

# **Homework 10**

due Tue Dec 13 at 11:59pm

(there will be no Homework 11)

# Help Sessions

Today at 3:45pm in the classroom

Mon Dec 12 at 3:45pm in Wilson 113  
(note room change)



# Data Science Institute

## AI Winter Intensive Workshop: Jan 3-6

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Posted by [spencejb](#) on Friday, November 18, 2022 in [Newsletter](#).

The practice of data science is changing with the rise of powerful, flexible and capable models called transformers. You can solve many different problems using a single pre-trained model, sometimes with no additional training on your data ("zero-shot" solutions). From text, to images, to audio ("textless Natural Language Processing"), you can ask and answer questions, identify objects in images, identify concepts in spoken conversations, ask questions about tables of data, and more, all using the same type of model—transformers. The emphasis for the Intensive will be Transformers—how to use them, how to train them, and how to deploy them to solve a variety of problems. The goal is that participants who come to the workshop with data for a project in-hand will end the workshop with an initial model upon which to build further work.

All sessions will be remote, on Zoom.

<https://www.vanderbilt.edu/datascience/2022/11/18/ai-winter-intensive-workshop-jan-3-6/>



# Data Science Institute

## AI Deep Learning Class Open to Graduate Students, Seniors

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Posted by [spencejb](#) on Wednesday, November 9, 2022 in [Newsletter](#).

This Spring, the Data Science Institute course on transformers, AI deep learning models, will be open to graduate students and seniors with permission of the instructor. The course, DS-5899 Special Topics in Data Science—Transformers in Theory and Practice, covers transformers models as applied to natural language processing, audio, image, video, multimodel problems, Bayesian inference, reinforcement learning, protein folding, and other applications. You can review the [syllabus](#), or reach out to the instructor, Jesse Spencer-Smith, DSI Chief Data Scientist ([jesse.spencer-smith@vanderbilt.edu](mailto:jesse.spencer-smith@vanderbilt.edu)) for more information. For the course, you'll want to have one semester or equivalent with Python, and be comfortable with mathematical notation (largely linear algebra).

To register, please email the instructor to indicate your interest. The Registrar will need permission from the DSI to allow your registration.

download from Brightspace

Pandas.zip

# pandas

Python Data Science Handbook by Jake VanderPlas

<https://jakevdp.github.io/PythonDataScienceHandbook/03.00-introduction-to-pandas.html>

<https://pandas.pydata.org/docs/>

# (part of) **Homework 10**

store data in a pandas dataframe

save from dataframe to .csv file

read from .cvs file into dataframe

summarize data from file (accuracy and mean RT)

# pandas

like dataframes in R, Excel spreadsheets, tables in Matlab

2D data structure with named columns (like a spreadsheet)

rows could be trials, subjects, sessions

columns could be levels of independent variable, trial variables, dependent variables

