



# Sharing your work using Markdown and GitHub

Annie Helms

# Before this workshop . . .

---

Create a GitHub profile

<https://github.com/>

---

Download Anaconda Navigator

<https://www.anaconda.com/products/individual>

---

Download R and Rstudio

<https://www.r-project.org/>

<https://rstudio.com/products/rstudio/download/>

---

Download GitBash

<https://git-scm.com/downloads>

---

Click green “Clone or download” button and  
download ZIP

[https://github.com/annie-helms/github\\_tutorial](https://github.com/annie-helms/github_tutorial)

# Goals for this Workshop



Brief overview of  
GitHub



Getting started with  
Jupyter Notebooks



Getting started with  
Rmarkdown



Creating your first  
GitHub repository

NOTE: This workshop will only include basic instruction in Markdown, not Python or R code.

# What is GitHub?



Online portfolio of your work



Keeps track of version history for each document



Can view and download other people's work



Streamlines collaboration on projects

# What can you upload?



Scripts in programming languages that show your analysis for a research project\*

\*in accordance with consent forms



Challenge projects online (see <https://tinyurl.com/y5g5lnwj>) to show off coding skills



Any file that is part of your projects (csv, ppt, PDF, Rmd, ipynb, etc.)

Example: <https://github.com/annie-helms/barcelona-2019>

annie-helms / barcelona-2019

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Actions Projects 0 Wiki Security 0 Insights Settings

This repository contains the analysis for my sociophonetic research in Barcelona from the summer of 2019.

Manage topics

10 commits 1 branch 0 packages 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone

annie-helms	Update README.md	Latest commit 0835943 3 days ago
README.md	Update README.md	3 days ago
barcelona_vowels.Rmd	fixed Markdown syntax	3 days ago
barcelona_vowels.csv	data sheet with formant productions	3 days ago
barcelona_vowels.html	updated with k-means clustering	3 days ago
blp_scores.csv	blp_scores.csv	3 days ago

Brief description of repository contents.

annie-helms/barcelona-2019: Thi

github.com/annie-helms/barcelona-2019

AppsMGoogleCboxPVCInfinityEZproxyGitHubSkills NetworkWRGoogleNIMIBM Cloudcat.dicccat.conjgen CatK!Other bookmarks

Search or jump to...Pull requestsIssuesMarketplaceExplore

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CodeIssues0Pull requests0ActionsProjects0WikiSecurity0InsightsSettings

This repository contains the analysis for my sociophonetic research in Barcelona from the summer of 2019.

Edit

Files in repository

1 branch0 packages0 releases1 contributor

Branch: masterNew pull requestCreate new fileUpload filesFind fileClone or download

annie-helmsCreate README.mdLatest commit 0835943 3 days ago

README.md

Update README.md

3 days ago

barcelona\_vowels.Rmd

fixed Markdown syntax

3 days ago

barcelona\_vowels.csv

data sheet with formant productions

3 days ago

barcelona\_vowels.html

updated with k-means clustering

3 days ago

blp\_scores.csv

blp\_scores.csv

3 days ago

Type here to search

Windows taskbar with icons for File Explorer, Word, Chrome, and other applications.

ENG US9:38 AM6/5/2020

This repository contains the analysis for my sociophone the summer of 2019. Edit

Manage topics

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annie-helms Update README.md Latest commit 0835943 3 days ago		
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barcelona_vowels.html	updated with k-means clustering	3 days ago
blp_scores.csv	blp_scores.csv	3 days ago

Comments explaining what was updated in this version





annie-helms / barcelona-2019

Unwatch 1

Code Issues 0 Pull requests 0 Actions Projects 0 Wiki Security 0 Insights

This repository contains the analysis for my sociophonetic research in Barcelona from the summer of 2019.

