

Python Alternatives to R/Shiny

Karla Fejfarová

- Institute of Biotechnology

Petr Šimeček

- ~~Keboola~~
- ~~The Jackson Laboratory~~
- ~~Google~~
- Institute of Molecular Genetics

@python_tip



PRAG
TŘEDOČESKÝ KRA

PRAG
TŘEDOČESKÝ KRA

Autohändler
AB Auto Brejla s.r.o.

FANY Gastroserwis s.r.o.

VÁGNER POOL sro
bazénová technologie

SCHMACHTL
CZ, spol. s ro

OBEČNÍ ÚŘAD VESTEC

Fachhandel für
Verpackungsmaterial
Hobal expert a.s.

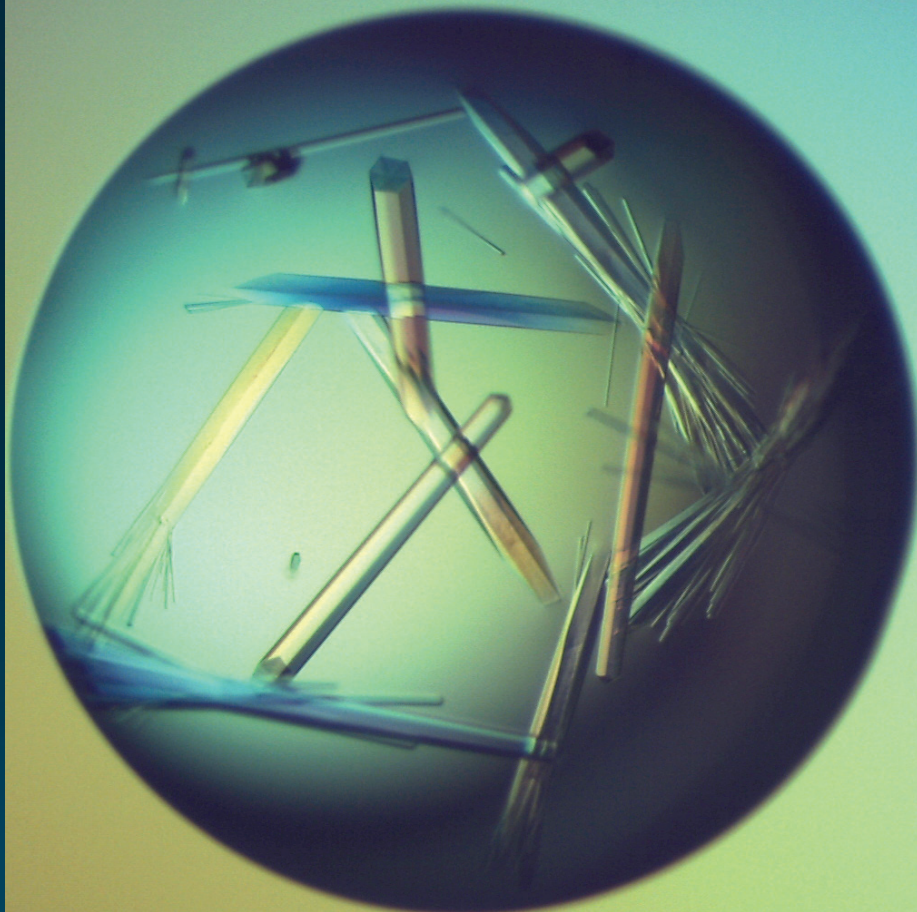
SAFINA, a.s.

Möbelgeschäft
NÁBYTEK KNY

3D

Google

What We Do?