pandas

Pandas.ipynb

# example dataframe (Titanic data)

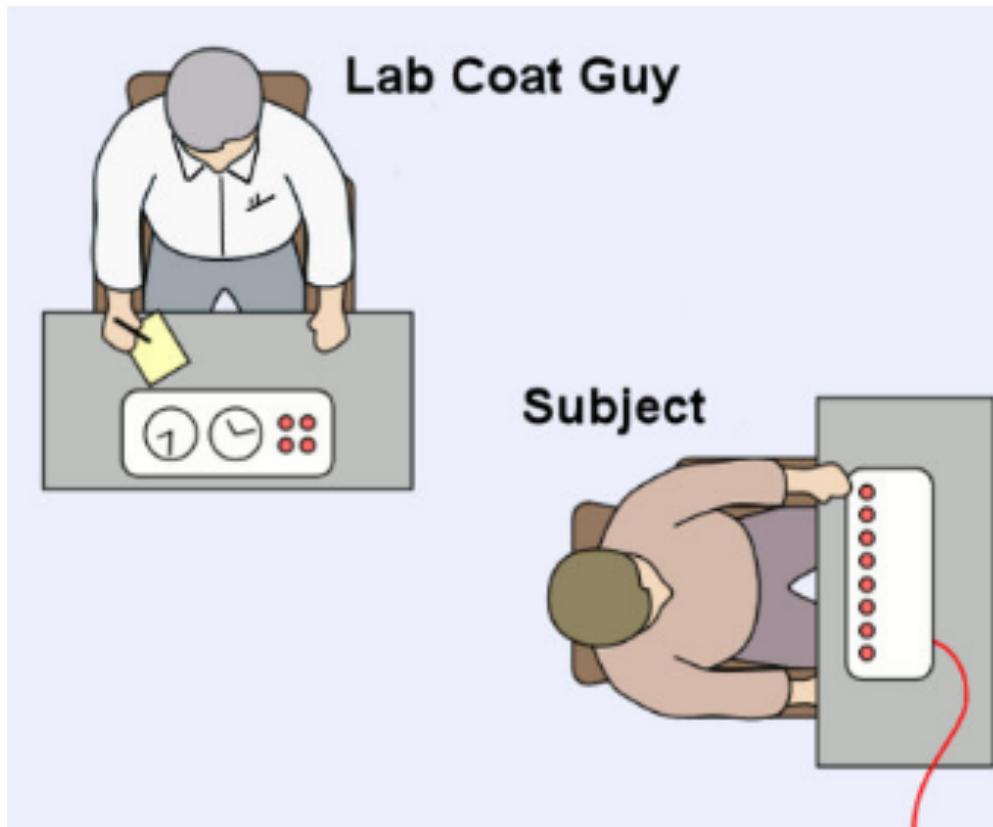
Survived	Pclass	Name	Sex	Age	Siblings/Spouses Aboard	Parents/Children Aboard	Fare
0	0	Mr. Owen Harris Braund	male	22.0		1	0 7.2500
1	1	Mrs. John Bradley (Florence Briggs Thayer) Cum...	female	38.0		1	0 71.2833
2	1	Miss. Laina Heikkinen	female	26.0		0	0 7.9250
3	1	Mrs. Jacques Heath (Lily May Peel) Futrelle	female	35.0		1	0 53.1000
4	0	Mr. William Henry Allen	male	35.0		0	0 8.0500
...	...	...	...	...	...	...	...
882	0	Rev. Juozas Montvila	male	27.0		0	0 13.0000
883	1	Miss. Margaret Edith Graham	female	19.0		0	0 30.0000
884	0	Miss. Catherine Helen Johnston	female	7.0		1	2 23.4500
885	1	Mr. Karl Howell Behr	male	26.0		0	0 30.0000
886	0	Mr. Patrick Dooley	male	32.0		0	0 7.7500

887 rows × 8 columns



online web-based experiments

# in-lab vs. web-based experiments



# in-lab vs. web-based experiments

## **in-lab:**

- careful experimental control (monitor calibration, viewing conditions)
- specialized instruments (responses boxes, eyetrackers, EEG)
- long, complex, difficult experiments (experimenter on hand)
- can be challenging to recruit large numbers of subjects
- often homogenous sample (college students)

# in-lab vs. web-based experiments

## **in-lab:**

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## **web-based:**

- no control over computer, monitor, conditions
- short, relatively simple experiments (15-20 minutes max)
- easier to recruit large numbers of subjects (100s or 1000s)
- can get heterogeneous samples (different regions, different countries), unique individuals (expertise, background, education)

# in-lab vs. web-based experiments

## **in-lab:**

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**hybrid** : combine in-lab and web-based sessions

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Test yourself and help us learn more about the mind and brain.

## Featured Brain Tests

[Home](#) / [About](#) / [Research](#) / [Education](#) / [More](#) / [中文](#) / [Español](#)

TestMyBrain aims to engage and collaborate with citizen scientists like you, by providing tools to help you learn about yourself. When you **test yourself**, you contribute to brain research.

Click **Go!** next to any of the studies below to get started.

To read our updated [cookie policy](#), please [click here](#).

Select TMB tests are now offered in other languages.

