

Elaboração de Experimentos: Experimentação Online

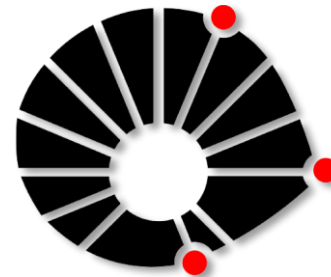
Thiago Oliveira da Motta Sampaio
(UNICAMP)



PsychoPy

Psychology software in Python

© Jonathan Peirce. Free software (GNU GPL3+)



LAPROS
UNICAMP

SOFTWARE

(Text editor, spreadsheets, image editor, audio player, etc)

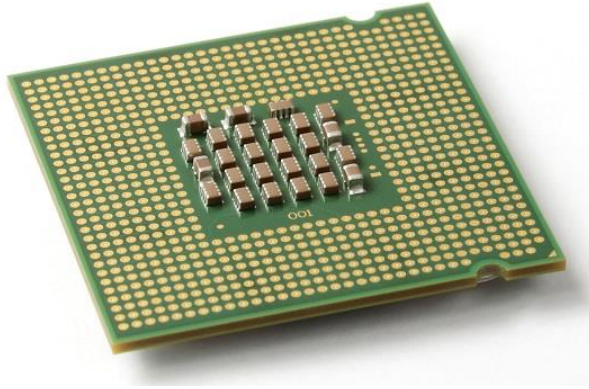
KERNEL

(system nucleus, operating the communication between software and hardware)

PROCESSOR

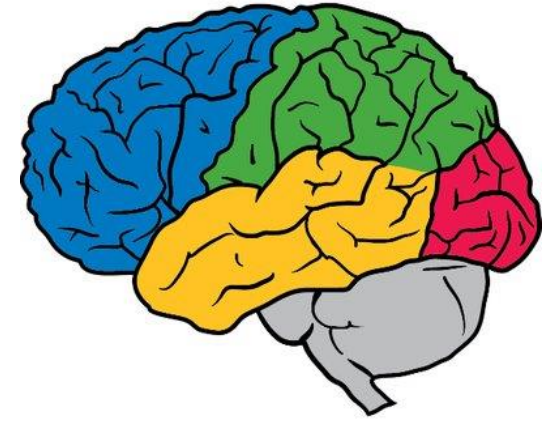
MEMORY

DEVICES



Binary
(Machine Code)

H	=	01001000
e	=	01100101
l	=	01101100
l	=	01101100
o	=	01101111
,	=	00101100
	=	00100000
w	=	01110111
o	=	01100111
r	=	01110010
l	=	01101100
d	=	01100100



Low-level
Programming Languages

High-Level
Programming Languages



Assembly

```

LEA    MESSAGE, A1
MOVE.B #14, D0
TRAP   #15

MOVE.B #9, D0
TRAP   #15

CR     EQU    $OD
LF     EQU    $OA
MESSAGE DC.B 'HELLO WORLD',

```

C

```

main()

{
    printf("hello, world\n");
}

```

Python

```
>>> print "hello world"
```

**A escolha de software e hardware na psicolinguística:
revisão e opinião**

***The choice of software and hardware in psycholinguistics:
review and opinion***

Thiago Oliveira da Motta Sampaio

Language Acquisition, Processing and Syntax Lab - LAPROS

Universidade Estadual de Campinas, Campinas, São Paulo / Brasil

thiagomotta@iel.unicamp.br

Uma linguagem é um software que nos permite criar, de forma lógica, uma sequência de passos/funções chamada ‘algoritmo’. Este algoritmo será lido e executado pela máquina, esta, que só entende binários.

Para que estas instruções sejam compreendidas pelo hardware, a linguagem precisa ser ‘**compilada**’, traduzida para a linguagem de máquina (ex. C e C++), ou ser ‘**interpretada**’, transformando suas linhas em um código binário (*byte code*) que será interpretado por uma máquina virtual (ex. Java e Python).

Programação - Proprietários

Matlab: \$\$\$\$\$\$? (PsychToolbox 3)

www.matworks.com

Presentation: U\$ 275 ou U\$ 100 se estudante

www.neurobs.com

```
%%
fRate = FrameRate([0]);
%
dur = 200; % ms
dur_f = fix(dur*fRate/1000); % frames
ITI_ms = [500,1000];

%% TRIALS
vlist = {'abafar','abaixar','abalar','abandar','abandonar','abastecer','abater','abrir',
tempos = {'1: INSTANTE','2: SEGUNDOS','3: MINUTOS','4: HORAS','5: DIAS+'};
emotion = {'1: BOM', '2: NEUTRO', '3: RUIM', ' '};

%%
nV = length(vlist); % total # of verbs
nB = 1; % total # of blocks
ITI = fix(ITI_ms*fRate/1000); % range of ISI and ITI
```

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```

Programação - Livres

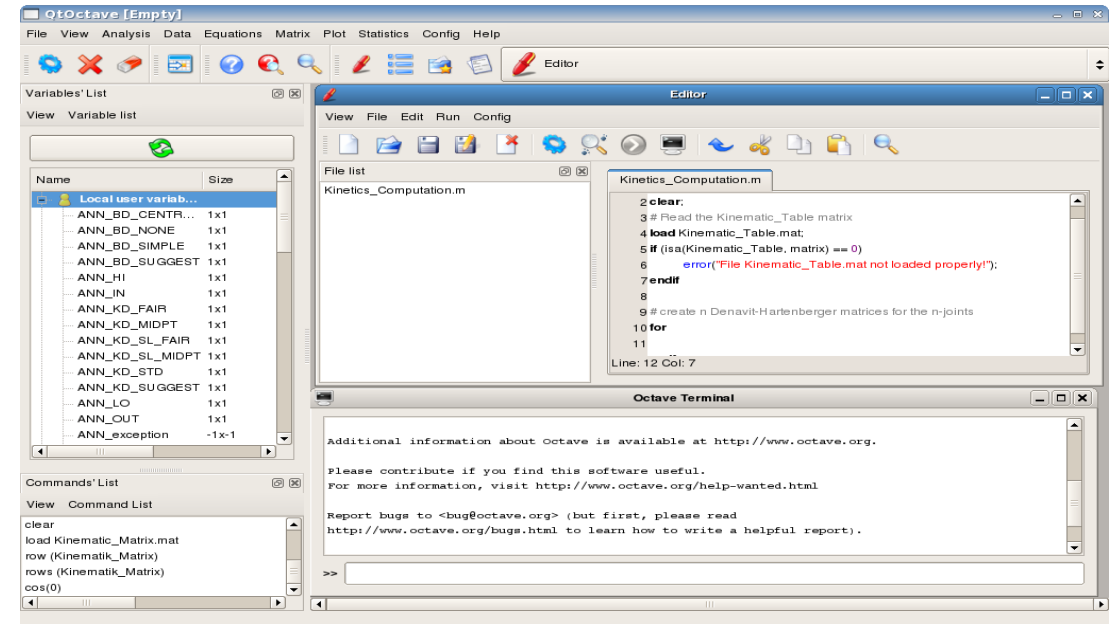
GNU Octave (Psychtoolbox 3)

<https://www.gnu.org/software/octave/>

Python

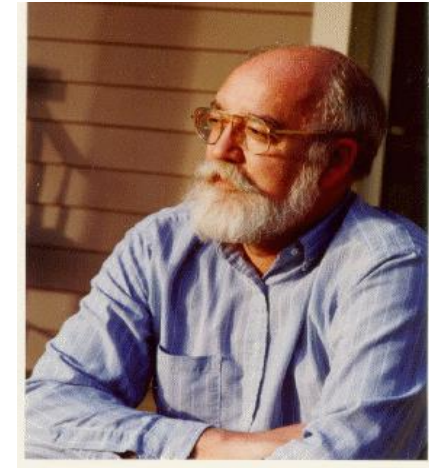
<https://www.python.org/>

+ C, C#, C++, DMDX, PEBL.....



