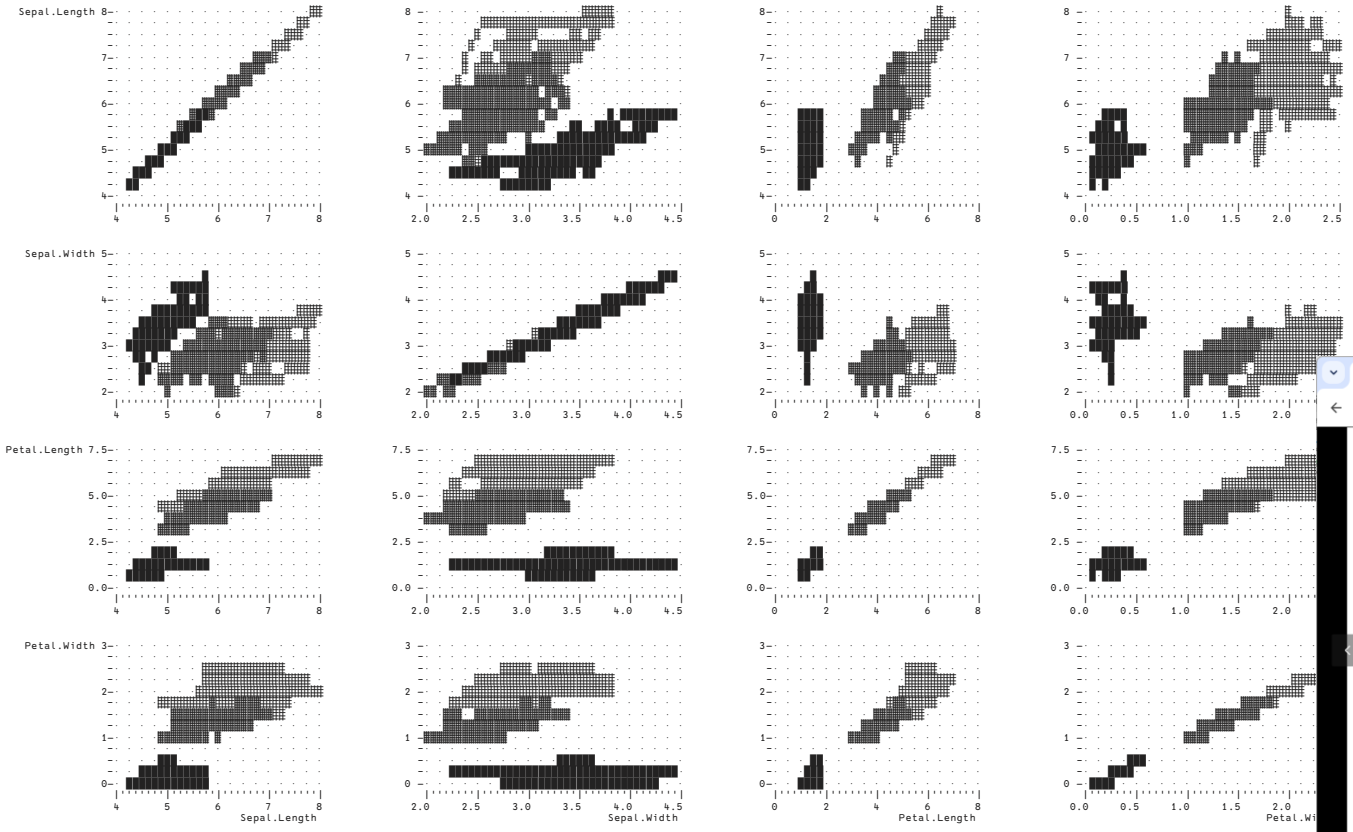
…50

SL	SW	PL	PW
6.3	3.3	6	2.5
5.8	2.7	5.1	1.9
7.1	3	5.9	2.1
6.3	2.9	5.6	1.8
6.5	3	5.8	2.2
7.6	3	6.6	2.1
4.9	2.5	4.5	1.7
7.3	2.9	6.3	1.8
6.7	2.5	5.8	1.8
7.2	3.6	6.1	2.5
6.5	3.2	5.1	2
6.4	2.7	5.3	1.9

