QLS-612 / Brainhack school week1

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Introduction outline

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

- Online course obviously !

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

Objectives

- Give you some fundamental tools and concepts for data science in neuroscience and neuroimaging
- Help you develop reproducible projects / research objects
- Break the ice with some tools
    - There will be loads of programming
    - Less of "I would not know how to start with that"
- Give you an overview of some basic techniques
- Breath or depth ?

This course is for you if

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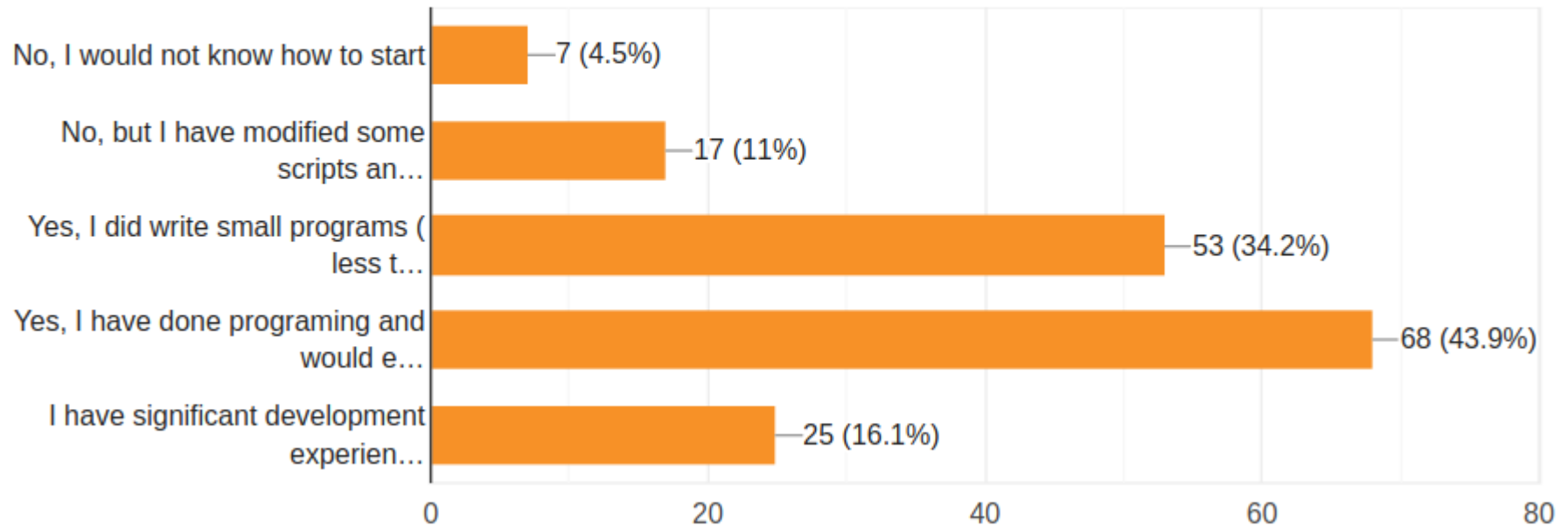- You are interested in collaborative and open science research

- You know how to develop in python and you have experience in data analysis
- You need some first exposure to programing
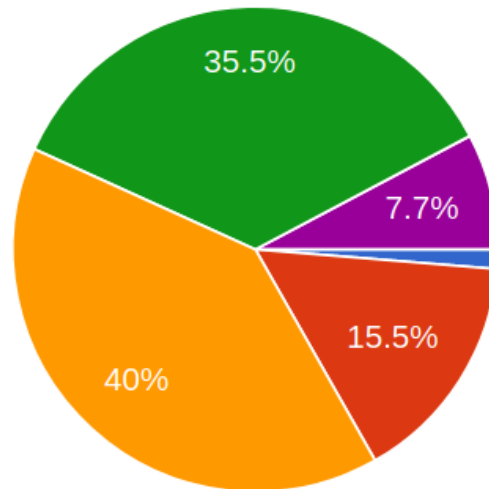
Who has registered to the BHS ?

Have you written a program before ?

