QLS-612 / Brainhack school week1

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Introduction outline

- Special circumstances
- Objectives
- Who is this course for ?
- Who are you ?
- Quick overview of the schedule
- Logistics
- Assessments
- The team / Acknowledgements
- Intro to the BrainHack School (Pierre Bellec)

Special circumstances

- Online course obviously !

- Some things might be harder:
  - Showing what is the problem on your computer
  - Asking for informal advice
  - Internet issues !
- We are trying to adapt with
  - More online help
  - A slower paced program
  - All material online
  - Online assessments

Objectives

- Give you some fundamental tools and concepts for data science in neuroscience and neuroimaging
- Help you develop reproducible projects and research objects
- Break the ice with some tools
    - Be more comfortable with programming in Python
    - Less of “I would not know how to start with that”
- Give you an overview of some basic techniques
- Breadth or depth ?

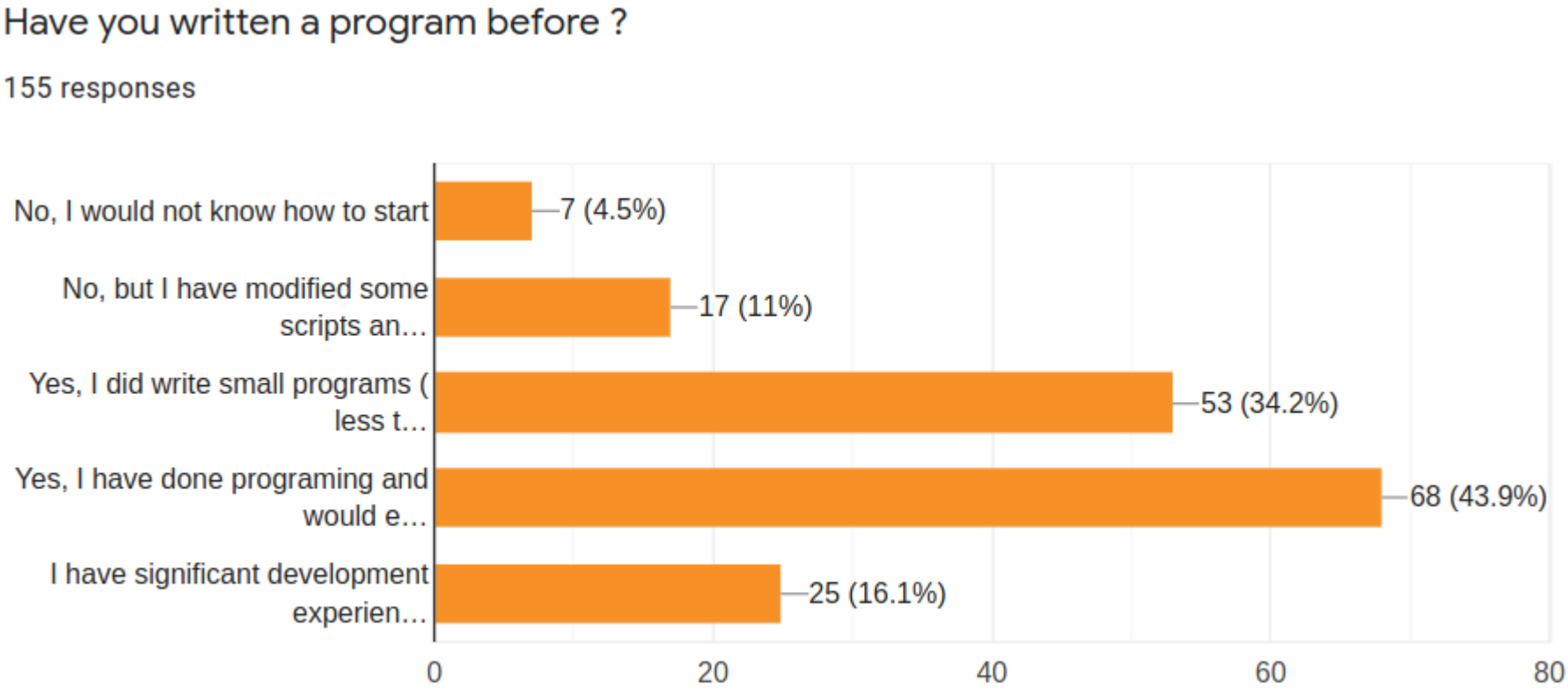
This course is for you if

- As per the requirements: you have done a little bit of programming
- You are working with neuroscience or neuroimaging data
- You want to learn more on how to practically analyse data
- You are interested in collaborative and open science research

Not for you if ...