[English](#)    [中文](#)    [Español](#)



**Go!**

### Mood and Cognition

🕒 **Estimated Time:** 2 weeks

Want to contribute to science while learning more about your own unique brain? The Laboratory for Brain and Cognitive Health Technology at McLean Hospital and Harvard Medical School is conducting a research study to examine how people's emotions and thoughts change over time. This study will involve 2-3 surveys per day for two weeks (one hour on first day and then 15 minutes each day thereafter). You must be a US citizen or permanent resident to participate and will be compensated up to \$75 for your time. To see if you qualify, click the GO button.



[Share](#)

[Tweet](#)

<https://testmybrain.org>



## Fear, Anger, and Joy

⌚ **Estimated Time:** 12 minutes

👤 8886 brains completed

How well can you recognize faces?

Go!



Share

Tweet



## Cognitive Style

⌚ **Estimated Time:** 8 minutes

👤 7798 brains completed

What is your cognitive style?

Go!



Share

Tweet



## Cognitive Snapshot

⌚ **Estimated Time:** 12 minutes

👤 8886 brains completed

What are your cognitive skills?

Go!



Share

Tweet



## Visual Reasoning

⌚ **Estimated Time:** 5 minutes

👤 9744 brains completed

Spot the pattern to complete the puzzle.

Go!



Share

Tweet



## Your Favorite Things

⌚ **Estimated Time:** 6 minutes

👤 11376 brains completed

What images do you find appealing? How similar are you to the average person?

Go!



Share

Tweet



## Famous Faces

⌚ **Estimated Time:** 8 minutes

👤 29543 brains completed

Can you identify famous people from their faces?

Go!



Share

Tweet

# TESTMYBRAIN

TestMyBrain.org is a not-for-profit research initiative dedicated to providing measurement tools that allow people to engage in science and

## Resources

### For Researchers

### For Educators

## Useful Links

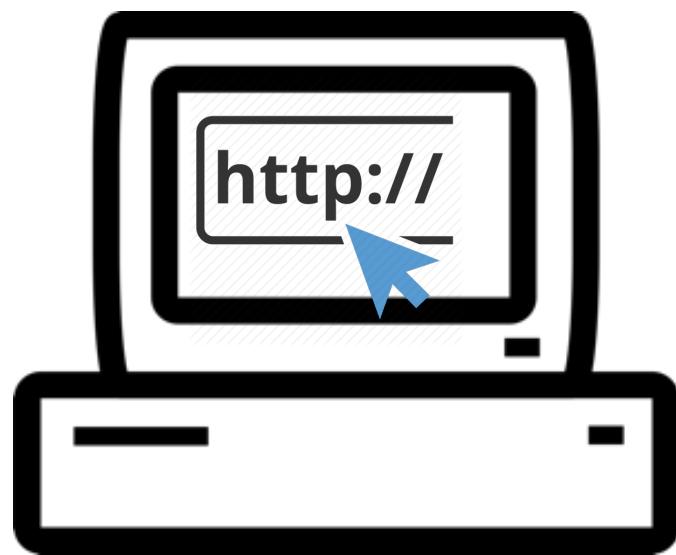
### ABOUT US

### FAQ

### OUR MISSION

# behind the scenes

html  
php  
javascript



**CLIENT**

1. A request is made for a webpage →
- ← 2. The server runs code to generate the web page
3. The browser displays the web page



**SERVER**



# data security

IRB



A cluster of overlapping text elements in various colors (gray, orange, teal, blue) including "IRB", "Ethics", "Human Subjects", "Monitoring", "Compliance", "Justice", "Research", and "Respect".

**HIPAA** (Health Insurance Portability and Accountability Act)  
protect personal medical data



# web-based research studies in general

what do you need to run "on the web"?



- individual/shared lab web server (hardware cost, sysadmin cost, blessing from IT, security challenges, homegrown custom software)

# web-based research studies in general

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- individual/shared lab web server (hardware cost, sysadmin cost, blessing from IT, security challenges, homegrown custom software)
- web hosting company (monthly or annual fee for hardware and sysadmin, homegrown custom software)



# web-based research studies in general

what do you need to run "on the web"?