Our Colleagues

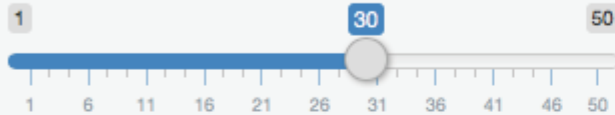


Histogram

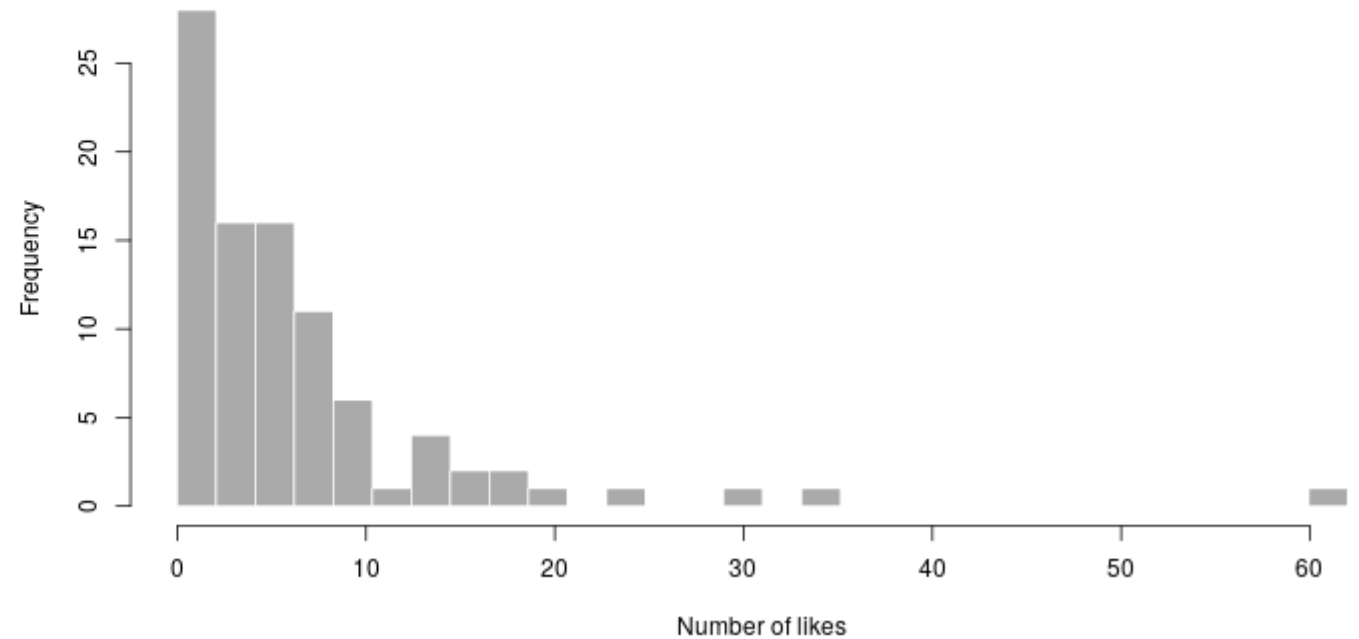
www.seekyourface.com/shiny/histogram/

@python_tip

Number of bins:

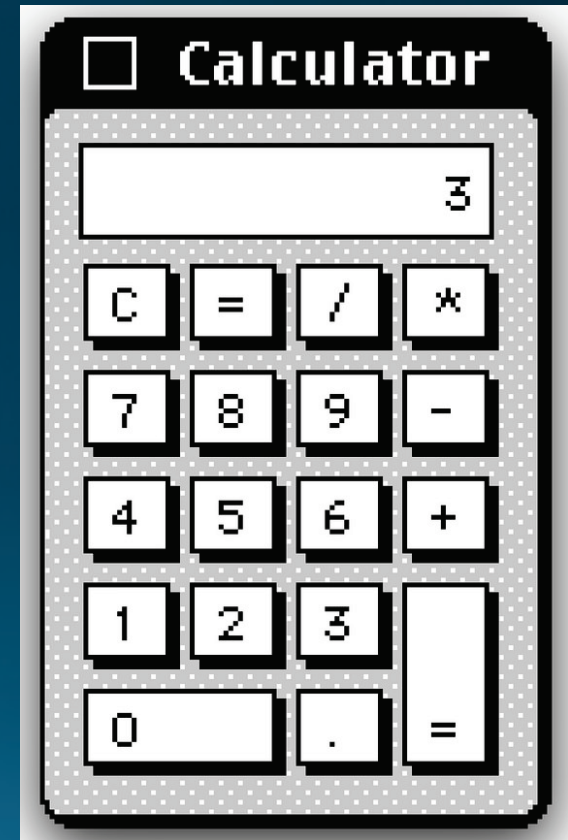


Number of likes per tweet distribution



Macintosh Calculator 1984

After being repeatedly unable to make *Steve Jobs* happy while writing Calculator for the original Macintosh, *Chris Espinosa* created "The Steve Jobs Roll Your Own Calculator Construction Set" so Jobs could change the app's look to what he preferred.