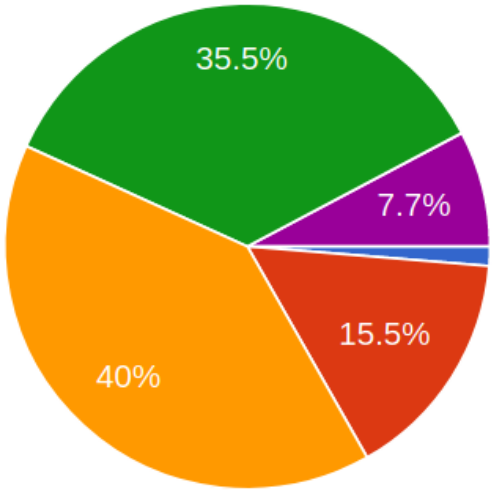
- You know how to develop in python and you have experience in data analysis
- You need some first exposure to programming

Who has registered to the BHS ?

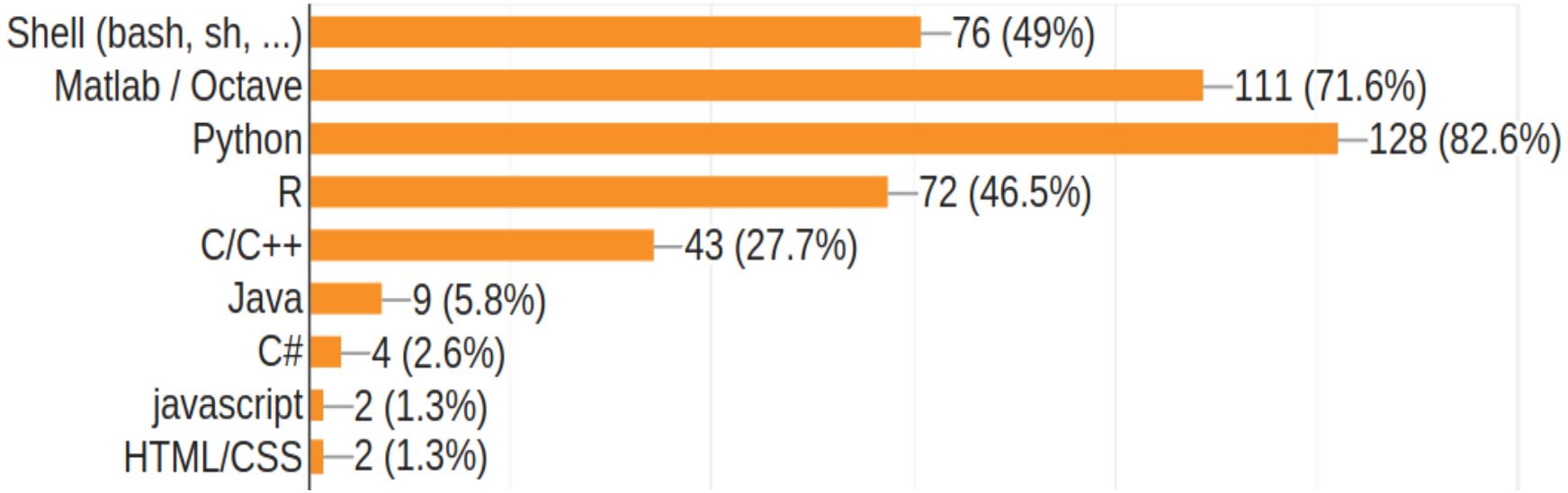


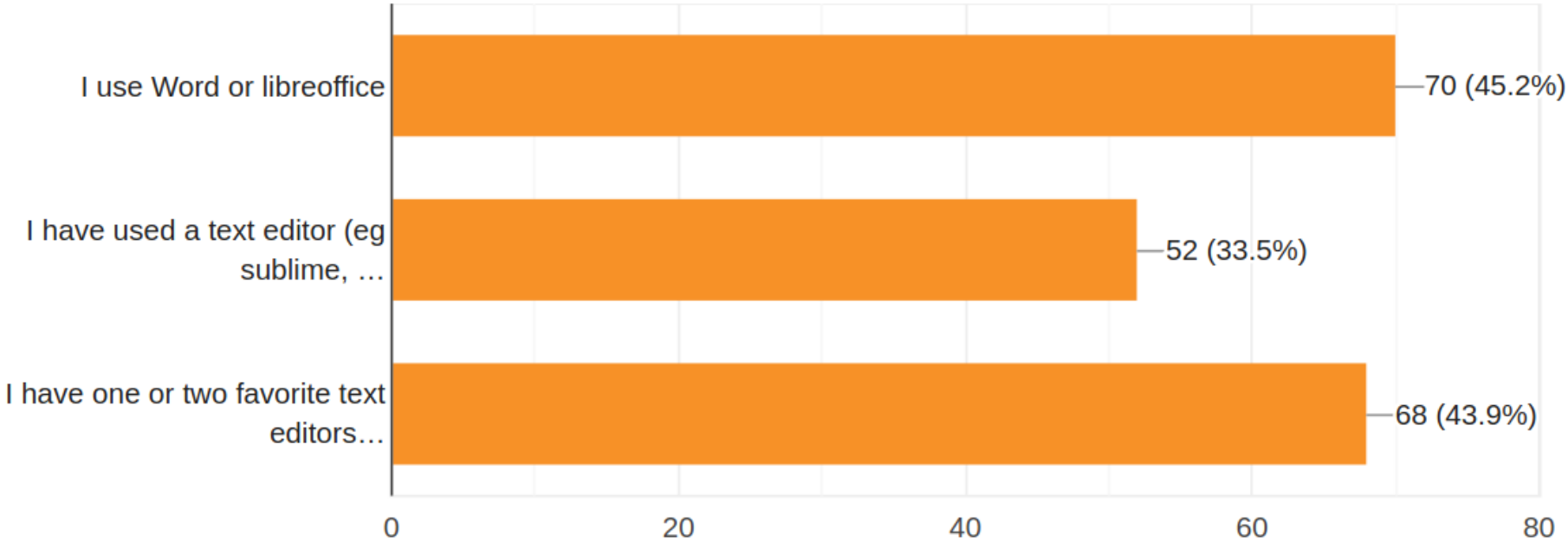
Which best fits your experience with statistical analysis

155 responses