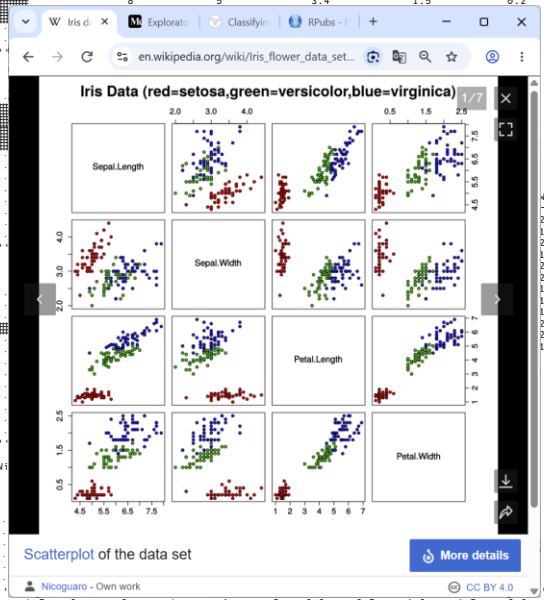
…50

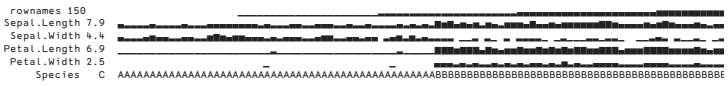


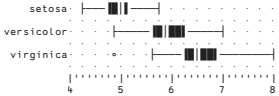


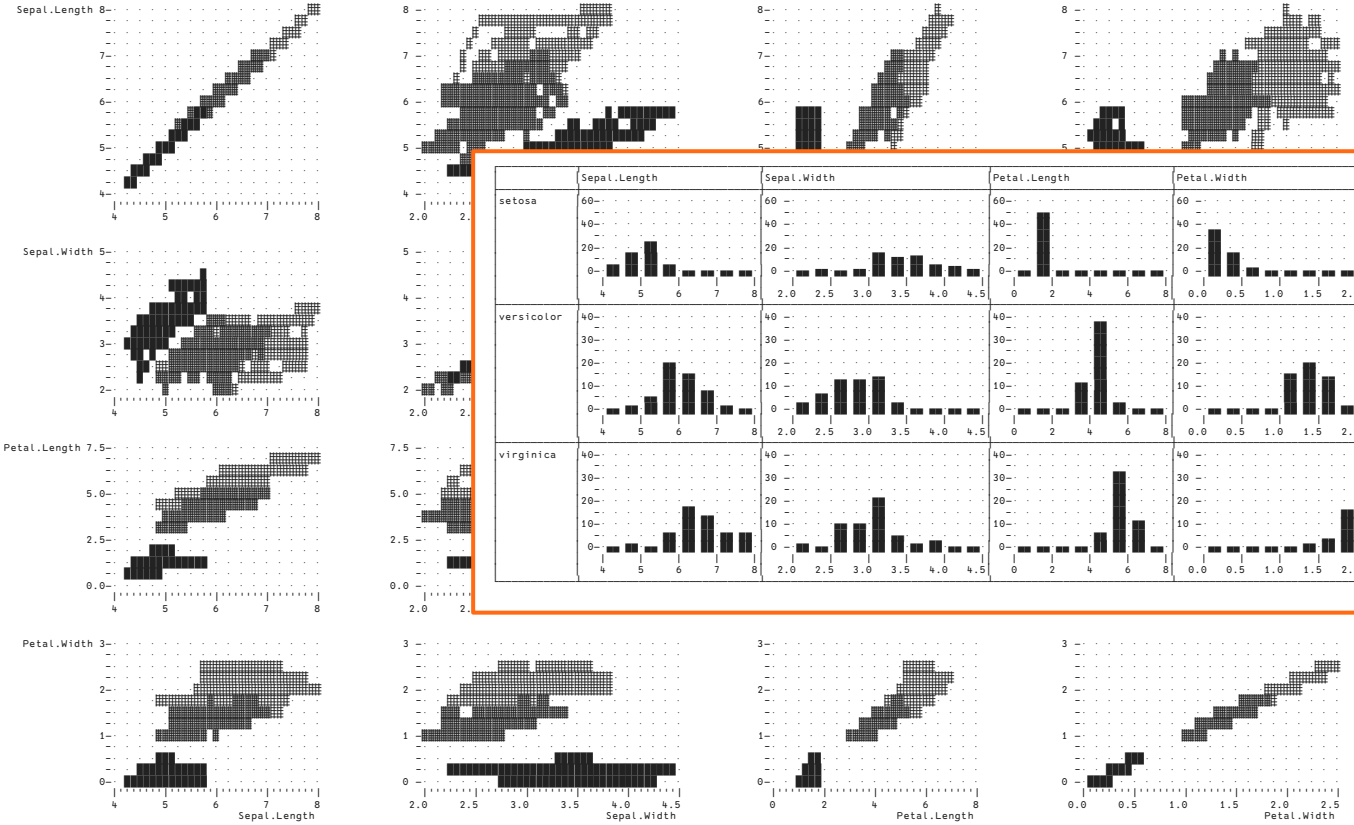


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4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa







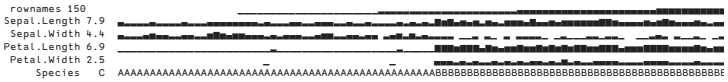


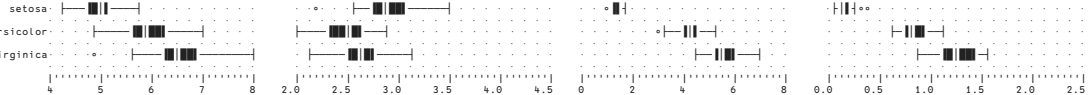
	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
0	4.9	3.1	1.5	0.1	setosa
1	5.4	3.7	1.5	0.2	setosa
2	4.8	3.4	1.6	0.2	setosa

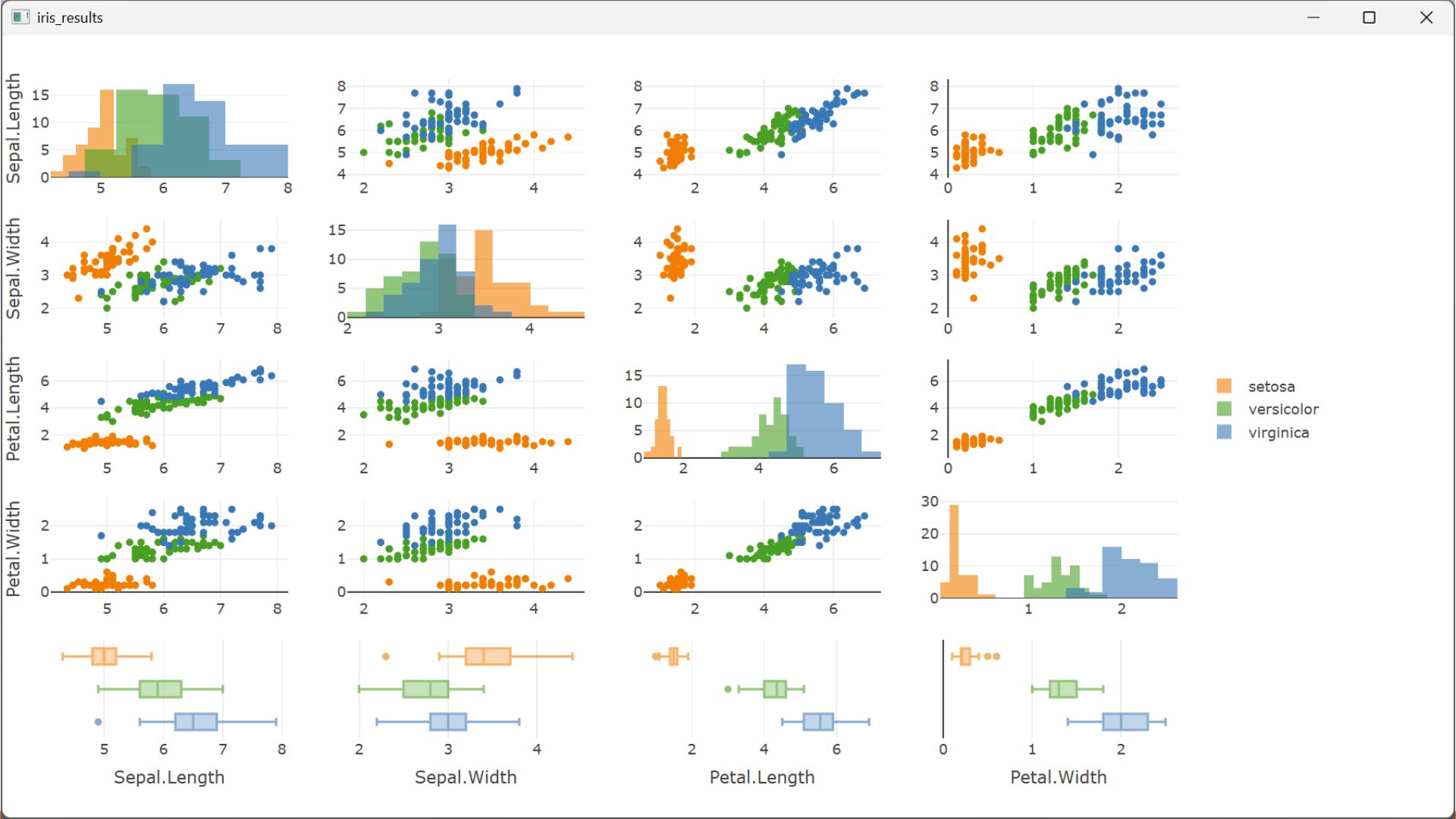
SW	PL	PW
3.5	1.4	0.2
3	1.4	0.2
3.2	1.3	0.2
3.1	1.5	0.2
3.6	1.4	0.2
3.9	1.7	0.4
3.4	1.4	0.3
3.4	1.5	0.2
2.9	1.4	0.2
3.1	1.5	0.1
3.7	1.5	0.2
3.4	1.6	0.2
3	1.4	0.1
3	1.1	0.1
4	1.2	0.2
4.4	1.5	0.4
3.9	1.3	0.4
3.5	1.4	0.3
3.8	1.7	0.3
3.8	1.5	0.3
3.4	1.7	0.2
3.7	1.5	0.4
3.6	1	0.2
3.3	1.7	0.5
3.4	1.9	0.2
3	1.6	0.2
3.4	1.6	0.4
3.5	1.5	0.2
3.4	1.4	0.2
3.2	1.6	0.2
3.1	1.6	0.2
3.4	1.5	0.4
4.1	1.5	0.1
4.2	1.4	0.2
3.1	1.5	0.2
3.2	1.2	0.2
3.5	1.3	0.2
3.6	1.4	0.1
3	1.3	0.2
3.4	1.5	0.2
3.5	1.3	0.3
2.3	1.3	0.3
3.2	1.3	0.2
3.5	1.6	0.6
3.8	1.9	0.4
3	1.4	0.3
3.8	1.6	0.2
3.2	1.4	0.2
3.7	1.5	0.2
3.3	1.4	0.2
3.2	4.7	1.4
3.2	4.5	1.5
3.1	4.9	1.5
2.3	4	1.3
2.8	4.6	1.5
2.8	4.5	1.3
3.3	4.7	1.6
2.4	3.3	1
2.9	4.6	1.3
2.7	3.9	1.4
2	3.5	1
3	4.2	1.5
2.2	4	1
2.9	4.3	1.3
2.9	4.1	1.3
3.1	4.9	1.5
2.2	4.5	1.5
2.9	4.4	1.4
3.1	4.8	1.5
3	5	1.7
2.7	5	1.9
2.2	4.5	1.5
2.5	3.5	1
3.2	3.8	1.1
2.8	3.7	1.2
2.5	3.9	1.1
2.8	5.1	2.4
2.9	4.5	1.7
3	4.5	1.5
2.6	4.7	1.4
2.4	4.4	1.5
2.4	4.1	1.3
2.7	4.2	1.3
2.7	4.9	1.5
3	4.6	1.5
3.4	5.4	2.3
3.1	5.6	2.4
2.3	5.1	1.9
3	5.9	2.3
2.5	5.8	1.8
2.6	6.9	2.3
3	5.6	2.5
2.9	5.8	2.4
2.5	6.1	2.8
3.6	6.4	2.1
3.2	5.6	2.2
2.7	5.1	1.5
3	5.6	2.4
2.7	5.1	1.9
3.2	5.9	2.3
2.8	5.7	2.5
3	5.2	2.3
2.8	5	1.9
3	5.2	2
2.8	5.4	2.3
3	5.1	1.8
…50	…50	…50