155 responses

Which best fits your experience with statistical analysis

155 responses

Legend:
- 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
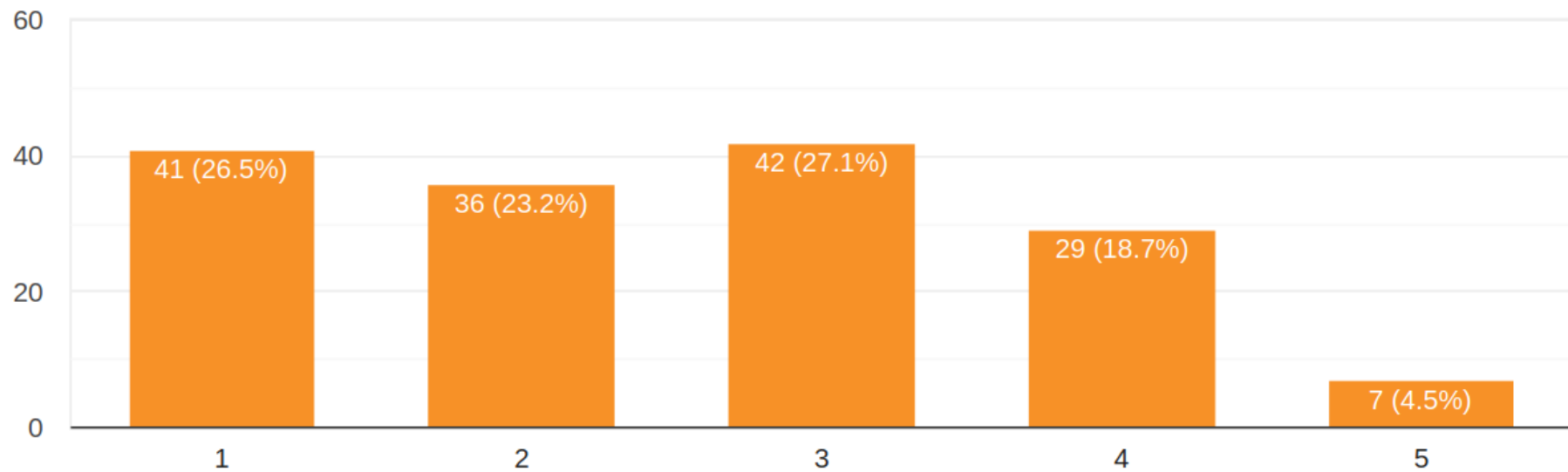