Iris Clustering

www.seekyourface.com/shiny/cluster/

Iris k-means clustering

X Variable

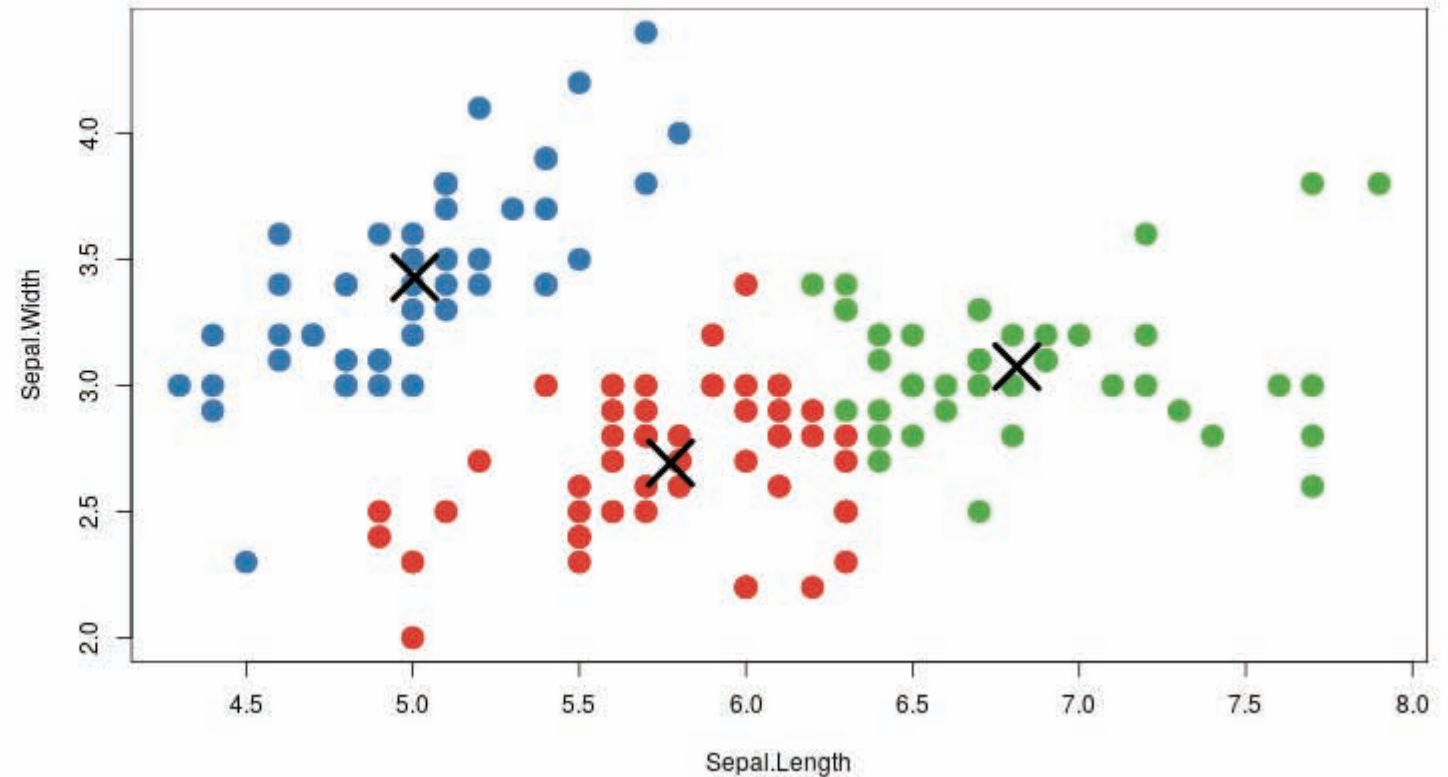
Sepal.Length

Y Variable

Sepal.Width

Cluster count

3





WordCloud

www.seekyourface.com/shiny/wordcloud/

Word Cloud

Choose a book:

Povětroň ▼

Change

Minimum Frequency:

1 15 50



A horizontal slider for Minimum Frequency. The track is a light gray bar with major tick marks and labels at 1, 6, 11, 16, 21, 26, 31, 36, 41, 46, and 50. A blue segment highlights the range from 1 to 15. A gray circular knob is positioned at the value 15.

Maximum Number of Words:

1 100 300



A horizontal slider for Maximum Number of Words. The track is a light gray bar with major tick marks and labels at 1, 31, 61, 91, 121, 151, 181, 211, 241, 271, and 300. A blue segment highlights the range from 1 to 100. A gray circular knob is positioned at the value 100.



Faces





www.seekyourface.com

Photo URL:

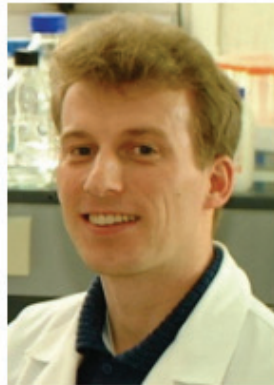
https://media.licdn.com/mpr/mpr/shrinknp_400_400/AAEAAQAAAAAAAAAL5AAAAJGM5YjZjYTIILTE3NzItNGM1MS04ODQ0LWE4OTQzNDk4NGM1MA.jpg

Find your lookalike among:

- ☒ Scientists
- ☐ Actors and Actresses

☐ **CENSORED**

Peter Forster (geneticist)



Confidence: 39 %

🔄 Don't like it? Try again!