- individual/shared lab web server (hardware cost, sysadmin cost, blessing from IT, security challenges, homegrown custom software)
- web hosting company (monthly or annual fee for hardware and sysadmin, homegrown custom software)  
  
- web-based survey, questionnaire, experiment platforms (hosts web site, tools for creating research studies, often priced per subject)



# surveys and questionnaires

- obtaining demographic data
- survey questions
- true/false, multiple choice, Likert scale, text boxes
- commercial companies (charge for all but small surveys, web hosting)
- REDcap (free for non-profit organizations, local IT hosting)



subscription model (starting at \$1500/year)  
per user fee (starting at \$25/month)  
free for small surveys



developed at Vanderbilt, now used by  
thousands of institutions around the world



<https://redcap.vanderbilt.edu>

(free for Vanderbilt users)

REDCap® Home My Projects + New Project ? Help & FAQ Training Videos Send-It Messenger !

Logged in as palmerit My Profile Log out

Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. [Read more](#) To review which users still have access to your projects, visit the [User Access Dashboard](#).

My Projects		Organize	Collapse All	Filter projects by title				
Project Title				Records	Fields	Instruments	Type	Status
Example Survey				0	9	1 survey	■	✖
Scientific Computing in Psychology and Neuroscience				0	5	1 survey	■	🔧
test				0	2	1 form	■	🔧



## Scientific Computing in Psychology and Neuroscience

PID 11627

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My Projects

REDCap Messenger !

### Project Home and Design

Project Home · Project Setup  
Designer · Dictionary · Codebook  
Project status: Development

### Data Collection

Survey Distribution Tools  
- Get a public survey link or build a participant list for inviting respondents  
Record Status Dashboard  
- View data collection status of all records  
Add / Edit Records  
- Create new records or edit/view existing ones

Show data collection instruments

### Applications

Alerts & Notifications  
Calendar  
Data Exports, Reports, and Stats  
Data Import Tool  
Data Comparison Tool  
Logging  
Field Comment Log  
File Repository  
User Rights and DAGs  
Data Quality  
External Modules

### Help & Information

Help & FAQ  
Video Tutorials  
Suggest a New Feature

Contact REDCap administrator

Project Home

Project Setup

Online Designer

Data Dictionary

Codebook

Create snapshot of instruments

VIDEO: How to use this page

Last snapshot: never ?

This page allows you to build and customize your data collection instruments one field at a time. You may add new fields or edit existing ones. New fields may be added by clicking the **Add Field** buttons. You can begin editing an existing field by clicking on the **Edit** icon. If you decide that you do not want to keep a field, you can simply delete it by clicking on the **Delete** icon. To reorder the fields, simply **drag and drop** a field to a different position within the form below. NOTE: While in development status, all field changes will take effect immediately in real time.

Learn how to use Smart Variables Piping Action Tags Field Embedding Special Functions

Return to list of instruments

Survey settings

Current instrument: **Survey of Scientific Computing in Psychology and Neuroscience**

Preview instrument

<b>Variable:</b> participant_id	* This field will NOT be displayed on the survey page. * You should NOT use identifiers (e.g., MRN, SSN) for the record ID field.
<b>Participant ID</b>	
NOTE: The field above is the record ID field and thus cannot be deleted or moved. It can only be edited.	
Add Field  Add Matrix of Fields	
<b>Variable:</b> grad_or_postdoc	
<b>Which of the following best describes you?</b>	
<input type="radio"/> Graduate student in Psychological Sciences (Arts & Science) <input type="radio"/> Graduate student in Psychological Sciences (Peabody) <input type="radio"/> Graduate students in the Interdisciplinary Neuroscience Program <input type="radio"/> Postdoctoral fellow	
reset	
Add Field  Add Matrix of Fields	
<b>Variable:</b> area_group	
<b>Research area group (check all that apply)?</b>	
<input type="checkbox"/> Clinical Science <input type="checkbox"/> Cognition and Cognitive Neuroscience <input type="checkbox"/> Developmental Science <input type="checkbox"/> Neuroscience <input type="checkbox"/> Quantitative Methods and Evaluation	

### Q How to embed a field elsewhere

Learn how to customize your instrument or survey by using [Field Embedding](#).

### Q How to modify multiple fields together

To copy, move, or delete multiple fields at the same time, hold the Ctrl, Shift, or Cmd key on your keyboard and click the field to reveal the options.

Logged in as palmerit | [Log out](#)

[My Projects](#)  
[REDCap Messenger](#) !