Pie chart values: 35.5%, 7.7%, 15.5%, 40%
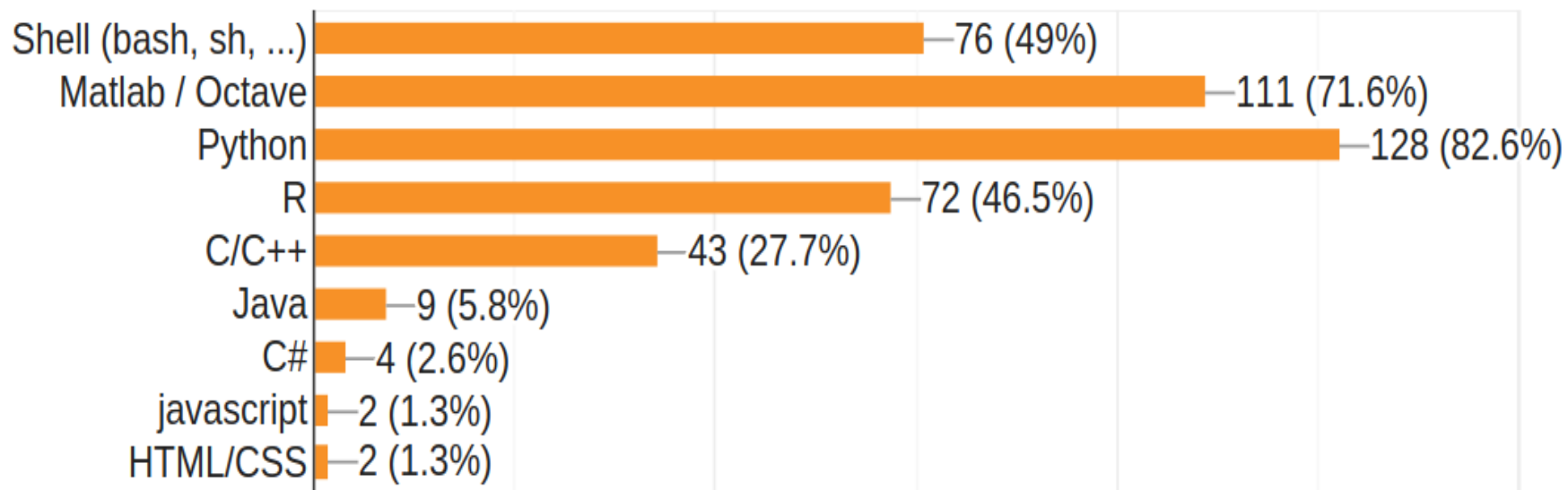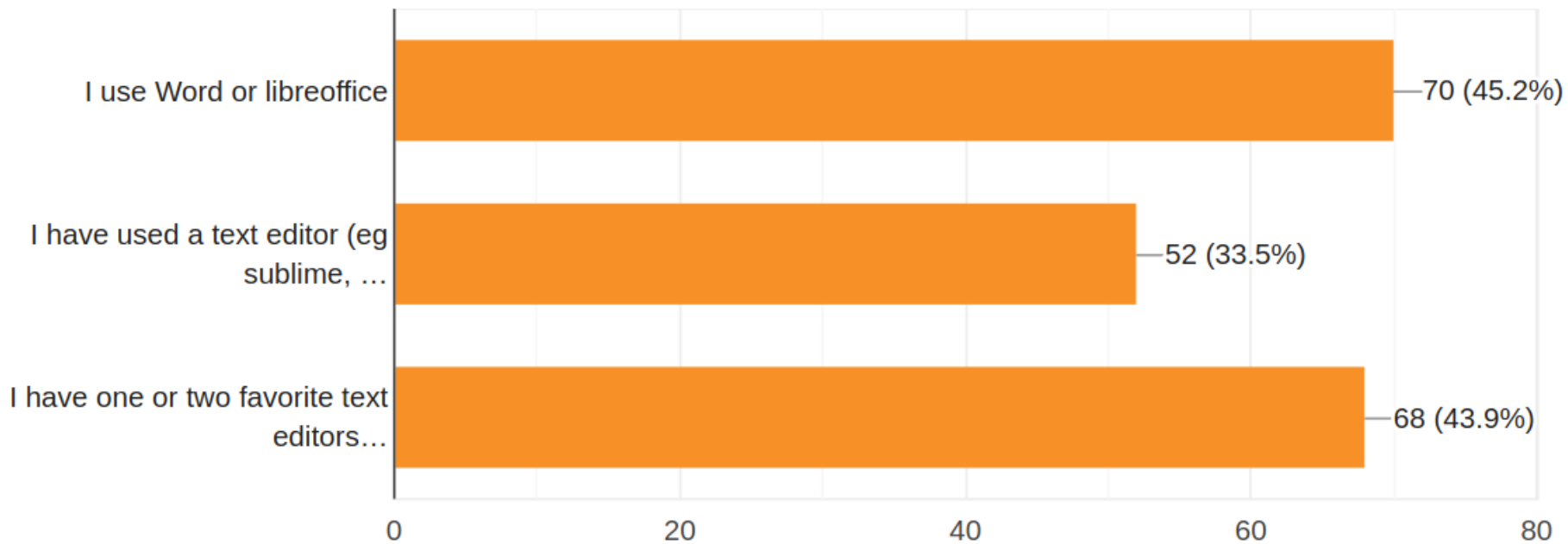
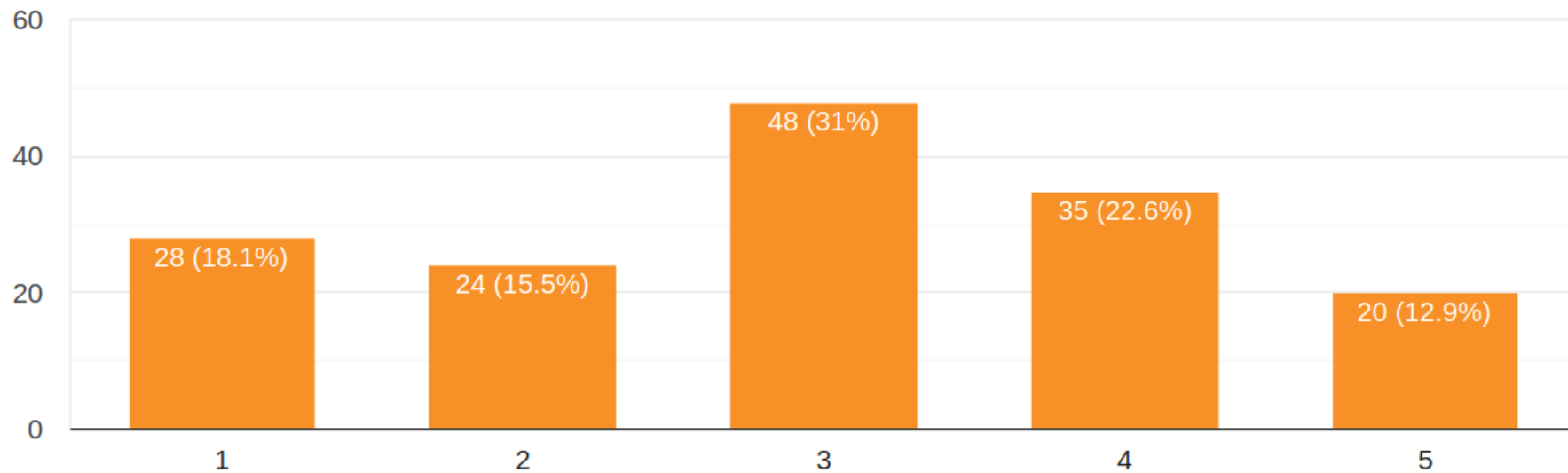# Please rate your experience working with Git/Github.