RodRego

The screenshot shows the RodRego Register Machine Simulator interface. On the left, there are ten registers labeled 0 through 9. Each register contains a row of ten red dots representing bits. To the right of each row are two buttons: a '+' button for incrementing and a '-' button for decrementing. The registers contain the following values: 0 (0000000000), 1 (0000000001), 2 (0000000010), 3 (0000000011), 4 (0000000100), 5 (0000000101), 6 (0000000110), 7 (0000000111), 8 (0000001000), and 9 (0000001001). In the center is a large white text area with the placeholder text "Type Commands Here...". To the right of this area are two small icons: an information icon (i) and a settings icon (gear). At the bottom of the interface are three buttons: "Play", "Reset", and "Step".



RodRego (Dan Dennett) Register Machine Simulator

<http://proto.atech.tufts.edu/RodRego/>

Builders - Proprietários

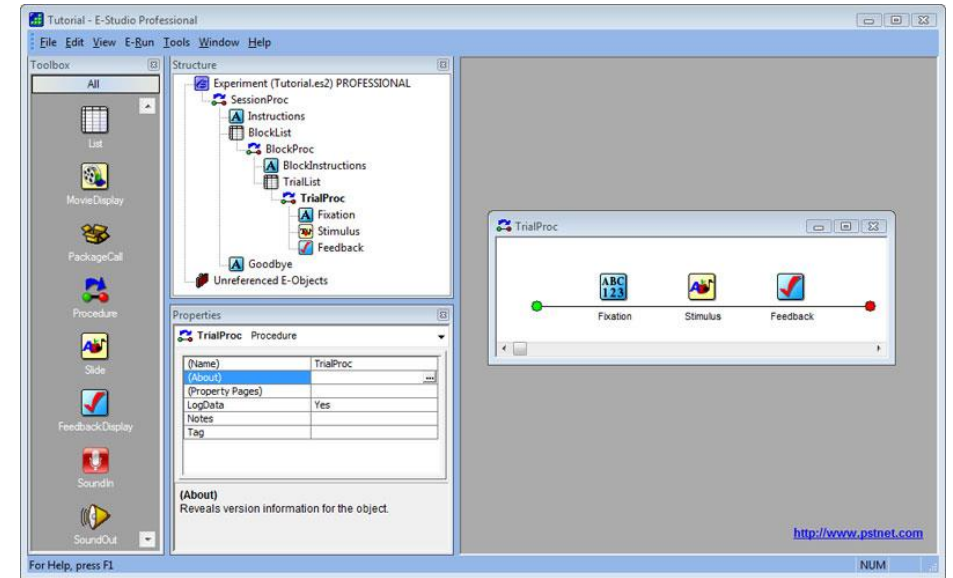
E-Prime: U\$ 1200

<https://pstnet.com>

Paradigm: U\$ 700 ou U\$ 70 (2 anos) se estudante

<http://paradigmexperiments.com>

+ Superlab, Experiment Builder, Tobii Studio etc....



Builders - Proprietários

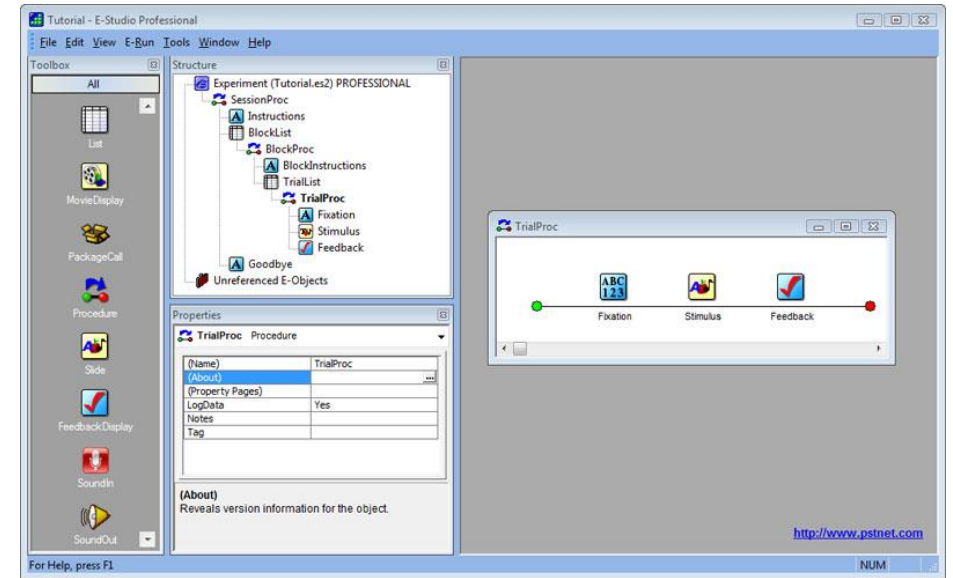
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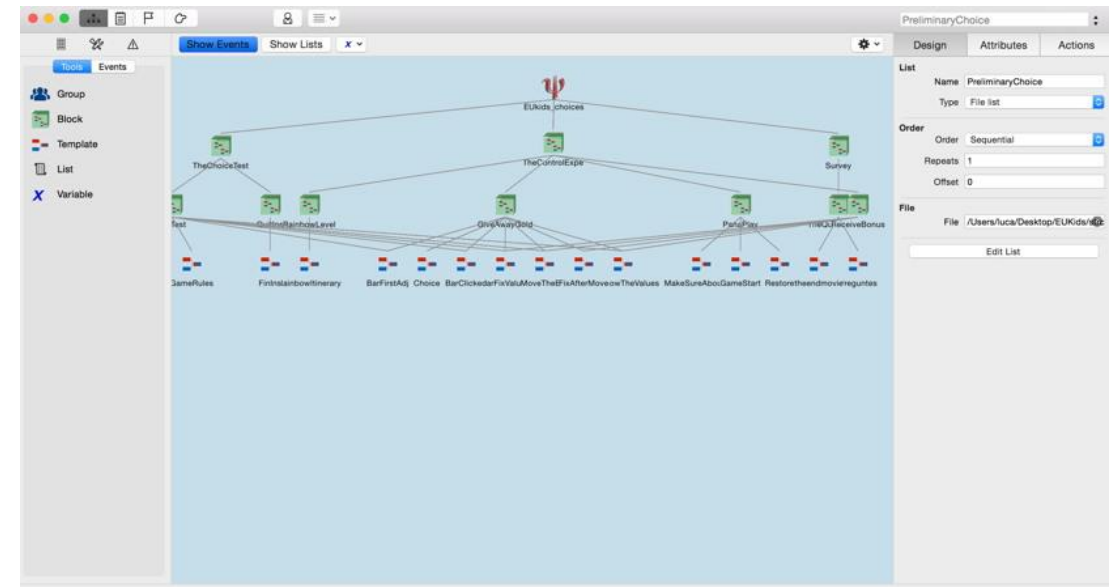
Builders - Livres