Project Home and Design

[Project Home](#)   [Project Setup](#)

[Designer](#)

[Project status](#)

Data Collection

Record Sta

- View data c

[Add / Edit](#)

- Create new

Show data collect

Applications

[Alerts & N](#)

[Calendar](#)

[Data Exp](#)

[Data Imp](#)

[Data Com](#)

[Logging](#)

[Field Com](#)

[File Repos](#)

[User Righ](#)

[Data Qual](#)

[REDCap M](#)

[External M](#)

Help & Informa

[Help & FA](#)

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[Create snapshot of instruments](#)

Last snapshot: never

[VIDEO: How to use this page](#)

## Add New Field

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(4 min\)](#).

**Field Type:** [Multiple Choice - Drop-down List \(Single Answer\)](#)

Use the Rich Text Editor [?](#)

### Field Label

What is your favorite color?

Use the Rich Text Editor [?](#)

### Variable Name

(utilized in logic, calcs, and exports)  
  
ONLY letters, numbers, and underscores  
 Enable auto naming of variable based upon its Field Label?

### Choices (one choice per line)

[Copy existing choices](#)

blue  
red  
green  
orange  
yellow

Enable auto-complete for this drop-down [?](#)

[How do I manually code the choices?](#)

### Action Tags / Field Annotation (optional)

Learn about [@ Action Tags](#) or [using Field Annotation](#)

**Save**

**Cancel**



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My Projects

REDCap Messenger !

#### Project Home and Design

Project Home · Project Setup

Designer · Dictionary · Codebook

Project status: Development

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Record Status Dashboard

- View data collection status of all records

Add / Edit Records

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Show data collection instruments

#### Applications

Alerts & Notifications

Calendar

Data Exports, Reports, and Stats

Data Import Tool

Data Comparison Tool

Logging

Field Comment Log

File Repository

User Rights and DAGs

Data Quality

REDCap Mobile App

External Modules

#### Help & Information

Help & FAQ

Video Tutorials

Suggest a New Feature

Contact REDCap administrator

## My Test Project

PID 123208

Project Home

Project Setup

Online Designer

Data Dictionary

Codebook

Create snapshot of instruments

VIDEO: How to use this page

Last snapshot: never ?

This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Online Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file may be more helpful if you will be adding a large number of fields for this project.

This page allows you to build and customize your data collection instruments one field at a time. You may add new fields or edit existing ones. New fields may be added by clicking the **Add Field** buttons. You can begin editing an existing field by clicking on the **Edit** icon. If you decide that you do not want to keep a field, you can simply delete it by clicking on the **Delete** icon. To reorder the fields, simply **drag and drop** a field to a different position within the form below. NOTE: While in development status, all field changes will take effect immediately in real time.

Learn how to use [Smart Variables](#) [Piping](#) [Action Tags](#) [Field Embedding](#) [Special Functions](#)

[Return to list of instruments](#)

Current instrument: **Form 1**

[Return to edit view](#)

NOTE: Please be aware that branching logic and calculated fields will not function on this page. They only work on the survey pages and data entry forms.

Record ID

What is your favorite color?

- blue
- red
- green
- orange
- yellow

#### How to embed a field elsewhere

Learn how to customize your instrument or survey by using [Field Embedding](#).

#### How to modify multiple fields together

To copy, move, or delete multiple fields at the same time, hold the Ctrl, Shift, or Cmd key on your keyboard and click the field to reveal the options.

# Qualtrics vs. REDCap

	<b>Qualtrics</b>	<b>REDCap</b>
Web based, secure	✓	✓
HIPAA compliant	✓	✓
Suitable for multi-site survey administration	✓	✓
Online and offline modes of administration (data collection)	✓	✓
Multiple language capability	✓	✓
Surveys may be modified during the course of the study	✓	✓
Editable look-and-feel (themes, logos)	✓	✓
“Quick” development of surveys (beware: garbage in, garbage out!)	✓	✓
“Free” to UCSF users	✓	✓