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

- Tools for writing better programs — 58 (37.4%)
- How to analyse data — 94 (60.6%)
- Python — 49 (31.6%)
- Visualization techniques — 77 (49.7%)
- Machine learning techniques — 102 (65.8%)
- Deep learning — 62 (40%)
- Container technologies — 23 (14.8%)
- How to organize my projects and code — 52 (33.5%)
- Git and Github — 24 (15.5%)
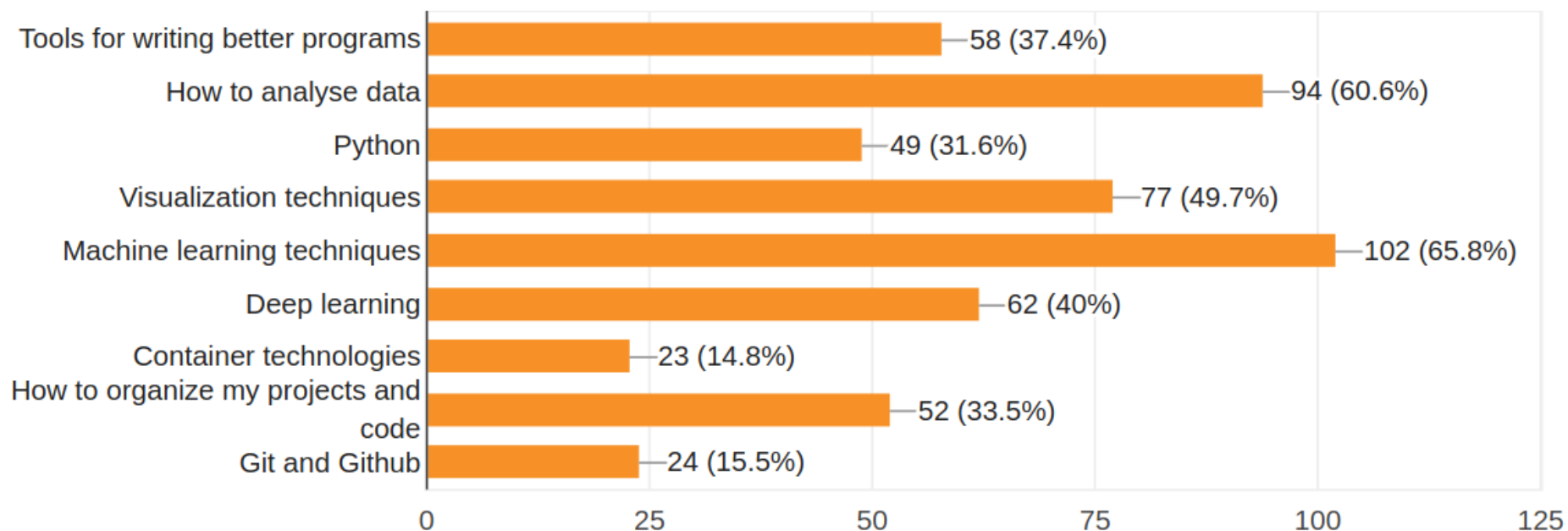
Remarks on the schedule

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

14

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

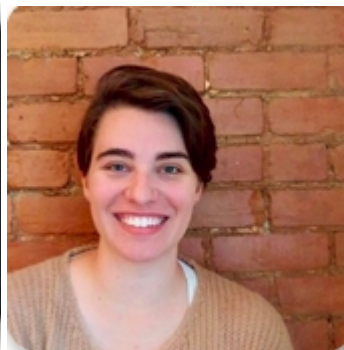|	
09:00 - 10:30	Fundamentals of deep learning in neuroscience (Instructor: Blake Richards)
10:30 - 12:00	Applications of deep learning in neuroscience (Instructor: Jakub Kaczmarzyk)
12:00 - 13:00	Lunch
13:00 - 14:00	Epistemology and lessons from the past (Instructor: J.B. Poline)
14:00 - 15:00	Review 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 923-1709-1379 and passwords sent on slack #schedule
    - zoom bombing...
    - How to ask questions ?
        - On the current / past presentation : zoom chat
        - Other : slack general channel
    - Zoom breakout rooms

- Material on OSF : https://osf.io/3kvzu/

Assessments

- Questions should be
- Quizz on Tuesday and Friday
- A few hour project (will be given to you on Friday) to send me back by May 31
  - Instruction will be sent.

