NEURO DATA ANALYSIS IN PYTHON

(NEU 365P)

Prof. Alexander Huth

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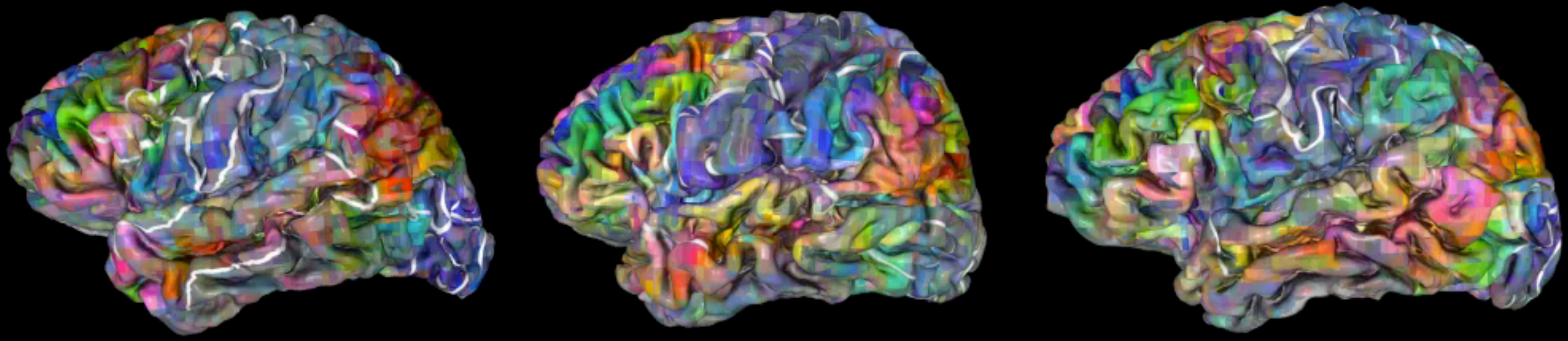
NEURO DATA ANALYSIS IN PYTHON



SYLLABUS

* The syllabus appears as README.md on the course github site https://github.com/alexhuth/ndap-fa2020

* You can also find the syllabus on Canvas

FORMAT

* We will meet MWF 11am-12pm

* Meetings will be a combination of:

  * Lectures

  * Demonstrations (you watch me try to write flawless code live)

  * Labs (your turn!)

FORMAT

* Slides will be posted on the course github page before class begins

* For demos and labs the relevant code will also be posted on github prior to class

* https://github.com/alexhuth/ndap-fa2020

ZOOM ETIQUETTE

* Every lecture will be recorded & posted on canvas for those who can’t attend

* Please keep yourselves on *Audio Mute* 🔇 unless you intend to speak

  * You can share video or not, up to you

* If you want to ask or answer a question, please use the “Raise Hand” button ✋

GRADED MATERIAL

* 6 homeworks (60% of grade)

* take-home final exam (30% of grade)

* class participation (10% of grade)

GRADED MATERIAL

* Re: class participation

* If you regularly won’t be able to attend synchronous class meetings, please email me and we can work something out

NECESSITIES

* For this class, *you will need frequent access to a computer that can run Python*

  * This computer need not be fast or new

    * But it will need to run a standard OS (MacOS, Windows, or Linux), *not* a mobile OS (Android, iOS)

* Please email me if this is an issue for you, and we will find a solution!

PROFESSOR

* Me! Alex Huth

* Office hours: MW 1:30-3:00pm @ zoom

  * *(may change, stay posted)*

TA

* Ria Paul

* Office hours: TBD @ zoom

OTHER MATERIALS

* Two **free** (!) books

  * https://www.inferentialthinking.com/

  * https://jakevdp.github.io/PythonDataScienceHandbook/

BACKGROUND

* What do you need to know for this class?
  (not that much don't worry about it)

TOPICS

* What are you going to learn in this class?

* My goal is to supply you with a basic toolkit for computationally analyzing neuroscience data

* *(A lot of these tools also work for non-neuroscience data)*

TOPICS

* What are you going to learn in this class?

  * Python *(numpy, matplotlib, etc.)*

  * Statistical methods *(bootstraps)*

  * Data visualization

  * Timeseries analysis (*spectrogram, filtering*)

  * (Un/)Supervised learning methods
    (regression, clustering, etc.)

TOPICS

* And you'll be using these tools to analyze neuroscience data such as

  * Spiking neural data

  * fMRI data

  * (*maybe*) EEG data

THAT’S ALL!