# Qualtrics vs. REDCap

Question types	Notes	Qualtrics	REDCap
Check one (Radio buttons)	<ul style="list-style-type: none"> <li>• Yes/No, True/False</li> <li>• Likert-type questions</li> </ul> <p><i>How much do you agree with the following statement?</i></p> <p><i>Cats are my favorite animal.</i></p>	✓	✓
Check all that apply	<i>What types of pets do you have?</i>	✓	✓
Numeric entry	<i>How many cats do you have?</i>	✓	✓
Text entry	<i>What is your veterinarian's name?</i>	✓	✓
Vertical or horizontal 0 -10	Can have “anchors” at ends and middle (Special case of “check one”)	✓	✓
Visual analog scale (VAS)	<i>How much of the time do you spend vacuuming?</i>	✓	✓

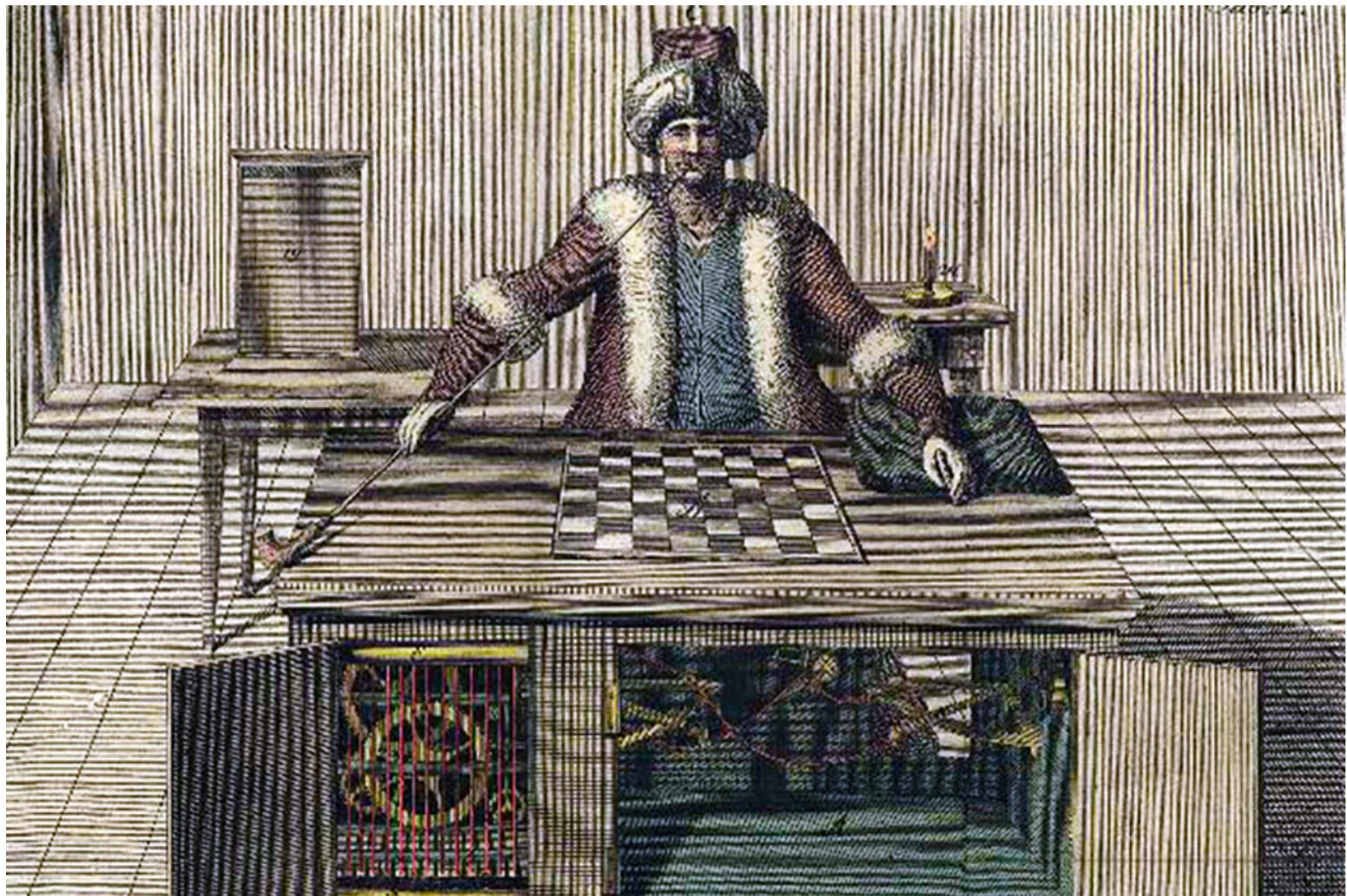
# Qualtrics vs. REDCap

Question types	Notes	Qualtrics	REDCap
Date	<i>When did you get your first cat?</i>	sort of	✓
Time span	<i>How long have you been an animal hoarder?</i>	work-around	work-around
Calculated variables	Can use previously calculated variables in question text/response text of items <code>#_cats_having_kittens = total_#_cats - #_cats_spayed_or_neutered</code>	yes, but can't back up	yes, but not in response text or bounds
Signature	Capture handwritten signature eg. for consent	✓	✓ (caveat)
Upload files	<i>Please share a cute picture of your favorite cat.</i>	✓	✓

