Graphics in Julia

Josefin Berner

Lund University

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Different Graphics Packages

- Winston
- PyPlot
- Gadfly
- Gaston

- Short summary given at
  http :
  //hwborchers.lima − city.de/JuliaMeetup/numerical/graphics.html

Winston

- 2D plotting library
- Some functionalities
  - scatter plots, line plots, bar charts
  - titles/labels
  - saving (pdf, svg, png, eps)
- Syntax close to Matlab
  - note that options have to be given as a string "b", not as a char 'b'
- Documentation
  http : *//winston.readthedocs.org/en/latest/*

PyPlot

- Wrapper for the Python module Matplotlib
- Some functionalities
  - scatter plots, line plots, histograms, surfaces, etc.
  - Latex titles/labels
  - saving (png, pdf, ps, eps, svg)
  - Animations
- Documentation
  http : *//matplotlib.org/api/pyplot_api.html*

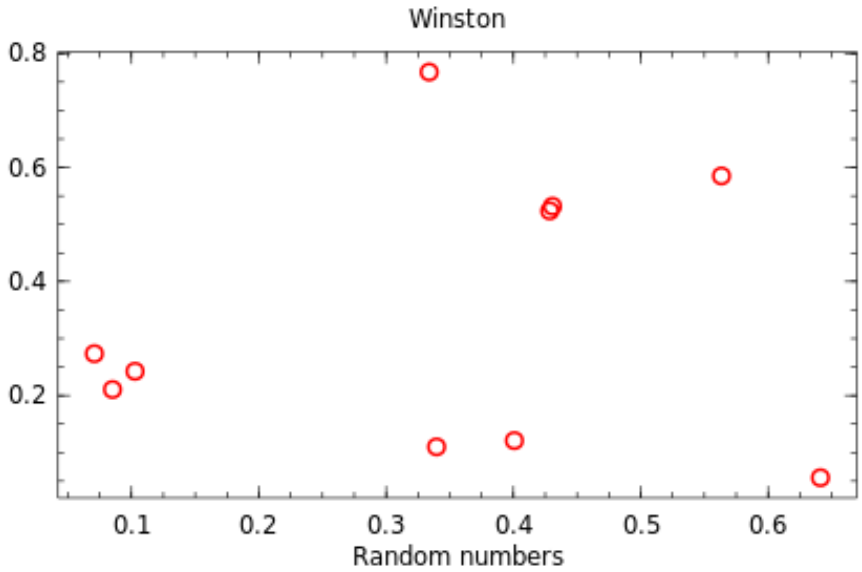
Gadfly

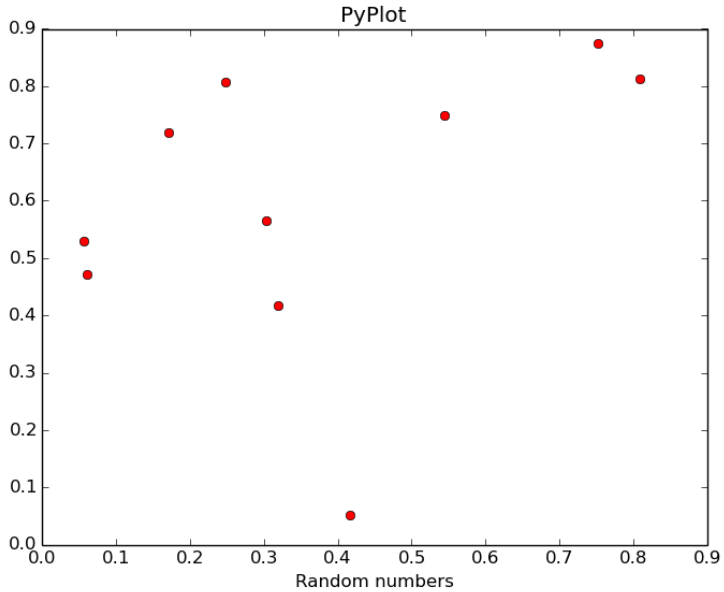
- Implementation of "The grammar of graphics" in Julia
- Some functionalities
  - Layers - Gadfly can draw multiple layers to the same plot
  - Latex titles/labels
  - saving (png, pdf, ps, eps, svg , svg-js)
- Flexible
- Said to be quite slow (haven't tested myself)
- Documentation
  http : *//dcjones.github.io/Gadfly.jl/*