PsyScope B77 / New PsyScope (Beta) – Mac

<http://psy.ck.sissa.it>

Open Sesame - Multiplataforma

<https://osdoc.cogsci.nl/>





www.psychopy.org

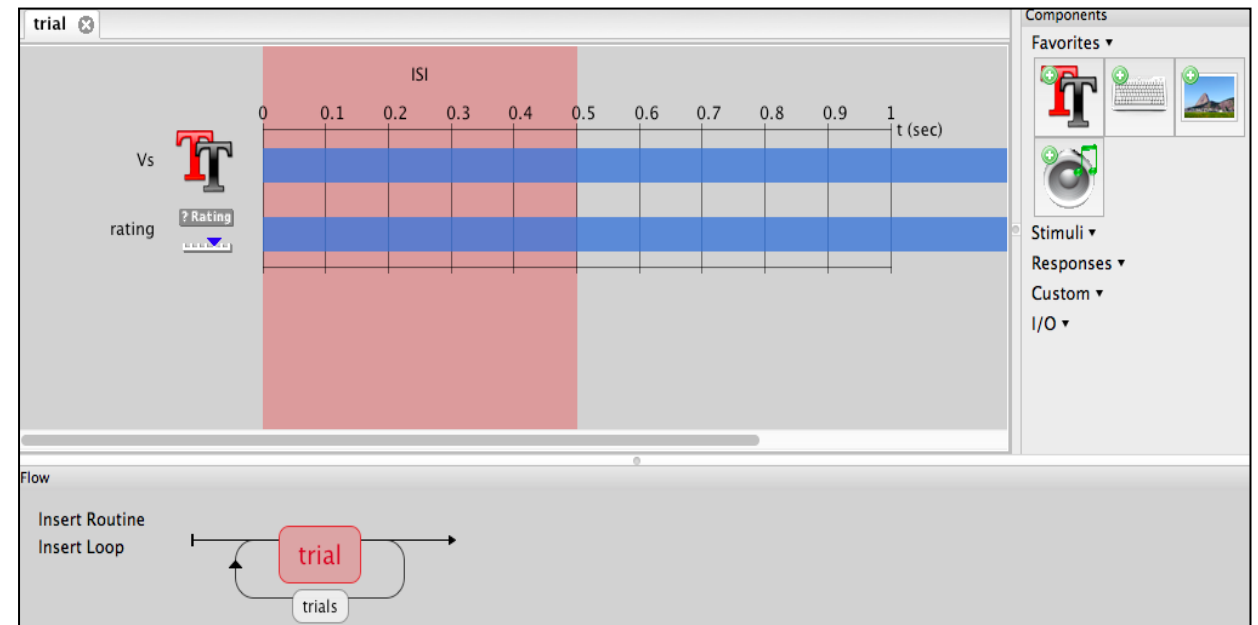


<https://discourse.psychopy.org/>



www.raspberrypi.org

- O Projeto iniciou em 2003 e passou a ser completamente multiplataforma em 2009
- Toolbox livre para Python
- Por ser aberto, é constantemente atualizado
- Por ser um projeto e livre, é difícil dar suporte a todos os hardwares e ainda tem bugs!!!



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(Text editor, spreadsheets, image editor, audio player, etc)

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PROCESSOR

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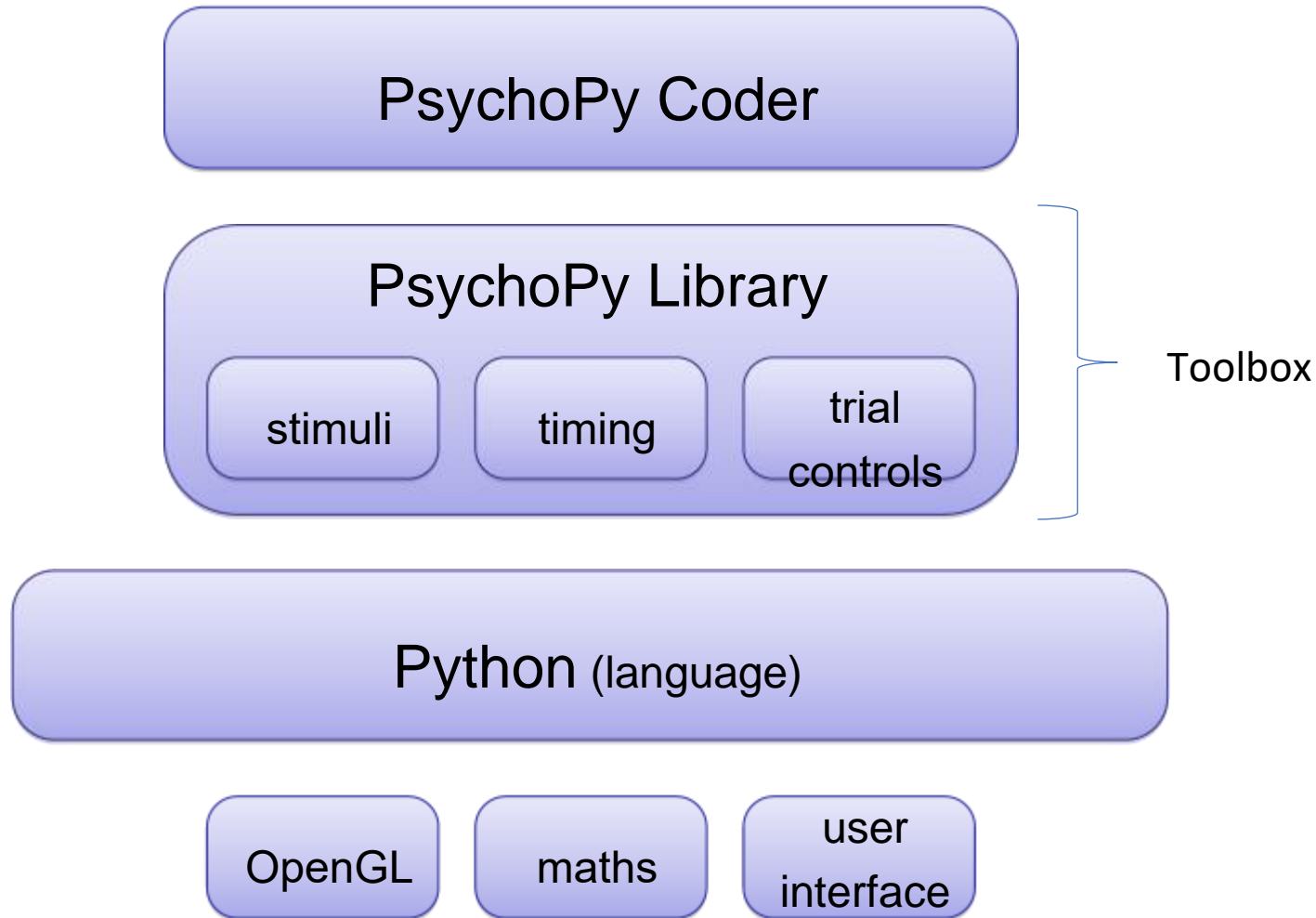
Arquitetura

Para dar cara de aplicação
(não apenas um conjunto de funções)

