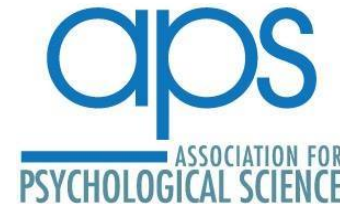




APS Workshop: Introduction to Python
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Experiment Creation

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Relevant Packages

- **psychopy**
- pyserial
- pyparallel
- pyopengl
- pyglet
- moviepy
- pillow

PsychoPy

- Originally created by Jon Pierce
- Initiated as a python replacement for Psychtoolbox
 - But it has grown in to much, much more
- It is recommended to install the Psychopy **standalone** alongside any data-centric python installation you might have (e.g., Anaconda)
- The standalone version of PsychoPy includes...
 - Python (2.x or, as of April 2018, 3.x)
 - PsychoPy
 - all the other packages required by PsychoPy

PsychoPy

- Coder
 - Coder is PsychoPy's IDE (like Spyder)
 - Provides already-written demos and examples
- Builder
 - No programming required
 - Experiments are built using a graphical interface
 - Demos/examples already built
- Can also use PsychoPy as a regular package within python (2.x or 3.x)

PsychoPy

- Running PsychoPy (using the shortcut created during installation) should get this...

Builder

- Routines
 - Describe timing of stimuli, instructions, responses, etc.
 - A set of events that will always occur together in a fixed order
- Flow
 - Control the way in which the Routines are combined, repeated, and controlled
 - Like a flowchart

Builder

Let's use Builder to **build** some experiments!

Shooter Task – Builder Version

Specification:

- Show a page of instructions
- Run 10 trials :
 - Show an image
 - Collect a response
 - Show a blank screen (ITI)
- Tell the subject that they're done

Shooter Task – Experiment Settings

- File->New
- Experiment Settings (blue button to the right of Monitor Center button)
 - Full-screen window: unchecked
 - Window size (pixels): [900,900]
 - Can leave the rest as they are

Shooter Task – Instructions

- Experiment->New Routine(Shift+Ctrl+N)
 - Name: instructions
- Click on the Text component button (to the right)
 - name: instructText
 - duration: leave blank
 - color: black
 - text: Whatever you want your instructions to say, but ask for a keypress
- Click on the Keyboard component button (to the right)
 - name: instructResp
 - allowedKeys: leave blank
 - store: nothing
 - forceEndTrial: checked
 - storeResponseTime: unchecked

Shooter Task – ITI

- Experiment->New Routine(Shift+Ctrl+N)
 - Name: ITI
- Click on the Text component button (to the right)
 - name: itiText
 - duration: 0.5
 - text: leave blank

Shooter Task – End of Task

- Experiment->New Routine
 - Name: thanks
- Click on the Text component button (to the right)
 - name: thanksText
 - duration: 10.0
 - color: black
 - text: Whatever you want your instructions to say, but ask for a keypress
- Click on the Keyboard component button (to the right)
 - name: thanksResp
 - allowedKeys: leave blank
 - store: nothing
 - forceEndTrial: checked
 - duration: 10.0
 - storeResponseTime: unchecked

Shooter Task – Trials

- Experiment->New Routine
 - Name: trial
- Click on the Image component button (to the right)
 - name: trialImg
 - duration: 1.0
 - image: leave blank for now (will change later)
- Click on the Keyboard component button (to the right)
 - name: trialResp
 - allowedKeys: ['1', '2']
 - store: last key
 - storeCorrect: checked
 - correctAns: leave blank for now (will change later)
 - forceEndTrial: checked
 - duration: 2.0
 - storeResponseTime: checked

Shooter Task – Flow

- Insert Routine
 - Select “instructions”
 - Click to the left of “trial”
- Insert Routine
 - Select “thanks”
 - Click to the right of “trial”
- Insert Loop
 - name: trials
 - loopType: random
 - nReps: 1
 - trialListFile: trials.csv

trials.csv

- Comma-delimited text file containing:

img,correctAns

./images/zaba011.jpg,black

./images/zabu02w4.jpg,black

./images/zawa90d3.jpg,white

- First line is the header, telling you what each column is
- Remaining lines describe each trial

trials.csv

- Need to go back and add in the trial info that will change each time through the loop
- In the trial routine, click on the keyboard component we added earlier
 - Change the correctAns to `$thisTrial.correctAns`
- In the trial routine, click on the image component we added earlier
 - Change the image to `$thisTrial.img`
 - Change the dropdown box (to the left of image) to “set every repeat”

Asks for the info associated with the “current” line of the trialLoop.csv file. It’s “`$thisTrial`” because we called our loop “trials”. If we had named the loop “blocks”, we would want “`$thisBlock.correctAns`” instead.

`$thisTrial.correctAns`

Asks for the info from the “correctAns” column of the trialLoop.csv file

`$thisTrial.img`

Same thing here, but now we want to ask for the info from the “img” column.

Coder

Let's use Coder to **build** that same experiment!

Take-homes

- You've now seen an **experiment created** in psychopy (twice!)
 - Builder
 - Code
- You've seen some of the functionality that **psychopy** provides
 - Window creation and management
 - Stimulus creation and manipulation
 - Response collection
 - Timing
 - Much more (other peripherals, logging, staircasing, etc.)
- **Online experiments** are coming to psychopy (stay tuned!)

Outline

1. Overview
2. Ways of using Python
3. Python basics
4. Data set overview
5. Data wrangling
6. Statistics
7. Plotting
8. Experiment creation

The End(ish)

- Materials available
 - github.com/cluhmann/python-psych-workshop
- Thank you
- Questions?
 - Feel free to harass me at APS or contact me later on
 - christian.luhmann@stonybrook.edu



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