Manage topics

10 commits 1 branch 0 packages 0 releases 1 contributor

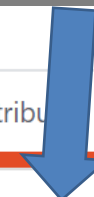
Branch: master New pull request

Create new file Upload files Find file Clone or download

annie-helms Update README.md

README.md	Update README.md
barcelona_vowels.Rmd	fixed Markdown syntax
barcelona_vowels.csv	data sheet with formant productions
barcelona_vowels.html	updated with k-means clustering
blp_scores.csv	blp_scores.csv

Allows for downloading of repository contents



Clone with HTTPS Use SSH

Use Git or checkout with SVN using the web URL.

https://github.com/annie-helms/barcelona

Open in Desktop Download ZIP

barcelona_vowels.Rmd	fixed Markdown syntax	3 days ago
barcelona_vowels.csv	data sheet with formant productions	3 days ago
barcelona_vowels.html	stering	3 days ago
blp_scores.csv		3 days ago
blp_scores.ipynb		3 days ago
clusters.csv		3 days ago

Scrolling down, this README file explains how the files function together in the project

README.md

# barcelona-2019

This repository contains the analysis for my sociophonetic research in Barcelona from the summer of 2019.

The blp\_scores.ipynb applies k-mean clustering to participants' responses in the Bilingual Language Profile (BLP) survey. In the model, participants are clustered into three groups, where one group is more balanced, one group favors Catalan, and one group favors Spanish.

In barcelona\_vowels.Rmd, this dataset is merged with the dataset containing participants' productions in Spanish and Catalan. The resulting data is analyzed and visualized.

annie-helms / barcelona-2019

<> Code

Issues 0

Pull requests 0

Actions

Projects 0

Wiki

Security 0

Insights

Settings

Branch: master barcelona-2019 / blr\_scores.ipynb

Find file

Copy path

annie-helms updated with analysis cdf0687 3 days ago

1 contributor

1844 lines (1844 sloc) 63 KB

<>

Raw

Blame

History

📄

✎

🗑

## Bilingual Language Profile Analysis

In this notebook, I will use K-means clustering to group my participants according to their raw responses to the Bilingual Language Profile (BLP) survey (Birdsong, D., Gertken, L.M., & Amengual, M. Bilingual Language Profile: An Easy-to-Use Instrument to Assess Bilingualism. COERLL, University of Texas at Austin. Web. 20 Jan. 2012. <https://sites.la.utexas.edu/bilingual/>.)

The survey gathers information from two separate languages about the following four categories:

- Attitudes towards the language
- History with the language
- Proficiency in the language
- Use of the language

The survey, as designed by Birdsong et al., weights each category and then computes an overall dominance score for each language. Rather than use the weights given by the authors, I will use the raw responses in each category to group the participants according to their similarity with each other. This categorical output will be computed with three levels, and will hopefully group participants as more Spanish dominant, as more Catalan dominant, or mostly balanced.

```
In [12]: import pandas as pd
import numpy as np # handle data as in a vectorized manner

# Matplotlib and associated plotting modules
import matplotlib.cm as cm
import matplotlib.colors as colors
```

Clicking on a file opens a preview page, where you can view older versions and view the file in its entirety

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In [12]: 

```
import pandas as pd
import numpy as np # handle data as in a vectorized manner

# Matplotlib and associated plotting modules
import matplotlib.cm as cm
import matplotlib.colors as colors

# import k-means from clustering stage
from sklearn.cluster import KMeans
```

In [17]: 

```
blr = pd.read_csv("blr_scores.csv")
blr.head()
```

Out[17]:

	Participant	Castellano	Catalan	Attitude_Castellano	Attitude_Catalan	History_Castellano	History_Catalan	Proficiency
0	p1	151.914	188.424	20	24	86	96	23
1	p2	126.848	200.958	20	24	87	97	18
2	p3	143.014	200.410	20	24	96	115	19
3	p4	125.674	172.170	12	12	81	120	19
4	p5	175.166	164.446	22	23	104	84	19

For the present analysis, I will drop some columns from the DataFrame, so that only the participant number and their raw scores for each category (4 in each language, 8 total) remain.