What is R/Shiny?

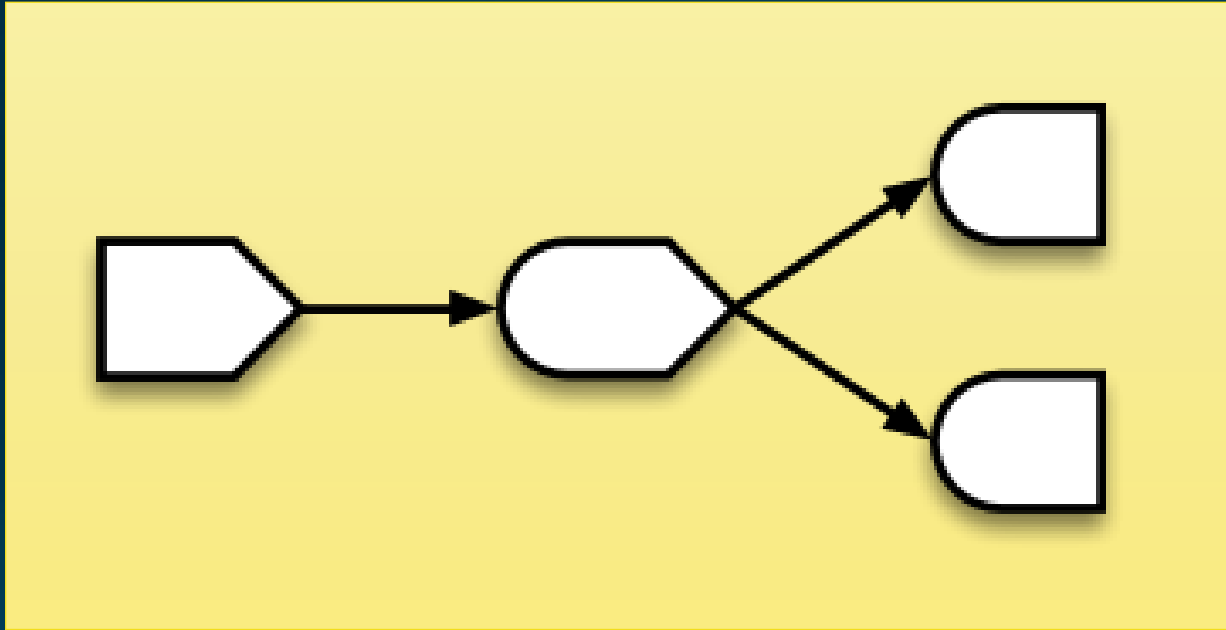
ui.r

```
pageWithSidebar(  
  headerPanel('Iris k-means clustering'),  
  sidebarPanel(  
    selectInput('xcol', 'X Variable', names(iris)),  
    selectInput('ycol', 'Y Variable', names(iris),  
               selected=names(iris)[[2]]),  
    numericInput('clusters', 'Cluster count', 3,  
                 min = 1, max = 9)  
  ),  
  mainPanel(  
    plotOutput('plot1')  
  )  
)
```