- You have awesome teachers and instructors

Data Science

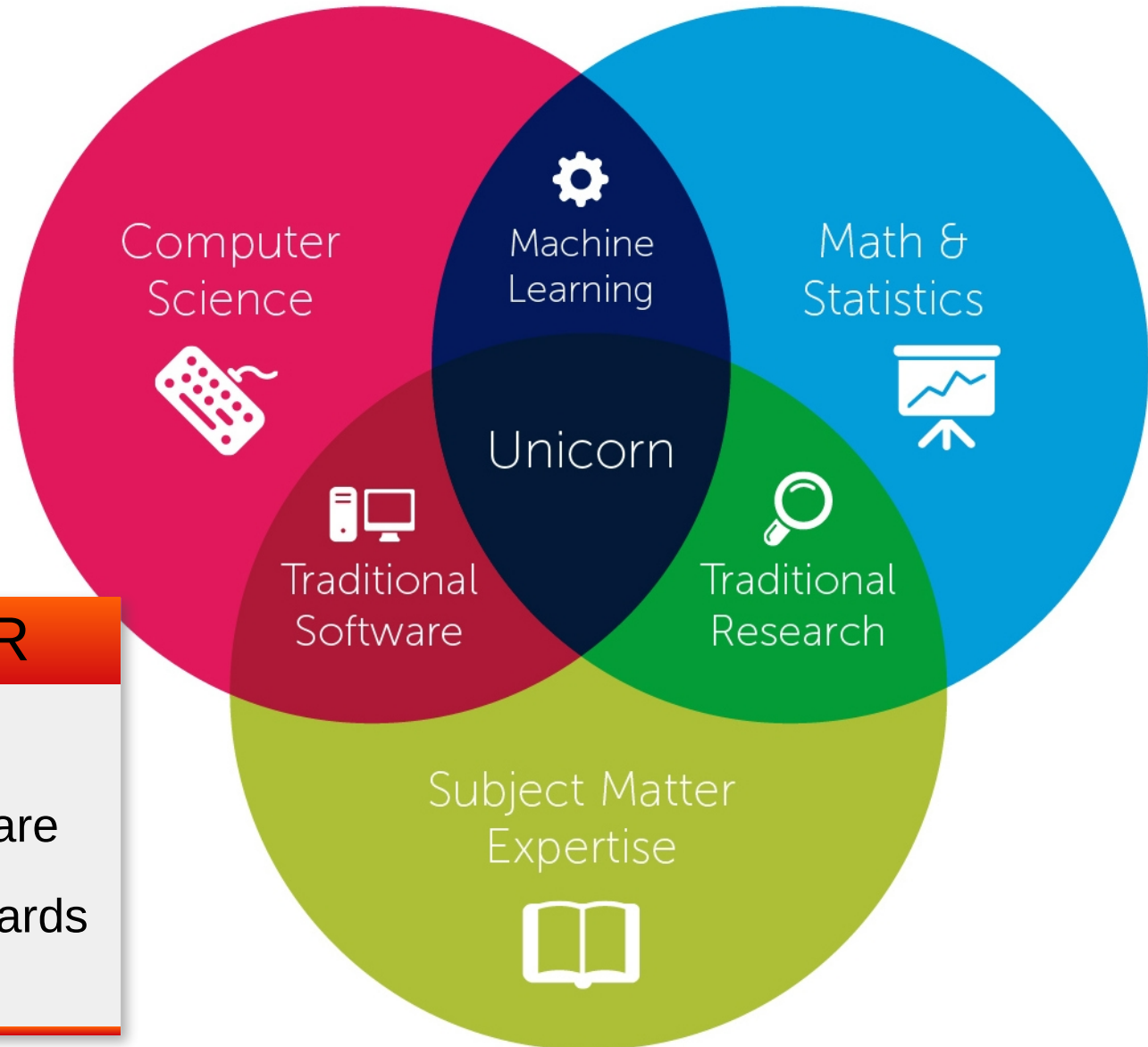Computer Science

Machine Learning

Math & Statistics

Unicorn

Traditional Software

Traditional Research

Subject Matter Expertise

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

FAIR

Data

Software

Standards reuse

Research

Science and Technology