# Qualtrics vs. REDCap

	Qualtrics	REDCap
Branching /display logic	✓	✓
Skip logic	sort of	Contact admin
Piping of text	✓	✓
“Refuse to answer” option	mostly	workaround
Validations	✓	sort of
Stop forward progress	✓	sort of
Online programming	✓	✓
Offline programming	✗	✓
Smart variables	✗	✓
“Action tags”	some	✓

# mechanical turk



[https://en.wikipedia.org/wiki/Mechanical\\_Turk](https://en.wikipedia.org/wiki/Mechanical_Turk)

# amazon mechanical turk

*artificial artificial intelligence*



Get Started with Amazon Mechanical Turk



## Create Tasks

Human intelligence through an API. Access a global, on-demand, 24/7 workforce.

[Create a Requester account](#)



## Make Money

Make money in your spare time. Get paid for completing simple tasks.

[Create a Worker account](#)

<https://www.mturk.com>

# amazon mechanical turk



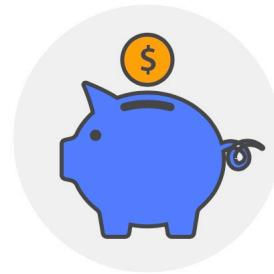
Get Started with Amazon Mechanical Turk



## Create Tasks

Human intelligence through an API. Access a global, on-demand, 24/7 workforce.

[Create a Requester account](#)



## Make Money

Make money in your spare time. Get paid for completing simple tasks.

[Create a Worker account](#)

or

“requesters” post ads for Human Intelligence Tasks (HITs)