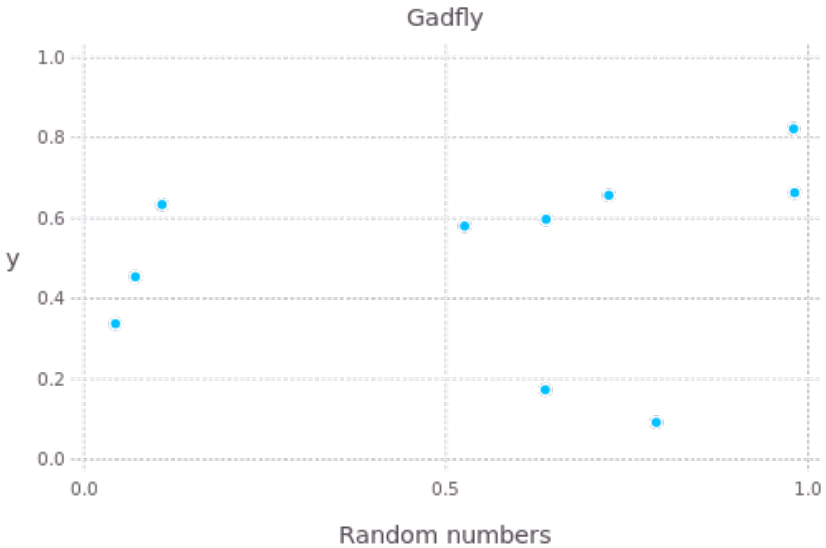
Gaston

- Wrapper for utilizing gnuplot in Julia
- Some functionalities
  - scatter plots, line plots, histograms, surfaces, etc.
  - titles/labels
  - saving (pdf, svg, png, gif)
- gnuplot needs to be installed and available in the path of your system
- I haven't got it to work yet

How do they look?







What about the code?

Winston

```
using Winston
x = rand(10); y = rand(10)
plot(x,y, "ro"); title("Winston"); xlabel("Random numbers")
```

PyPlot

```
using PyPlot
x = rand(10); y = rand(10)
plot(x,y, "ro"); title("PyPlot"); xlabel("Random numbers")
```

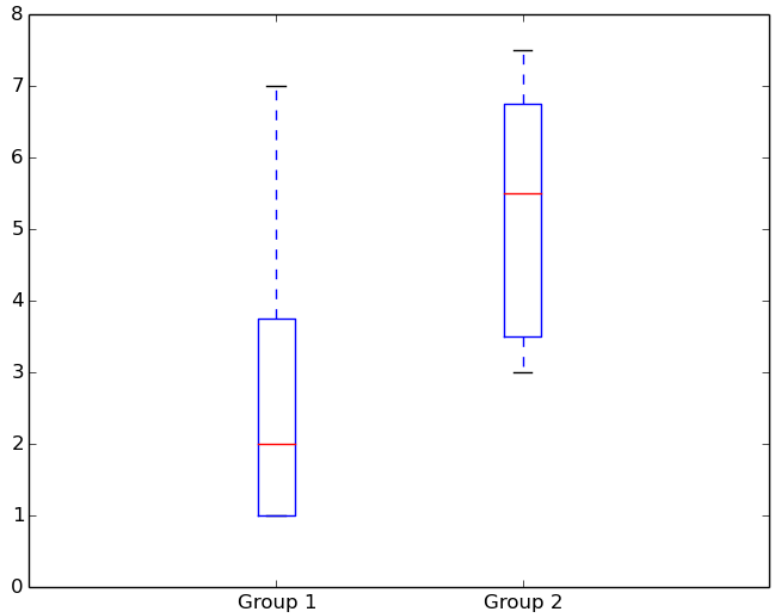
Gadfly

```
using Gadfly
plot(x=rand(10),y= rand(10), Guide.title("Gadfly"),
Geom.point, Guide.xlabel("Random numbers"))
```

Discussion

- Which one is the best?
- Should you use more than one?
- Are there any functionalities we miss?

Last example



Boxplot

```
using PyPlot
x1 = [1.0 3 1 1 4 7]; x2 = [5 7 7.5 3 3 6]; data = [x1, x2]'
boxplot(data)
axis([0,3,0,8]); ax1 = axes()
ax1[:set_xticklabels](["Group 1", "Group 2"])
```

Boxplot-kungen