server.r

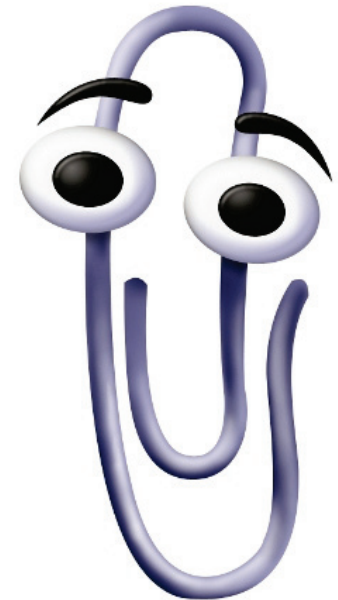
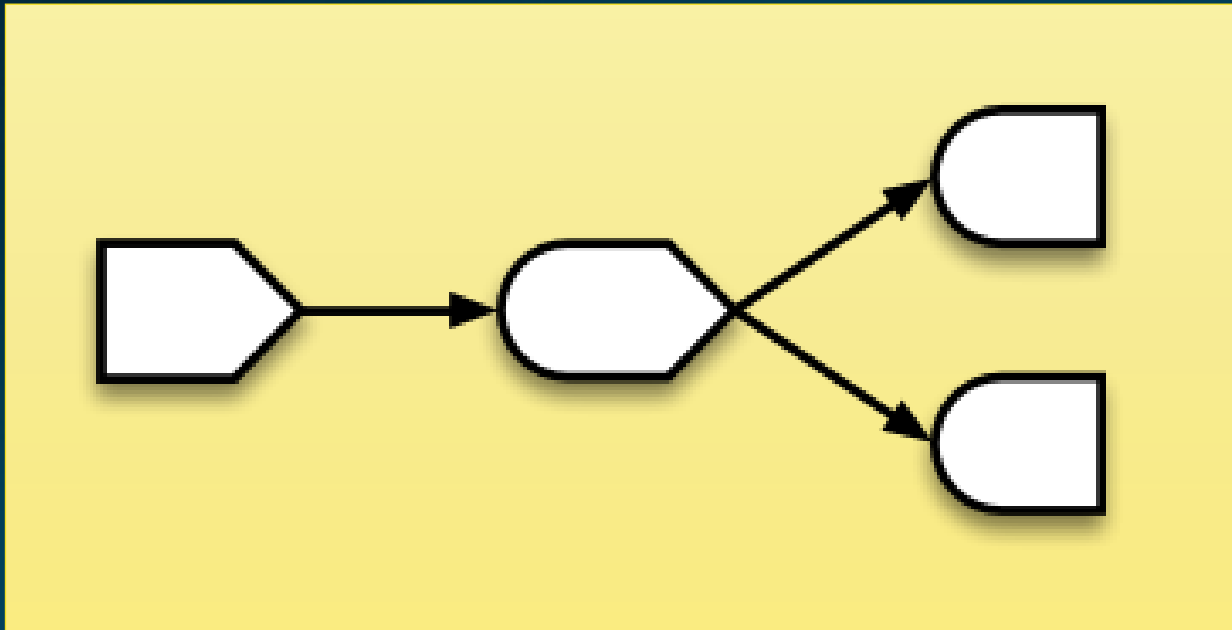
```
function(input, output, session) {  
  
  # Combine the selected variables into a new data frame  
  selectedData <- reactive({  
    iris[, c(input$xcol, input$ycol)]  
  })  
  
  clusters <- reactive({  
    kmeans(selectedData(), input$clusters)  
  })  
  
  output$plot1 <- renderPlot({  
    palette(c("#E41A1C", "#377EB8", "#4DAF4A", "#984EA3",  
              "#FF7F00", "#FFFF33", "#A65628", "#F781BF", "#999999"))  
  
    par(mar = c(5.1, 4.1, 0, 1))  
    plot(selectedData(),  
          col = clusters()$cluster,  
          pch = 20, cex = 3)  
    points(clusters()$centers, pch = 4, cex = 4, lwd = 4)  
  })  
  
}
```


Reactivity Graph



Reactivity Graph

We love Excel





Wes McKinney ✓

@wesmckinn

 **Follow**

Replying to @astrobiased

@astrobiased @treycasey @vagabondjack
the lack of a comprehensive production-grade
Shiny-alike for Python is a Big Problem

RETWEET

1

LIKES

7



7:59 AM - 11 Jun 2015

Bokeh

<http://bokeh.pydata.org/>

Flask

<http://flask.pocoo.org>

Dash

<https://github.com/plotly/dash>

Bowtie

<https://github.com/jwkvam/bowtie>

Spyre

<https://github.com/adamhajari/spyre>

Flask

Photo URL:

`cz/images/guests/130.jpg`

Find your lookalike among:

- ☐ Scientists
- ☒ Actors and Actresses
- ☐ Pornstars



Josh Lucas

Confidence: 0.39281

[Don't like it? Try again!](#)



Spyre

WORD CLOUD

Number of words:

500

 2852-1.txt

refresh

Text

WordCloud





Dash

Iris K-means clustering

X variable

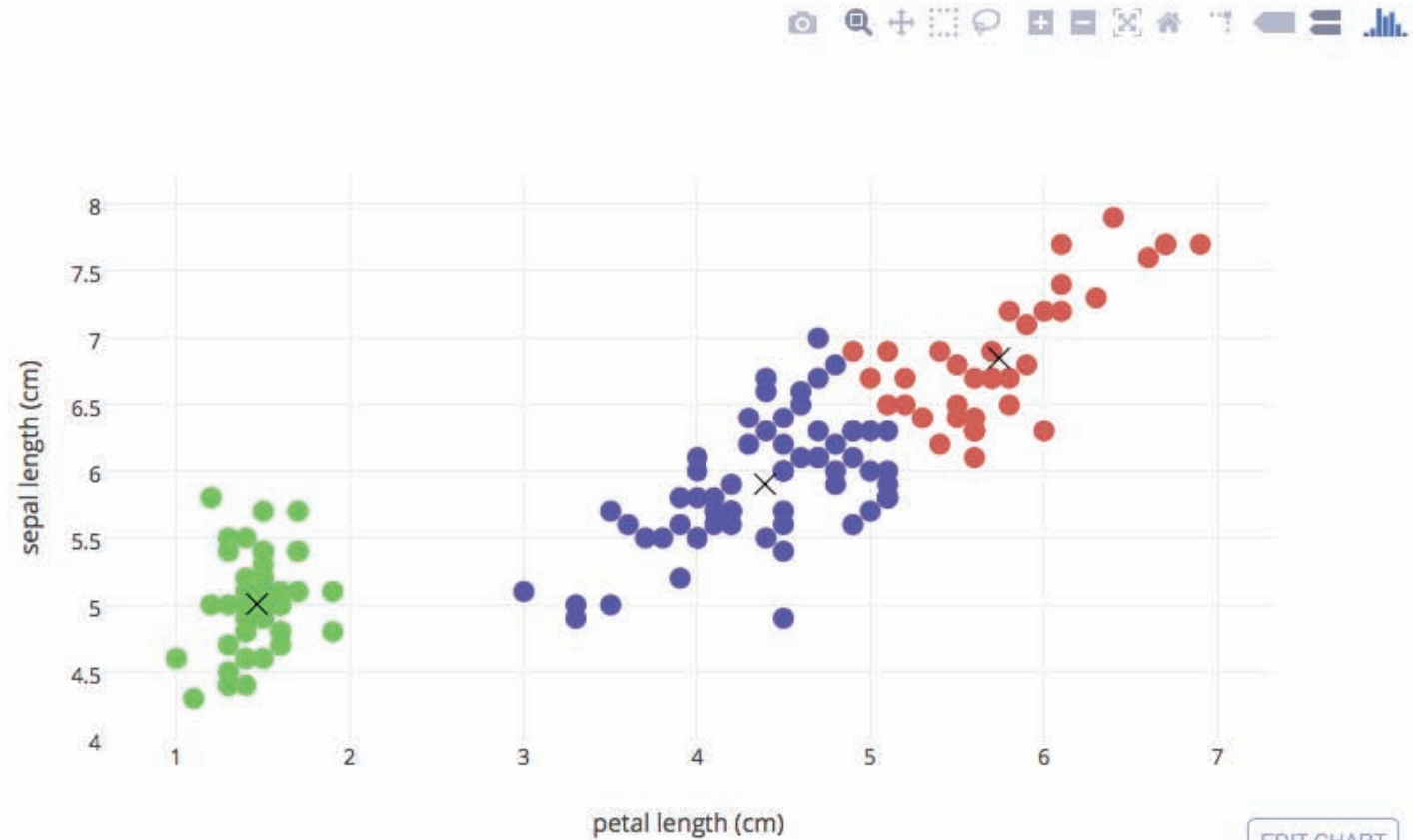
petal length (cm)

Y variable

sepal length (cm)

