

Voice-driven Figure Modification

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Abstract



Real Abstract

In this presentation, I will demonstrate some pioneering work done by Yihui Xie, the developer of the R package “knitr” and other R-related work. Yihui has blended the dynamism of Shiny with an R package for voice recognition. The result is a simple graph which can be edited live – by using voice commands.

The supporting code will be detailed. Ideas for further development in the clinical research field will be reviewed, in particular in the area of delivering statistical results to medical reviewers – results which the reviewers can modify with voice alone.

Voice Interface

Not a new idea



But an idea whose time has come



But not something always welcomed



Why not our world?



Three tools needed

R

- To form the structure

Shiny

- To form the dynamism

annyang

- For speech recognition



Steal from one – it's plagiarism. Steal from many – it's research.

This is plagiarism.

Full credit to my friend Yihui Xie.

<https://yihui.name/en/>

Too interesting a concept to not share in such venues.

Demonstration

<https://yihui.shinyapps.io/voice/>

Code snips - initialization

```
Shiny.onInputChange('title', 'say title something');
```

```
Shiny.onInputChange('color', 'black');
```

```
Shiny.onInputChange('bigger', 1);
```

Code snips – initialization JavaScript

```
var commands = {  
  'title *title': function(title) {  
    Shiny.onInputChange('title', title);  
  },  
  'color :color': function(color) {  
    Shiny.onInputChange('color', color);  
  },  
  'bigger': function() {  
    bigger += 1;  
    Shiny.onInputChange('bigger', bigger);  
  },  
}
```

Code snips – initialization JavaScript

```
annyang.addCommands (commands) ;  
    annyang.start () ;  
}  
};
```


Code snips – figure R

```
library(shiny)

shinyApp(
  ui = fluidPage(
    singleton(tags$head(
      tags$script(src="//cdnjs.cloudflare.com/ajax/libs/annyang/1.4.0/annyang.min.js"),
      includeScript('init.js')
    )),
```

Code - figure

```
server = function(input, output) {  
  lm_line = reactive({  
    input$yes  
    fit = lm(dist ~ speed, data = cars)  
    lines(cars$speed, predict(fit, cars), lwd = 2)  
  })  
}
```

Code - figure

```
output$foo = renderPlot({  
  col = input$color  
  if (length(col) == 0 || !(col %in% colors())) col = 'gray'  
  plot(cars, main = input$title, col = col, cex = input$bigger, pch = 19)  
  lm_line()  
})
```

Apply this to our world

Idea: Voice-driven AE tables

- Replace PDF files and printouts
- Service the medical science community

Adverse Event Standard Shell (PhUSE)



Project: Analysis and Display White Papers Project Team

Title: Analysis of Adverse Events Associated with Adverse Events

Working Group: Standard Analysis and Reporting

Overview of Adverse Events During the Treatment Phase Safety Population

	T1 (N=XX) n (%)	T2 (N=XX) n (%)	PL (N=XX)	T1 & T2 (N=XX)	Risk Difference* T1-PL (95% CI)	Risk Difference* T2-PL (95% CI)	Risk Difference* T1&T2-PL (95% CI)
Treatment Emergent Adverse Events	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)
Serious Adverse Events	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)
Adverse Events leading to Discontinuation of Treatment	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)
Fatal Adverse Events	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx (xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)	xx.x (xx.x, xx.x)

Footnotes:

N=number of patients; n=number of patients with at least one row event. Percentages are calculated relative to the treatment group N.

Patients may be counted in more than one row.

Serious Adverse Events are counted regardless of whether or not severity increases relative to baseline.

*Risk difference confidence interval from [insert method].

Links

Author page

<https://yihui.name/en/>

Demonstration figure

<https://yihui.shinyapps.io/voice/>

Github code

<https://github.com/yihui/shiny-apps/tree/master/voice>

Speech recognition library

<https://www.talater.com/annyang/>