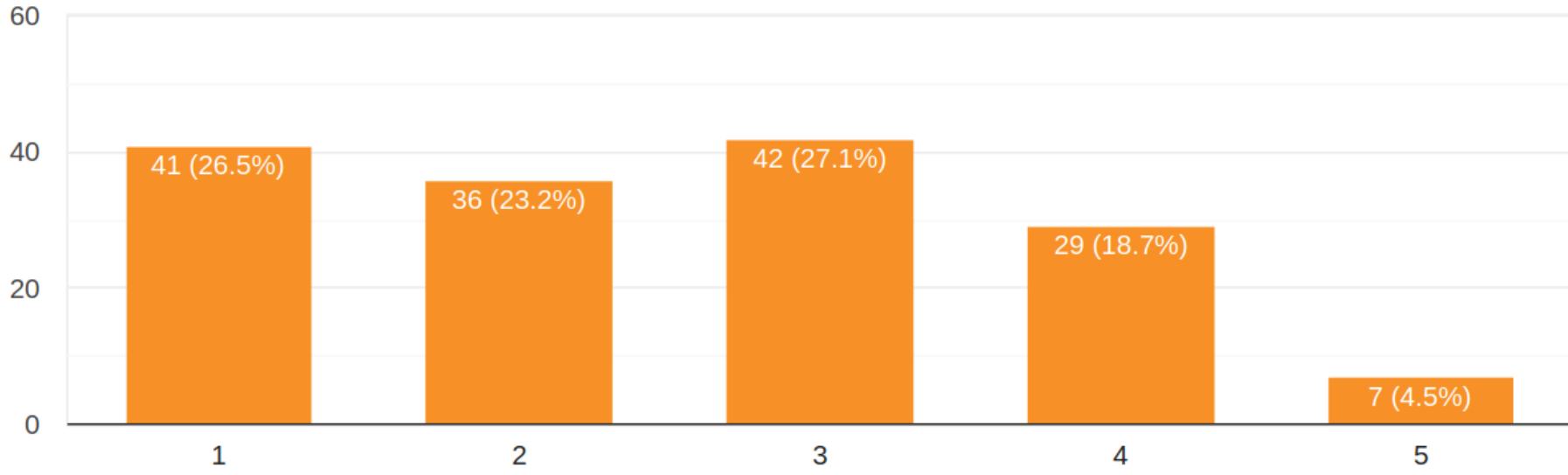
- I have run a few correlations using MS Excel
- I have used a statistics program (e.g. SPSS, Prism, STATA, JMP) to perfor…
- I have used a programming language (e.g. R, Python) to do basic stats
- I have used a statistic program or programming language (e.g. R, Pytho…
- I have published analyses using complex statistical models