Semelhante a uma
toolbox para Matlab

Interface de Programação

Low-level libraries



Arquitetura

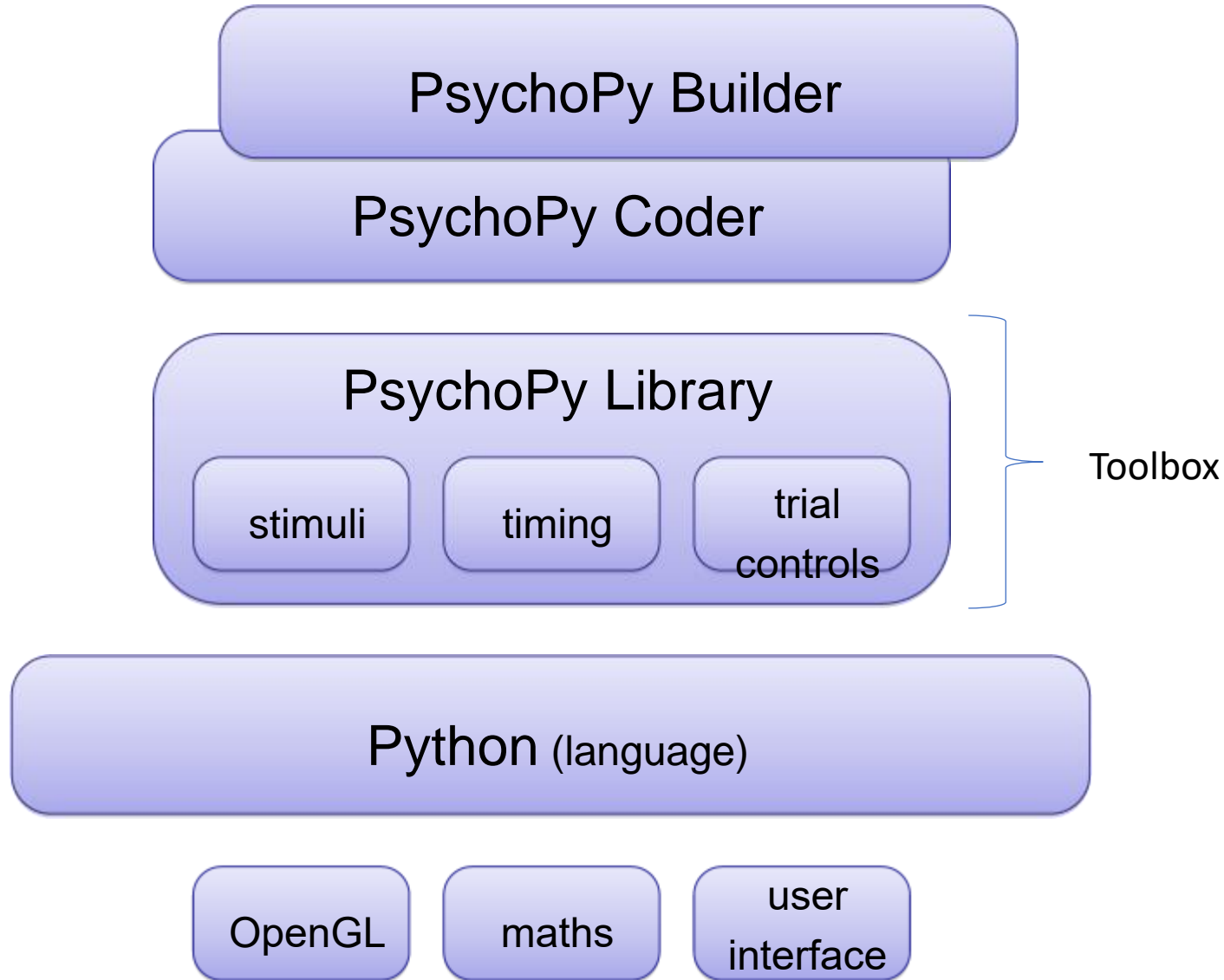
Para facilitar o uso de não programadores

Para dar cara de aplicação
(não apenas um conjunto de funções)

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toolbox para Matlab

Interface de Programação

Low-level libraries

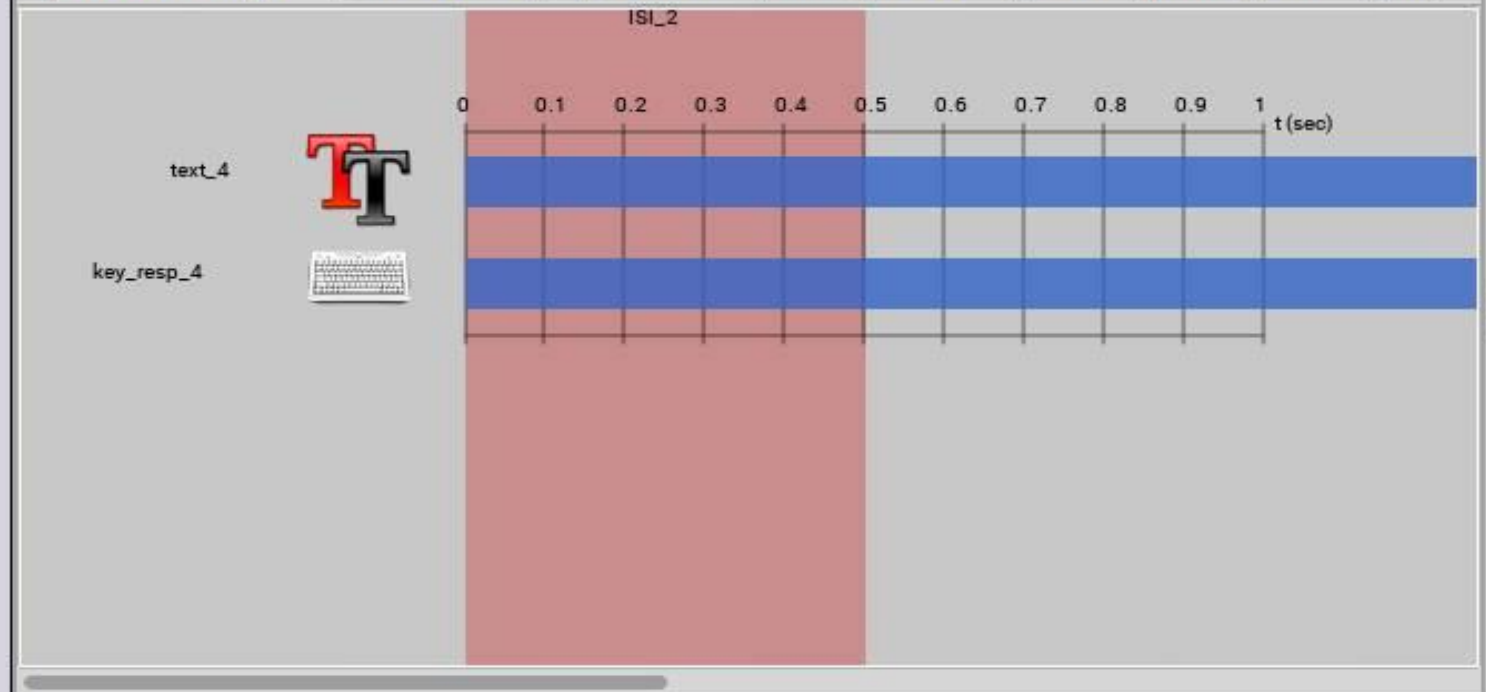


MentalRot.psyexp - PsychoPy Builder

File Edit Tools View Experiment Demos Help



Instructions_1 | Instructions_2 | Practice | Trial | licence | pause | pause_start | plot