In [18]: 

```
blr = blr[['Participant', 'Attitude_Castellano', 'Attitude_Catalan', 'History_Castellano', 'History_Catalan', 'Proficiency_Castellano', 'Proficiency_Catalan', 'Use_Castellano', 'Use_Catalan']]
blr.head()
```

Out[18]:

Input

Output

What kind of file is .ipynb?

This is a Jupyter Notebook, which contains chunks of code along with their outputs

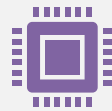
# Jupyter Notebooks



Web application used to create and share code



Interactive with code outputs presented in the document

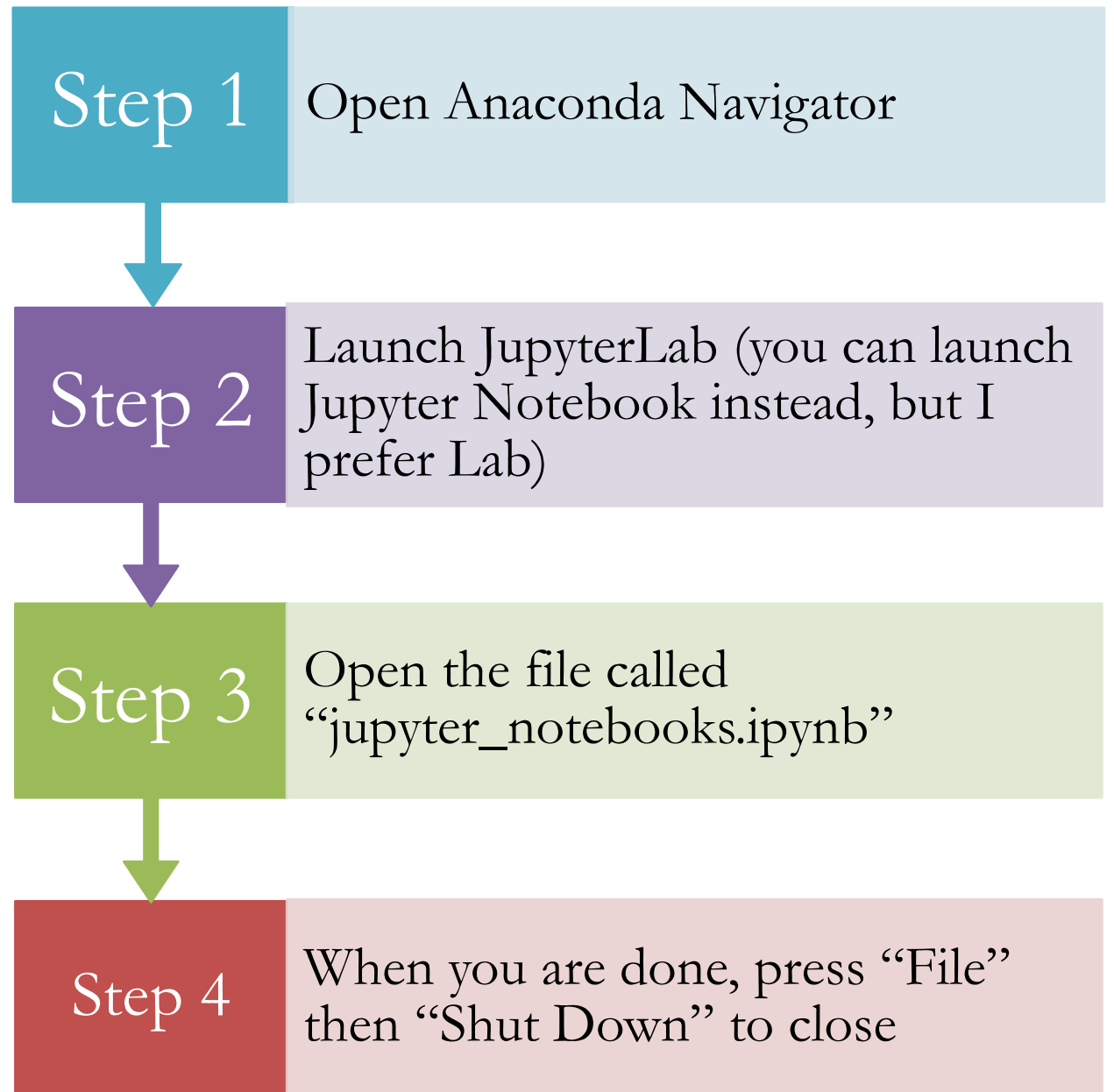


Supports multiple programming languages (R, Python, and more)



Files can be converted to multiple file types (html, PDF, LaTeX, etc.)

# Using Jupyter Notebooks



# RStudio



User-friendly environment for R



Saves code chunks allowing for collaboration



Includes file type “Rmd” which uses R code and Markdown syntax

# Using RMarkdown

Step 1

Open RStudio



Step 2

Open the file “r\_markdown.Rmd”  
from the GitHub repository



Step 3

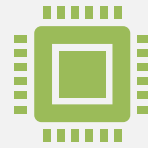
When you have finished, click  
“Knit” to knit file to HTML (or  
PDF)



# GitBash



Syncs your files with your  
GitHub repository



Authenticates you and your  
computer using an SSH key



Clones GitHub repositories to  
your local folder

# Creating and Syncing a GitHub Repository

Step 1

Launch GitBash on your computer

Step 2

Enter the following line of code using the email address you used to create a GitHub account:

```
ssh-keygen -t rsa -b 4096 -C "email"
```

Step 3

Save the SSH key to a folder in your computer (easiest just to press “enter” and accept default location)

Step 4

Choose a password (easiest just to press “enter” and decline to use a password)

# Creating and Syncing a GitHub Repository

Step 5

Add the SSH key to the ssh-agent by running the following line of code:  
**eval “\$(ssh-agent -s)”**  
and then run: **ssh-add ~/.ssh/id\_rsa**

Step 6