Shell (bash, sh, ...)
76 (49%)
Matlab / Octave
111 (71.6%)
Python
128 (82.6%)
R
72 (46.5%)
C/C++
43 (27.7%)
Java
9 (5.8%)
C#
4 (2.6%)
javascript
2 (1.3%)
HTML/CSS
2 (1.3%)


I use Word or libreoffice
70 (45.2%)
I have used a text editor (eg sublime, …
52 (33.5%)
I have one or two favorite text editors…
68 (43.9%)
0
20
40
60
80

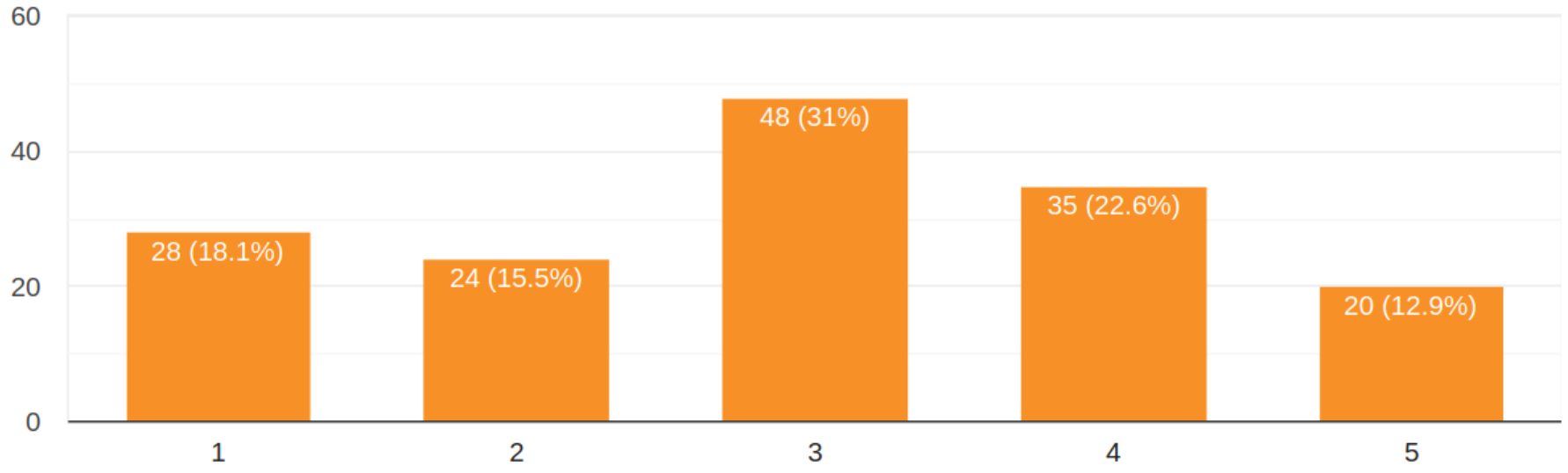
Please rate your experience working with Git/Github.