Components

Favorites ▾

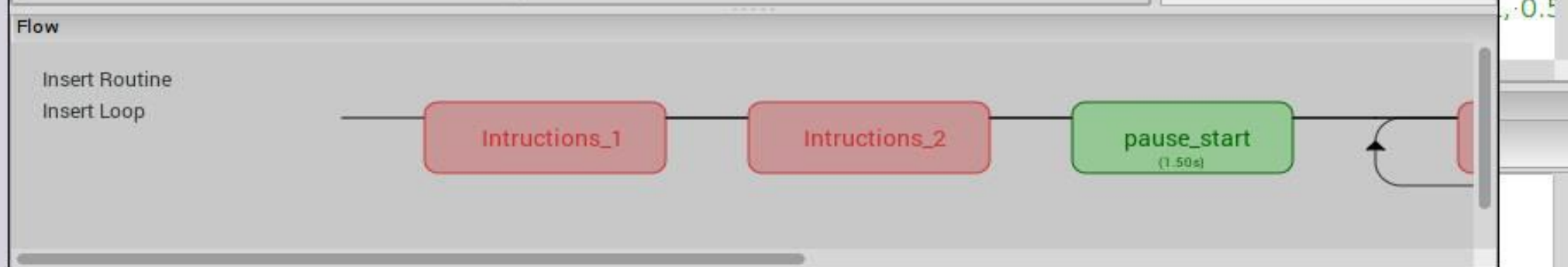


Stimuli ▾

Responses ▾

Custom ▾

I/O ▾



“Achatamento” de valores

Valores incrementais como posições na tela **[x,y]** cores no sistema RGB que variam de **[0,0,0 = preto]** até **[256,256,256 = branco]**, são “achatados” no PsychoPy para caberem entre **[-1,-1,-1 - preto]** e **[1,1,1 - branco]**.

ANEXO: Endereço das ferramentas computacionais citadas no texto

a) Multiplataforma Livre:

C: www.open-std.org/jtc1/sc22/wg14

ExPyrimint: www.expyrimint.org

JATOS: www.jatos.org

Java: www.java.com

JsPsych: <http://www.jspsych.org>

Julia: julialang.org

Open Sesame: osdoc.cogsci.nl

Octave: www.gnu.org/software/octave

PEBL: pebl.sourceforge.net

PsyToolkit: www.psychtoolbox.org

* PsychJava: psychjava.com

PsychoPy: psychopy.org

Psychtoolbox 3 (p/ Matlab e Octave): psychtoolbox.org

PsyPad: www.psympad.net.au

PyGame: pygame.org

Python: www.python.org

R-Project: www.r-project.org

Scilab: www.scilab.org

VisionEgg: visionegg.org

b) Multiplataforma Proprietário:

Matlab: www.mathworks.com

SuperLab: www.cedrus.com/superlab

c) MacOS X, Livre:

Psyscope: psy.ck.sissa.it

d) Windows, Proprietários:

E-Prime: www.pstnet.com/eprime.cfm

Paradigm: paradigmexperiments.com

Presentation: www.neurobs.com

e) RaspberryPi: www.raspberrypi.org

Revista de Estudos da Linguagem, Belo Horizonte, v.25, n.3, p. 971-1010, 2017

The choice of software and hardware in psycholinguistics: review and opinion

A escolha de software e hardware na psicolinguística: revisão e opinião

Thiago Oliveira da Motta Sampaio

Language Acquisition, Processing and Syntax Lab – LAPROS

Universidade Estadual de Campinas, Campinas, São Paulo / Brasil

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Resumo: Nos últimos anos, diversos *softwares* foram criados para auxiliar a elaboração de experimentos em ciências cognitivas. A oferta de *softwares* de simples utilização deveria facilitar o trabalho dos iniciantes, porém, acabou trazendo novos problemas e dúvidas. Que *software* usar?

Experimentação Online

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A escolha de software e hardware na psicolinguística: revisão e opinião

Estas linguagens também possuem suas toolboxes, facilitando bastante a tarefa de elaboração de testes psicofísicos na web. Uma toolbox bem recente é o *jsPsych* (DE LEEUW, 2014), para *JavaScript*. O *jsPsych* disponibiliza alguns modelos que podem ser reutilizados para outros tipos de testes, o que facilita bastante o seu uso. Aqueles que já trabalharam com *JavaScript*, *CSS* e *HTML5*, linguagens desenvolvidas para criação de páginas web, provavelmente terão facilidade em desenvolver experimentos com esta toolbox. Outra toolbox com o mesmo objetivo e utilizando a mesma linguagem é o *JATOS* (*Just Another Tool for Online Studies*), de Lange, Kühn & Filevich (2015).

No que diz respeito aos tempos de reação, De Leeuw & Moritz (2015) realizaram uma bateria de testes comparando o desempenho do *jsPsych* com o *PsychToolbox 3* e advogam a favor da utilização de *JavaScript* inclusive para testes cronométricos. Já Reimers & Steward (2014) comparam testes em *JavaScript* em *Flash*. Os autores argumentam que ambos podem ser ferramentas úteis para experimentação psicofísica. Nos últimos anos, porém, o *Flash* vem sendo excluído de ambiente web, o que me faz acreditar que, mesmo que ainda seja uma ferramenta útil, é possível que, em breve, testes escritos em *Flash* deixem de ser viáveis. De qualquer forma, o *Flash* gera arquivos bastante pesados em relação aos outros softwares, o que pode comprometer o desempenho em máquinas mais antigas e menos potentes.

PLOS ONE



[PLOS One](#). 2019; 14(9): e0221802.

PMCID: PMC6726137

Published online 2019 Sep 4. doi: [10.1371/journal.pone.0221802](https://doi.org/10.1371/journal.pone.0221802)

PMID: [31483826](https://pubmed.ncbi.nlm.nih.gov/31483826/)

Testing the effectiveness of the Internet-based instrument PsyToolkit: A comparison between web-based (PsyToolkit) and lab-based (E-Prime 3.0) measurements of response choice and response time in a complex psycholinguistic task

[Jonathan Kim](#), Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft,^{1,*} [Ute Gabriel](#), Conceptualization, Methodology, Supervision, Writing – review & editing,^{#1} and [Pascal Gyga](#), Conceptualization, Methodology, Supervision, Writing – review & editing^{#2}

code Properties

Nam code

Code

Auto->JS

Begin Experiment Begin Routine Each Frame End Routine End Experiment

```
win = visual.Window(
    size=(1024, 768), fullscr=True, screen=0,
    winType='pyglet', allowGUI=False, allowStencil=False,
    monitor='testMonitor', color=[0,0,0], colorSpace='rgb',
    blendMode='avg', useFBO=True,
    units='height')
# store frame rate of monitor if we can measure it
expInfo['frameRate'] = win.getActualFrameRate()
if expInfo['frameRate'] != None:
    frameDur = 1.0 / round(expInfo['frameRate'])
else:
    frameDur = 1.0 / 60.0
```

```
win = new visual.Window({"size": [1024, 768], "fullscr": true
expInfo["frameRate"] = win.getActualFrameRate();
if ((expInfo["frameRate"] !== null)) {
    frameDur = (1.0 / round(expInfo["frameRate"]));
} else {
    frameDur = (1.0 / 60.0);
}
```

PsychoJS

PsychoJS is a JavaScript library that makes it possible to run neuroscience, psychology, and psychophysics experiments in a browser. It is the online counterpart of the [PsychoPy](#) Python library. It is also a git submodule: [psychopy/psychojs](#)

Motivation

Many studies in behavioural sciences (e.g. psychology, neuroscience, linguistics or mental health) use computers to present stimuli and record responses in a precise manner. These studies are still typically conducted on small numbers of people in laboratory environments equipped with dedicated hardware.