Run the following line of code to copy your SSH key to your clipboard:  
**cat ~/.ssh/id\_rsa.pub | clip**

Step 7

In your GitHub account, click your profile picture, then “Settings”

Step 8

Under “Personal Settings” select “SSH and GPG keys”

# Creating and Syncing a GitHub Repository

Step 9

Click “New SSH Key” to add your key to your account



Step 10

Add a title like “personal-computer” and paste your SSH key into the “Key” field



Step 11

Click “Add SSH Key”



Step 12

Create a Github repository by clicking “New” on the left side of the homepage

# Creating and Syncing a GitHub Repository

Step 13

Make repository public, initialize with README, and click Create

Step 14

Click green “Clone or Download” button and clone with SSH. Copy the URL

Step 15

Go to Gitbash and run this command to create your folder, using the directory of your choice:

```
mkdir ~/Desktop/github
```

Step 16

Navigate to this folder by running:

```
cd ~/Desktop/github
```

# Creating and Syncing a GitHub Repository

Step 17

Now run the following, pasting in your URL: **`git clone repository_URL`**

Step 18

You should see a new folder named after your repository if you run: **`ls`**

Step 19

Copy the Jupyter notebook and Rmarkdown file you created earlier into your new folder

Step 20

In GitBash, navigate to your folder with:  
**`cd ~/Desktop/github/repo_name`**

# Creating and Syncing a GitHub Repository

Step 21

Run the following code to view what changes have been made in your local folder: **git status**

Step 22

To select a file you want to update on GitHub, run:  
**git add *name\_of\_file***

Step 23

Commit this change by running:  
**git commit -m '*summarize changes*'**

Step 24

To sync all committed files to GitHub, run: **git push**  
To exit GitBash, run: **exit**

# Summary of Workshop



Brief overview  
of GitHub



Getting started  
with Jupyter  
notebooks



Getting started  
with  
RMarkdown



Creating and  
syncing a  
GitHub  
repository with  
GitBash