155 responses



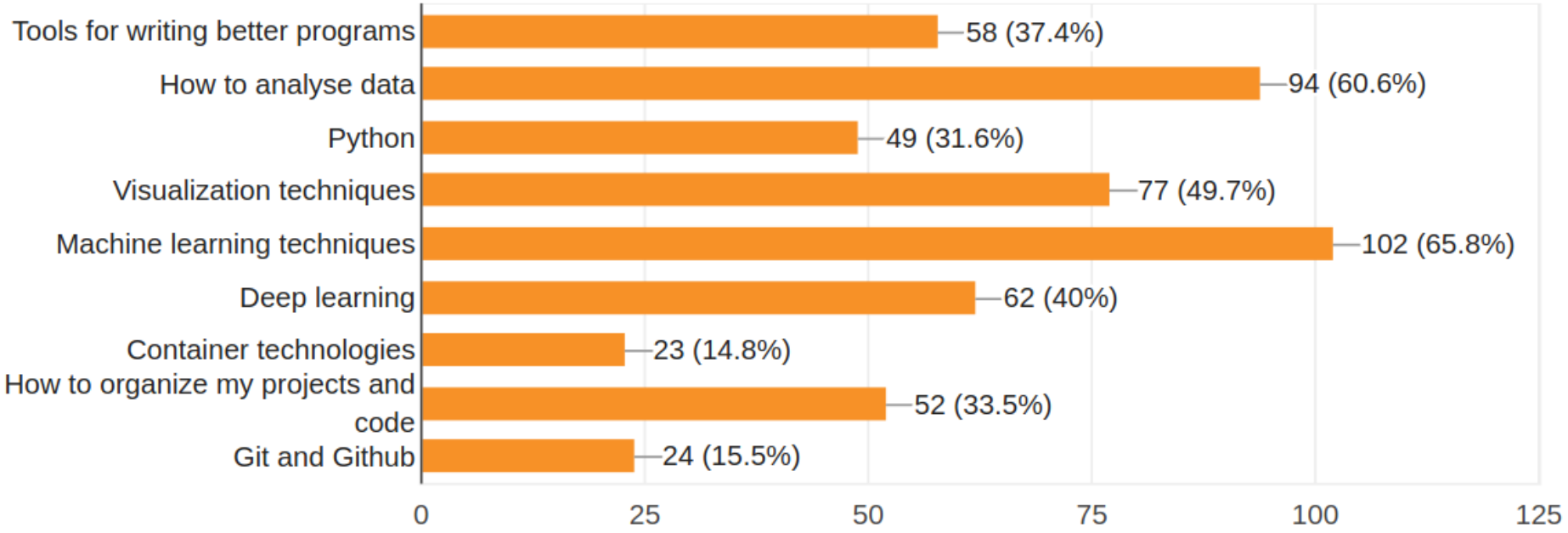
Please rate your experience working with Python.

155 responses



What would be most important for you to learn? (choose a maximum of 3)

155 responses



Remarks on the schedule

11 Monday May, 2020	09:00 - 10:00	Course introduction (Instructor: J.B. Poline)
	10:00 - 11:00	Modern reproducibility problems in the life sciences (Instructor: J.B. Poline)
	11:00 - 12:00	Set-up and installation
	12:00 - 13:00	Lunch
	13:00 - 14:00	Introduction to the terminal (Instructor: Ross Markello)
	14:00 - 17:00	Introduction to git and GitHub (Instructor: Elizabeth DuPre)
12 Tuesday May, 2020	09:00 - 12:00	Python for data analysis (Instructor: Ross Markello)
	12:00 - 13:00	Lunch
	13:00 - 16:30	Containerization with Docker (Instructor: Peer Herholz)
	16:30 - 17:30	Assessment 1

13 Wednesday May, 2020	09:00 - 10:30	Standards for project management and organization (Instructor: Elizabeth DuPre)
	10:30 - 12:00	Tools for project management and organization (Instructor: Chris Markiewicz)
	12:00 - 13:00	Lunch
	13:00 - 16:30	High-performance computing (Instructor: Felix-Antoine Fortin)
14 Thursday May, 2020	09:00 - 10:30	Data visualization (Instructor: Peer Herholz)
	10:30 - 12:00	Introduction to classical statistics (Instructor: J.B. Poline)
	12:00 - 13:00	Lunch
	13:00 - 16:30	Introduction to machine learning (Instructor: Estefany Suarez & Jake Vogel)
	16:30 - 17:00	Feedback for review sessions on Friday

15 Friday
May, 2020

09:00 - 10:30	Fundamentals of deep learning in neuroscience (Instructor: Blake Richards)
10:30 - 12:00	Applications of deep learning in neuroscience (Instructor: Jakub Kaczmarzyk)
12:00 - 13:00	Lunch
13:00 - 14:00	Epistemology and lessons from the past (Instructor: J.B. Poline)
14:00 - 15:00	Review session 1 (Instructor: TBA)
15:00 - 16:00	Review session 2 (Instructor: TBA)
16:00 - 17:00	Assessment 2

Logistics

- Communication by Slack
  - Please, avoid emails
  - Check which channel is most appropriate

- Zoom https://zoom.us/j/92317091379 will stay, password sent on #schedule if needs changing
  - zoom bombing...
  - How to ask questions ?
    - On the current / past presentation : zoom chat
    - Other : slack general channel
  - Zoom breakout rooms

- Week 1 material on OSF : https://osf.io/3kvzu/

Assessments

- Quizzes on Tuesday and Friday
- A few hours project will be assigned to you on Friday - to be handed back by May 31st
  - Instructions will be sent by email.