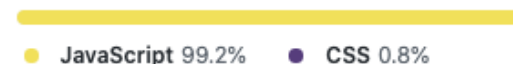
With high-speed broadband, improved web technologies and smart devices everywhere, studies can now go online without sacrificing too much temporal precision. This is a “game changer”. Data can be collected on larger, more varied, international populations. We can study people in environments they do not find intimidating. Experiments can be run multiple times per day, without data collection becoming impractical.

The idea behind PsychoJS is to make PsychoPy experiments available online, from a web page, so participants can run them on any device equipped with a web browser such as desktops, laptops, or tablets. In some circumstance, they can even use their phone!

Getting Started

Running PsychoPy experiments online requires the generation of an index.html file and of a javascript file that contains the code describing the experiment. Those files need to be hosted on a web server to which participants will point their browser in order to run the experiment. The server will also need to host the PsychoJS library.

Languages





jsPsych

Introduction

Tutorials ^

The Basics: Hello World

Demo Experiment: Simple
Reaction Time Task

Overview v

Core Library API ^

jsPsych

jsPsych.data

jsPsych.randomization

jsPsych.turk

jsPsych.pluginAPI

Plugins v

About v



jspsych

jsPsych is a JavaScript library for running behavioral experiments in a web browser. The library provides a flexible framework for building a wide range of laboratory-like experiments that can be



NEW in June 2020
About PsyToolkit
Why use PsyToolkit?
Web based / login
Lessons
FAQ
Library of Experiments
Library of Questionnaires
PsyToolkit on Linux
Contact
Support and donate
Copyright
Social Media/Forum
Search website

PsyToolkit

NEW in June 2020

- The [new beta version 3.1.0](#)
- Lots of [new features](#)
- Various new lessons have recently been added
 - [How to play video clips in experiments](#)
 - [How to have a tickbox list at the beginning of survey to check participants consent](#)
 - [How to elegantly end a survey when people turn out not to be in the target population](#)
 - <https://www.psytoolkit.org/lessons/surveyaudiovideo.html> [How to embed audio/video in surveys (without YouTube and without ads, etc)]

Online research made easy

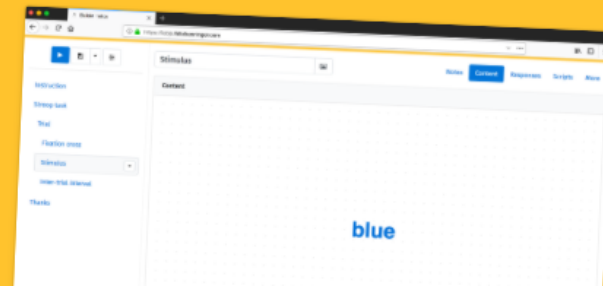
lab.js is a free, open, online study builder
for the behavioral and cognitive sciences.
(it works great in the lab, too)



No code required

lab.js provides a visual interface
so you can see the study as you build it.

Thanks to our ready-made templates,



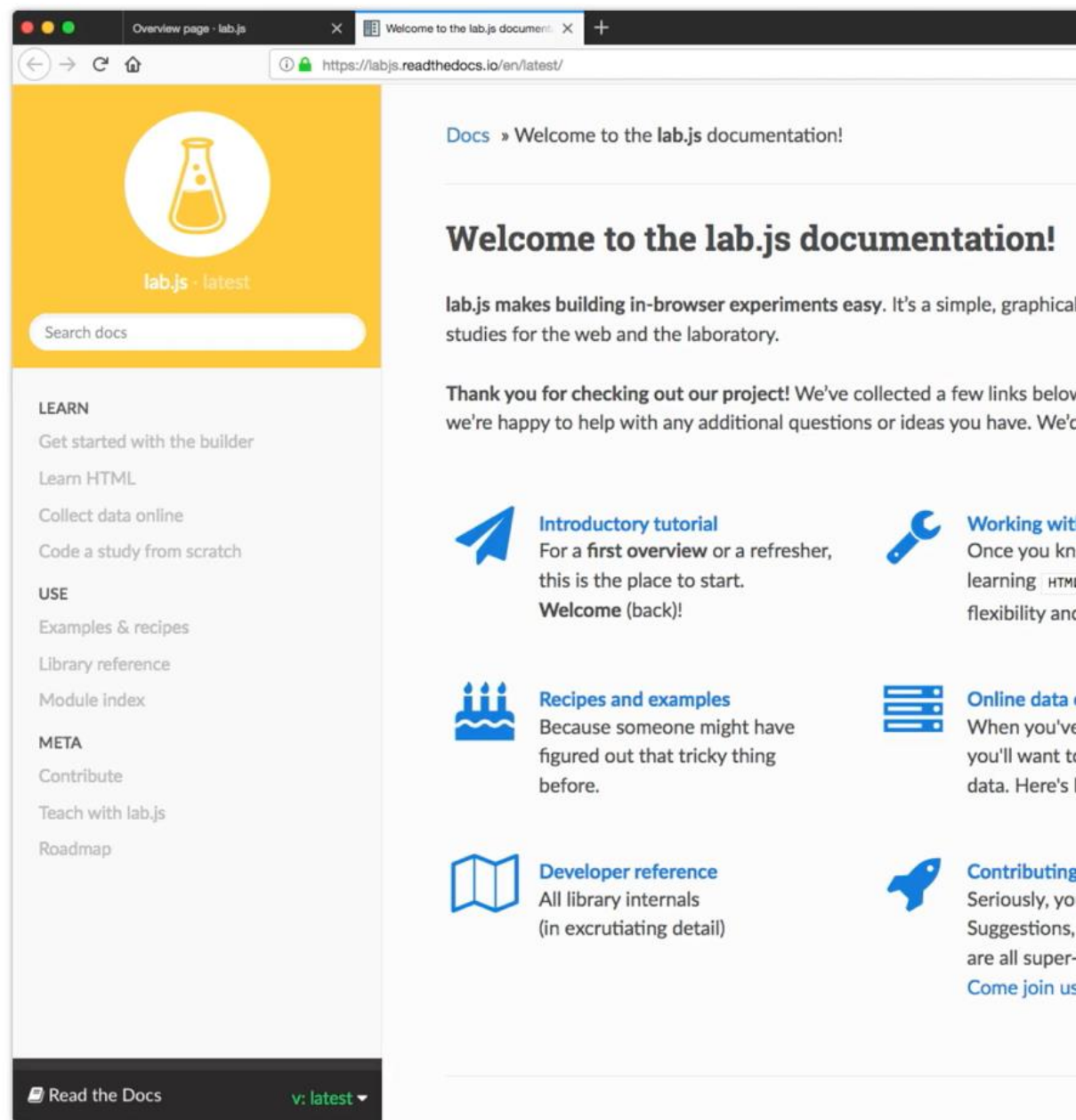
Where to find help

- **Online documentation**

<https://labjs.readthedocs.io>

- **Slack chat room**

Please follow **support** link on the project homepage



The screenshot shows a web browser window displaying the lab.js documentation page. The browser tabs include "Overview page · lab.js" and "Welcome to the lab.js document...". The address bar shows the URL "https://labjs.readthedocs.io/en/latest/". The page features a yellow header with the lab.js logo (a beaker) and the text "lab.js · latest". Below the header is a search bar labeled "Search docs". The main content area is divided into sections: "LEARN" (Get started with the builder, Learn HTML, Collect data online, Code a study from scratch), "USE" (Examples & recipes, Library reference, Module index), and "META" (Contribute, Teach with lab.js, Roadmap). On the right side, there are several featured links with icons: "Introductory tutorial" (paper plane icon), "Working with..." (wrench icon), "Recipes and examples" (candle icon), "Online data..." (server rack icon), "Developer reference" (book icon), and "Contributing" (rocket icon). The footer includes the "Read the Docs" logo and a version selector set to "v: latest".