Cluster count

3

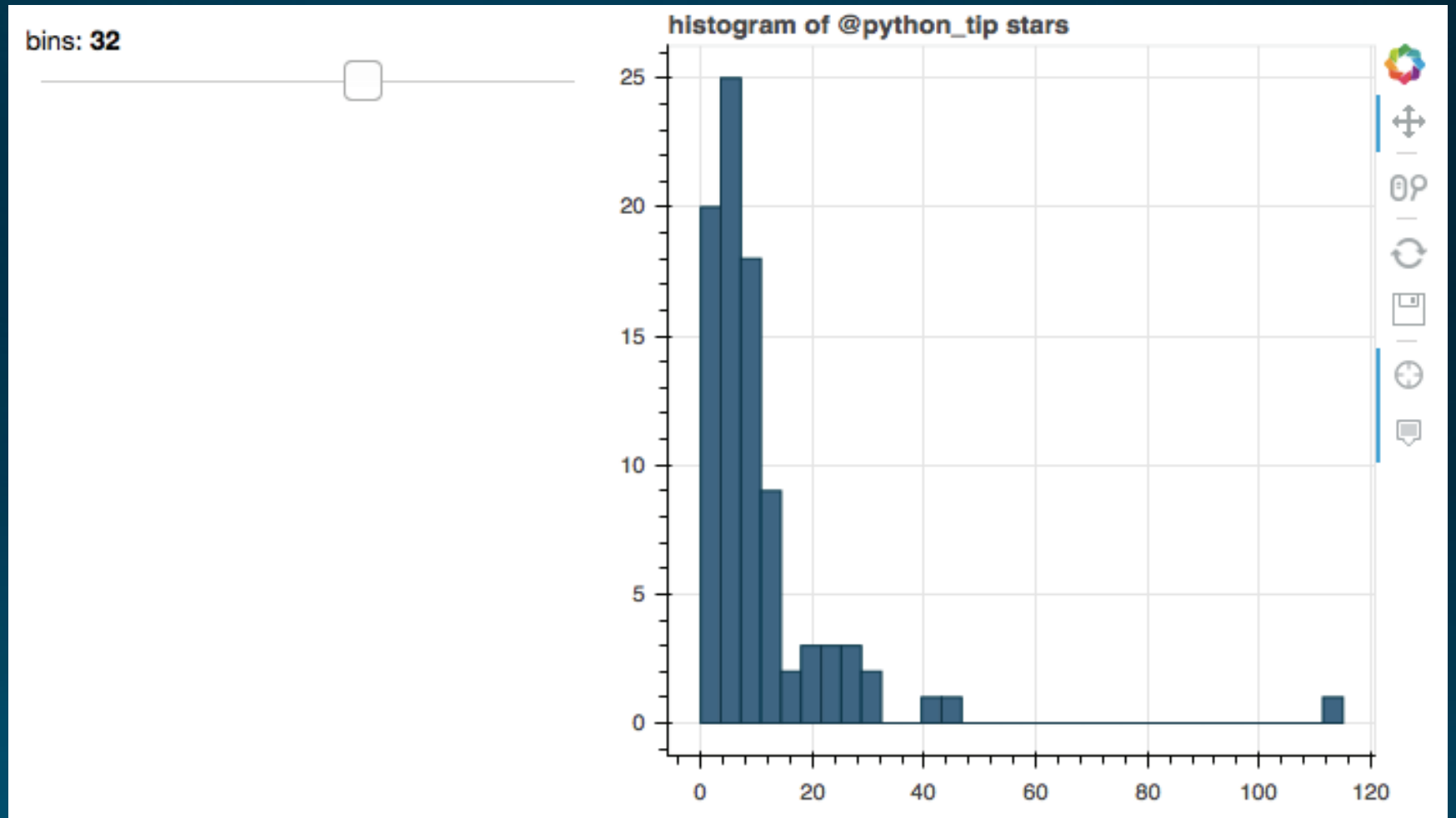


dash 2.0 - Deprecation Notice and Next Steps

April 20, 2016

tl;dr: We're no longer maintaining the code in this master branch. We're rethinking and rewriting `dash` to be an abstract web-application framework for technical computing. And we'd love your help. If you'd like to get involved, please reach out: chris@plot.ly (@chriddyp).