The team

- You have awesome teachers and instructors

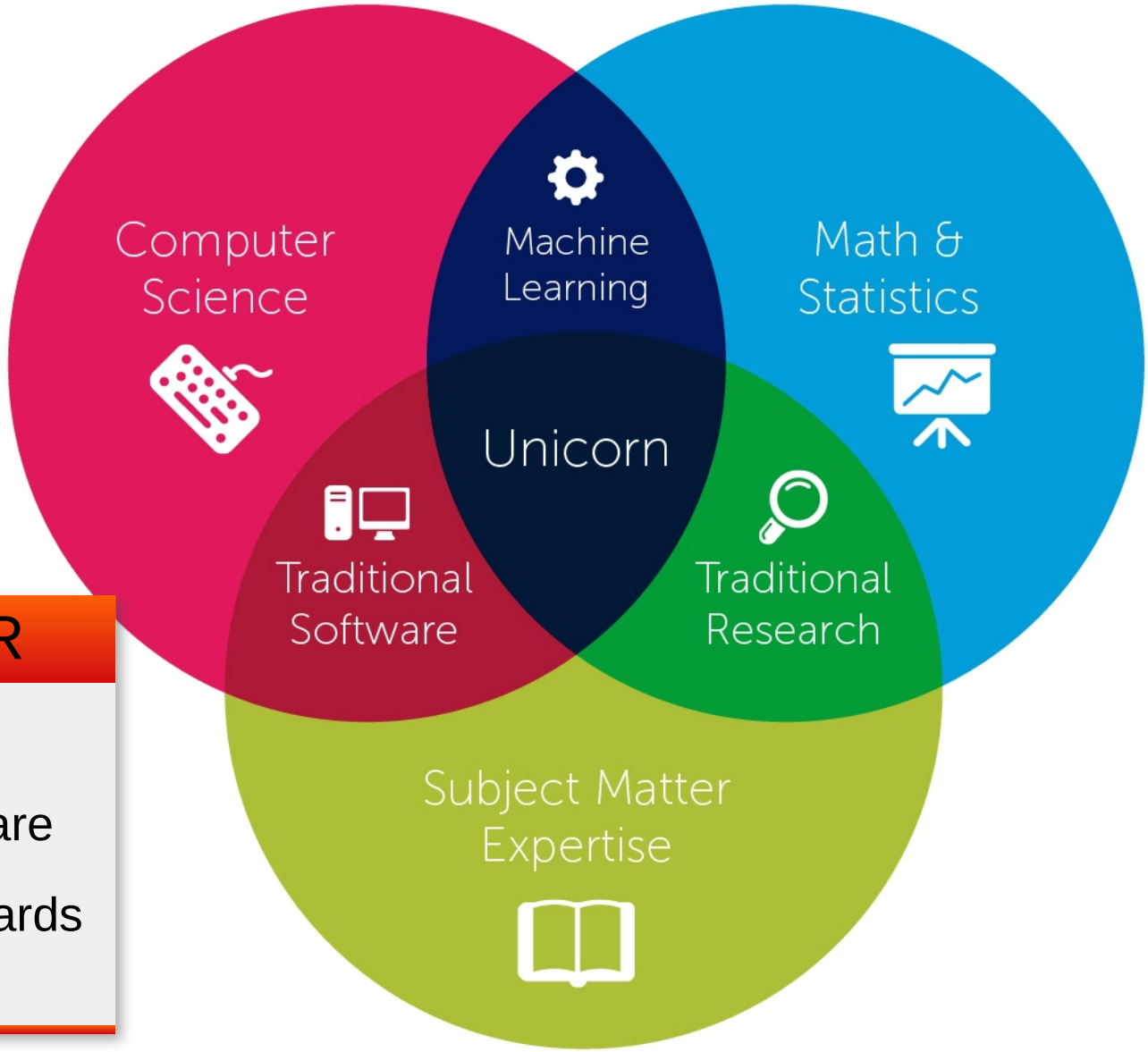







Ethical Scholarly communications
Epistemiology / lessons from the past
How to collaborate and teach

Data Science



FAIR

- Data
- Software
- Standards reuse

Research

Science and Technology