PsychoPy³

Now running studies online

PsychoPy3 Builder interface showing a timeline from 0 to 11 seconds. The interface includes a toolbar with icons for file operations and a red box highlighting the 'Run' icon. The 'Components' panel on the right lists 'Favorites', 'Stimuli', 'Responses', 'Custom', and 'I/O'.



Psychopy³

Now running studies online

Psychopy3 Experiment Runner (v2020.1.2)

File	Path
declxical_P.psyexp	/Users/thiagoomsampaio/OneDrive/Orientacoes/Fernando/E
openIAT.psyexp	/Users/thiagoomsampaio/Downloads/openiat-master
inputText.psyexp	/Users/thiagoomsampaio/Downloads/textinput-master
Exp1_P3_pav.psyexp	/Users/thiagoomsampaio/OneDrive/Orientacoes/Lilian/Exper

Alerts (0) ▾

Stdout ▾

```
File
"/Applications/Psychopy3.app/Contents/Resources/lib/python3.6/psychopy/app/b
uilder/builder.py", line 2303, in onPavlovianRun
  self.fileExport(htmlPath=self._getHtmlPath(self.filename))
File
"/Applications/Psychopy3.app/Contents/Resources/lib/python3.6/psychopy/app/b
uilder/builder.py", line 1782, in fileExport
  exp=self.exp)
File
"/Applications/Psychopy3.app/Contents/Resources/lib/python3.6/psychopy/app/b
uilder/builder.py", line 2515, in __init__
  if len(filePath) > 70:
TypeError: object of type 'bool' has no len()
206.3411 INFO Loaded monitor calibration from ['2019_01_15 17:30']
206.4402 INFO Investigating repo at
/Users/thiagoomsampaio/OneDrive/Orientacoes/Lilian/Experimento-Producao_eliciada/E
xp1 - teste
209.6878 INFO Loaded monitor calibration from ['2019_01_15 17:30']
```



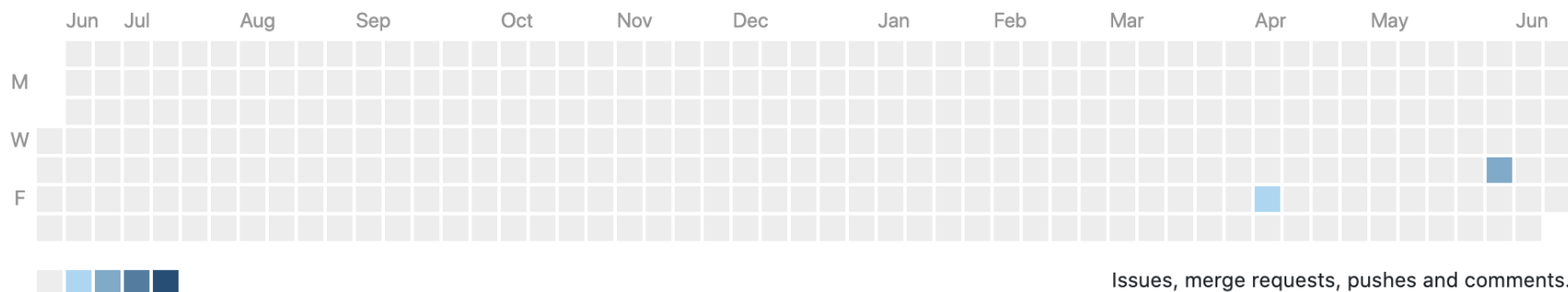
Thiago Motta Sampaio

@thiagomotta · Member since August 07, 2018

www.thiagomotta.net · 📍 Campinas, Brazil · 🏢 University of Campinas



Professor of Cognitive Sciences and Psycholinguistics @ University fo Campinas, Brazil

Overview Activity Groups Contributed projects Personal projects Snippets





Activity

[View all](#)

-  **Thiago Motta Sampaio** @thiagomotta 2 weeks ago
Pushed to branch [master](#) at [Thiago Motta Sampaio / ClickDetectingParadigm_BrazPort](#)
73ac5874 · textSizeUpdate_02_redV
-  **Thiago Motta Sampaio** @thiagomotta 2 weeks ago
Pushed to branch [master](#) at [Thiago Motta Sampaio / ClickDetectingParadigm_BrazPort](#)
c2ce11a2 · textSize01

Personal projects

[View all](#)


-  **ClickDetectingParadigm_BrazPort** 🔒 Maintainer ★ 0 🍴 0
Click Detection Paradigm in Brazilian Portuguese Paulo Angel... Updated 5 days ago
-  **LilianExp** 🔒 Maintainer ★ 0 🍴 0
LilianExp_Pavlovia_Test Updated 22 hours ago




PsychoPy³

Now running studies online

→ ↻ 🔒 pavlovia.org/dashboard

 Docs Explore Dashboard Store Sign Out

Profile Experiments Participants Credits



Thiago Motta Sampaio
👤 thiagomotta 🗳️ 550
Professor of Cognitive Sciences and Psycholinguistics @ University fo Campinas, Brazil
@ mottakun@gmail.com
📍 Campinas, Brazil

Affiliati

Unive

Click to :

Messaç

License

You are not covered by a license.

You will need to assign credits to your experiments for participants to be able to run them. You can find out more about how to manage credits [here](#).



ClickDetectingParadigm_BrazPort

thiagomotta

★ 0 40 Δ 0 **PILOTING**

created: 2020-06-04 updated: 2020-06-13

Click Detection Paradigm in Brazilian Portuguese Paulo Angelo Adriano Thiago Motta Sampaio University fo Campinas, Brazil

Keywords:

Click to add or edit keywords

Software Platform Platform Version
PSYCHOJS ▼ **2020.1**

View code

Pilot

Run

Status

INACTIVE

The experiment is available on the Pavlovia server but cannot be run. Change its status to **PILOTING** to test it, and **RUNNING** to make it available to participants.

PILOTING

You can pilot the experiment to test that it is working adequately.

Pressing the [Pilot] button (above) generates a new URL, which is valid for 1h each time.

RUNNING

Participants can run the experiment, provided that they meet the constraints of its recruitment policy and that either enough credits or a valid license are available.

Recruitment

Policy

Constraints

URL

Anyone meeting the experiment constraints can run it by opening the experiment Url, provided that either enough credits or a valid license are available.

Url: https://run.pavlovia.org/thiagomotta/clickdetectingparadigm_brazport/html

Saving Format

CSV

Experiment results are saved in .csv files, which are stored on the Pavlovia server and in the experiment's GitLab repository.

You can retrieve them by pressing the [Download results] button, directly from the repository, or by git pulling from your local repository.

Sessions

Piloting

completed= 0 (00.0%)
aborted= 1 (100.0%)
last session: 2020-06-04 16:44:20

Running

completed= 0 (%)
aborted= 0 (%)
last session: --

Chrome File Edit View History Bookmarks People Tab Window Help

ibex farm x +


https://spellout.net/ibexfarm/

Ibex Farm

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You are logged in as **mahayanag** ([logout](#)).