SL	SW	PL	PW
7	3.2	4.7	1.4
6.4	3.2	4.5	1.5
6.9	3.1	4.9	1.5
5.5	2.3	4	1.3
6.5	2.8	4.6	1.5
5.7	2.8	4.5	1.3
6.3	3.3	4.7	1.6
4.9	2.4	3.3	1
6.6	2.9	4.6	1.3
5.2	2.7	3.9	1.4
5	2	3.5	1
5.9	3	4.2	1.5
…50			

SL	SW	PL	PW
6.3	3.3	6	2.5
5.8	2.7	5.1	1.9
7.1	3	5.9	2.1
6.3	2.9	5.6	1.8
6.5	3	5.8	2.2
7.6	3	6.6	2.1
4.9	2.5	4.5	1.7
7.3	2.9	6.3	1.8
6.7	2.5	5.8	1.8
7.2	3.6	6.1	2.5
6.5	3.2	5.1	2
6.4	2.7	5.3	1.9
…50			






iris_results
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
setosa
versicolor
virginica

OUTLINE

- Introduction
- Packages
- Example
- Usage

Installation and Usage

- Installation instructions (Tatin)

  https://github.com/dyalog_labs/output

- Documentation

  ```
  ]Plt -???   ]Tbl -???
  ```

  https://plotly.com/javascript/reference/

  https://tabulator.info/docs/6.4/columns

  https://github.com/dyalog_labs/textdraw/textdraw.ipynb





https://feedback.dyalog.com

https://github.com/dyalog_labs/output

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