Bokeh





Bowtie

Iris K-means clustering

Cluster count

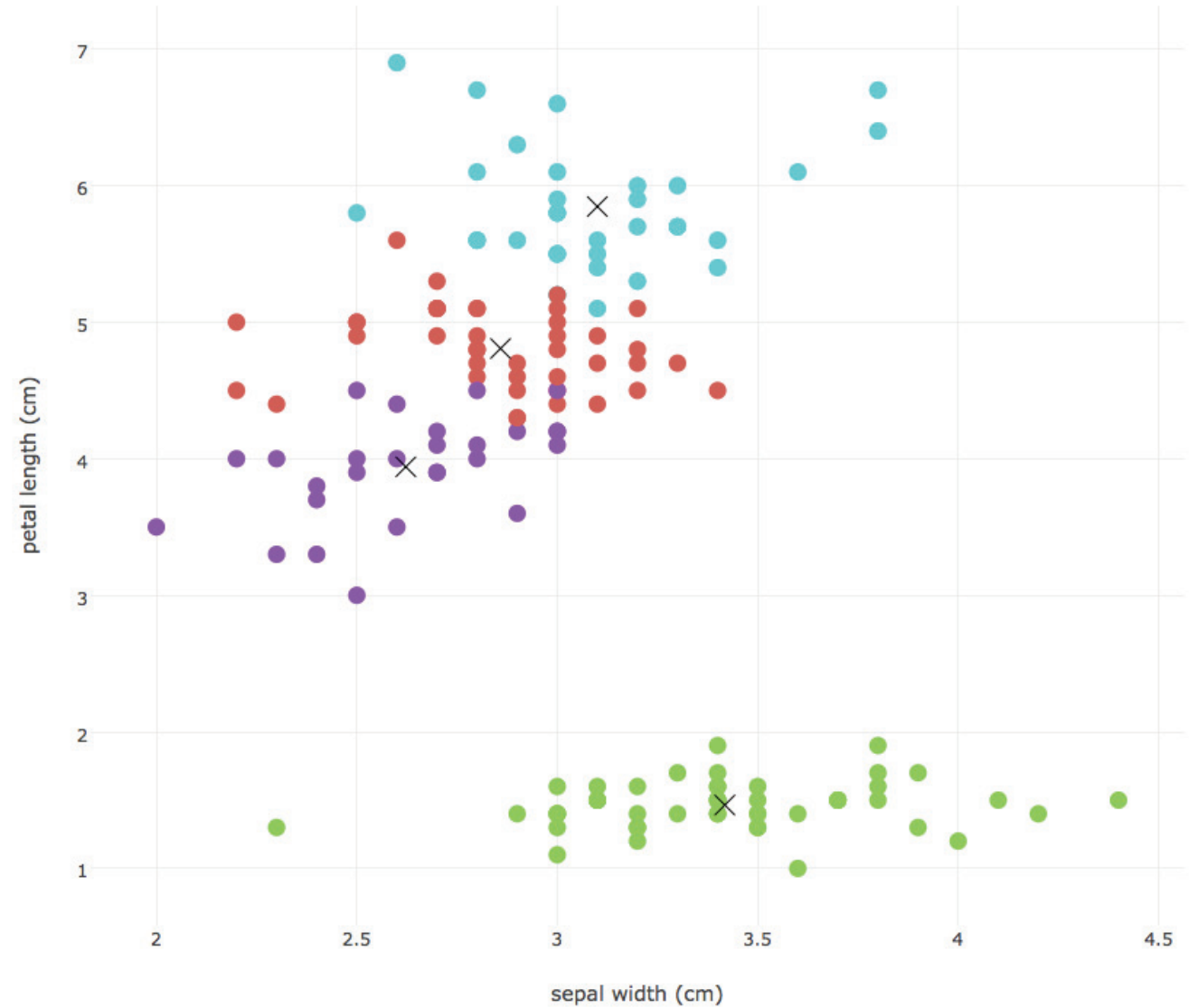


X variable

sepal width (cm) x ▾

Y variable

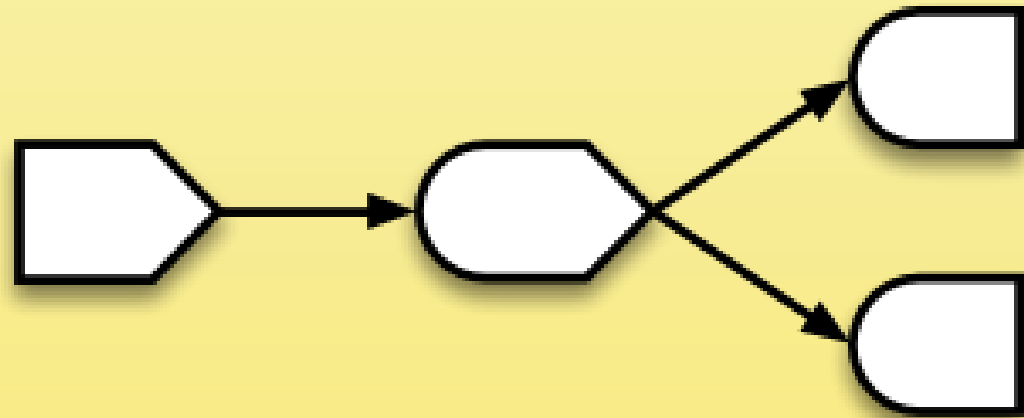
petal length (cm) x ▾





Glossy

- Built on cherrypy
- Uses websockets as implemented in ws4py
- Messages spread according to reactivity graph
- Currently under developement





Andrew Ng ✓

@AndrewYNg

 Folgen



I often advise people to take on projects you're only 70% qualified for, but then learn like crazy to bridge that 30%.

 Original (Englisch) übersetzen

RETWEETS

2.476

GEFÄLLT

5.193



00:59 - 13. März 2017 aus [東京 千代田区](#)

 74

 2,5 Tsd.  5,2 Tsd. 

**I HAVE NO
IDEA WHAT
I'M DOING**



Thank You for Your Attention

- Twitter: @python_tip
- Slides: bit.ly/czpycon2017
- Code: <https://github.com/karlafej/WebAppEx>