Welcome to the Ibex farm



[» manage my experiments](#)

This site provides free hosting for **ibex** experiments.

Upload data files in your browser, then send your participants a link to the experiment.

[View an example experiment](#)

Currently hosting **18053** experiments.

Have you found Ibex Farm useful? **Buy me a coffee!**
(Running costs are now covered for the foreseeable future. Thank you all.)

Contact a.d.drummond@gmail.com if you have any issues, or try the [google group](#).

The code for this site is BSD-licensed and available on [github](#).

3:30 / 1:22:16

Leitura autocadenciada usando IbexFarm

62 vues · 26 mai 2020

6 0 PARTAGER ENREGISTRER ...

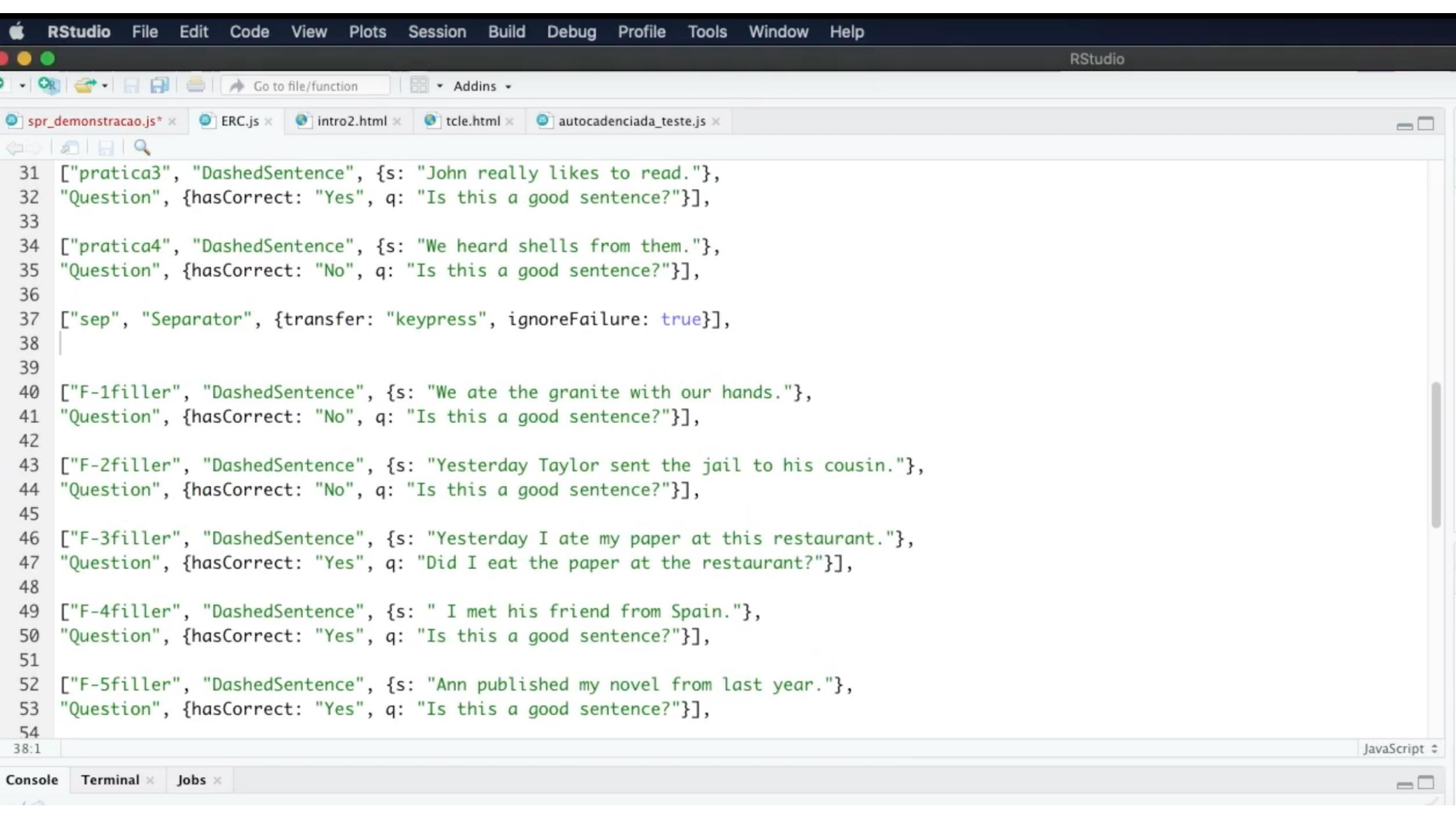


Psicolinguística UFRN
42 abonnés

S'ABONNER

Tutorial em português para montagem de experimento de leitura autocadenciada (aka automonitorada) usando IbexFarm.

PLUS



```
31 ["pratica3", "DashedSentence", {s: "John really likes to read."},  
32 "Question", {hasCorrect: "Yes", q: "Is this a good sentence?"}],  
33  
34 ["pratica4", "DashedSentence", {s: "We heard shells from them."},  
35 "Question", {hasCorrect: "No", q: "Is this a good sentence?"}],  
36  
37 ["sep", "Separator", {transfer: "keypress", ignoreFailure: true}],  
38 |  
39  
40 ["F-1filler", "DashedSentence", {s: "We ate the granite with our hands."},  
41 "Question", {hasCorrect: "No", q: "Is this a good sentence?"}],  
42  
43 ["F-2filler", "DashedSentence", {s: "Yesterday Taylor sent the jail to his cousin."},  
44 "Question", {hasCorrect: "No", q: "Is this a good sentence?"}],  
45  
46 ["F-3filler", "DashedSentence", {s: "Yesterday I ate my paper at this restaurant."},  
47 "Question", {hasCorrect: "Yes", q: "Did I eat the paper at the restaurant?"}],  
48  
49 ["F-4filler", "DashedSentence", {s: " I met his friend from Spain."},  
50 "Question", {hasCorrect: "Yes", q: "Is this a good sentence?"}],  
51  
52 ["F-5filler", "DashedSentence", {s: "Ann published my novel from last year."},  
53 "Question", {hasCorrect: "Yes", q: "Is this a good sentence?"}],  
54
```

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You are logged in as [mahayanag](#) ([logout](#)).

/ibexexps/mahayanag/spr_demonstracao/experiment.html

Go to the **my account** page to view your other experiments or to create/delete experiments.

Experiment 'spr_demonstracao' (ibex 0.3.9)

[Update from git repo](#)» ([help](#))

chunk_includes ([upload a file to this directory](#) | [refresh](#))

example_intro.html ([delete](#) | [rename](#) | [upload new version](#) | [edit](#))

test1.mp3 ([delete](#) | [rename](#) | [upload new version](#) | [edit](#))

test2.mp3 ([delete](#) | [rename](#) | [upload new version](#) | [edit](#))

css_includes ([upload a file to this directory](#) | [refresh](#))

DashedSentence.css

FlashSentence.css

Form.css

global_main.css

Message.css

Question.css

Scale.css

Separator.css

data_includes ([upload a file to this directory](#) | [refresh](#))

example_data.js ([delete](#) | [rename](#) | [upload new version](#) | [edit](#))

js_includes ([upload a file to this directory](#) | [refresh](#))

AcceptabilityJudgment.js

DashedAcceptabilityJudgment.js

DashedSentence.js