“workers” complete HITs in exchange for payment

# amazon mechanical turk

Worker ID: A1I60RCRGDC9ZV

HITs Goal BETA 0 / set goal Reward Goal BETA 0 / set goal

Hello, Tom Palmeri | Sign Out

**amazon mturk** Worker HITs Dashboard Qualifications Search All HITs Filter

All HITs Your HITs Queue

## HIT Groups (1-20 of 847)

Show Details Hide Details Items Per Page: 20

Requester	Title	HITS	Reward	Created	Actions
+ Kostadin Kushlev	Compensation HIT for A24B5UF6RMHYGX(~ 1 minutes)	1	\$15.00	11/3/2020	Preview
+ luca l bonatti	**日本語を母国語とする人々** の学術研究	2	\$12.50	4d ago	Preview
+ VU-CAS-Gauthier-OPlab	Arts Research Experiment [INVITE ONLY]	1	\$12.00	21d ago	Preview
+ SurveyComet	Compensation HIT for A3G50WGKHW6OL5(~ 1 minutes)	1	\$8.00	1h ago	Preview
+ Cari Herrmann Abell	Compensation HIT for A3CDSJ09BBZ9G7(~ 1 minutes)	1	\$8.00	21d ago	Preview
+ Tim Cole	Research on Conflict in Marriage(~ 25 minutes)	2	\$8.00	2d ago	Preview
+ Violet Peng	Event Relation QA (qualification)	1	\$7.50	1d ago	Preview
+ Violet Peng	Event Relation QA (2nd real task)	3	\$7.50	6d ago	Preview
+ Violet Peng	Event Relation QA (qualification)	1	\$7.50	12d ago	Preview
+ Alicia Mendez	Parenting 1.5-5 year olds in Pandemic ~45 min	1	\$7.00	11/2/2020	Preview
+ CARE Online Research Studies	Payment HIT for Sherylann(~ 1 minutes)	1	\$6.50	4d ago	Preview
+ Yale Institute for Network Science	HIT for A3DKFBFK3FA3MA	1	\$6.00	3/19/2020	Preview
+ Yale Institute for Network Science	HIT for A3DKFBFK3FA3MA	1	\$6.00	3/19/2020	Preview
+ Cyber Pilot	Cybersecurity Knowledge Assessment: Windows OS Pilot 9(~ 45 minutes)	20	\$6.00	1h ago	Preview
+ Cyber Pilot	Cybersecurity Knowledge Assessment: Windows OS Pilot 8(~ 45 minutes)	20	\$6.00	1h ago	Preview
+ Cyber Pilot	Cybersecurity Knowledge Assessment: Windows OS Pilot 10(~ 45 minutes)	18	\$6.00	1h ago	Preview
+ Cyber Pilot	Cybersecurity Knowledge Assessment: Windows OS Pilot 7(~ 45 minutes)	20	\$6.00	1h ago	Preview
+ Cyber Pilot	Cybersecurity Knowledge Assessment: Windows OS Pilot 6(~ 45 minutes)	18	\$6.00	2h ago	Preview

# amazon mechanical turk

Worker ID: A1I60RCRGDC9ZV [?](#)

HITs Goal BETA 0 / set goal Reward Goal BETA 0 / set goal

Hello, Tom Palmeri | Sign Out

**amazon mturk** Worker [HITs](#) [Dashboard](#) [Qualifications](#)   [Filter](#)

All HITs Your HITs Queue

## HIT Groups (1-20 of 918)

[+ Show Details](#) [- Hide Details](#) Items Per Page: 20 [▼](#)

Requester	Title	HITs	Reward	Created	Actions
+ Flor	Anotación de comentarios ofensivos en redes sociales. WARNING: This HIT may contain ad...	48,086	\$0.01	6d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ James Billings	Market Research Survey	14,959	\$0.01	1h ago	<a href="#">Preview</a> <a href="#">Accept &amp; Work</a>
+ Content Research	Clean Up How-To Questions	8,241	\$0.05	3h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Omer Orun	Find the official email address of a hotel	4,304	\$0.04	2d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Tamara Berg	中英翻译 Translate short TV show related English sentences to Chinese. [The Big Bang The...	3,856	\$0.24	2h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Enrichment at Tink	All Countries: Select the best fitting category to this Danish transaction (with qualification test)	3,757	\$0.05	1h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ John Cottongim	Draw bounding boxes around the letter or number groups	3,194	\$0.02	6d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ ViCCo Group	What are these objects called?	2,550	\$0.07	26m ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Musicbed	Add Metadata to video clips	2,051	\$0.54	1d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ f8b64e4e-b7c8-47a8-9ee3-b161727f4c	Judge the reputation polarity of Article Clips	1,790	\$0.08	1d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Tamara Berg	中英翻译 Translate short TV show related English sentences to Chinese. [House M.D.]	1,613	\$0.24	2h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Shopping Receipts	Extract General Data & Items From Shopping Receipt	1,431	\$0.02	5h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Shopping Receipts	Extract General Data & Items From Shopping Receipt	1,038	\$0.03	10h ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Violet Peng	Event QA Qualification	982	\$0.10	5d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Shopping Receipts	Extract General Data & Items From Shopping Receipt	805	\$0.01	37s ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ SurveyComet	Short Questionnaire(~ 4 minutes)	688	\$0.30	10/13/2020	<a href="#">Preview</a> <a href="#">Qualify</a>
+ JOHN C FEMIANI	Draw bounding boxes around each building	613	\$0.10	2d ago	<a href="#">Preview</a> <a href="#">Qualify</a>
+ Eilon Sheetrit	Is the Term relevant to the topic?	585	\$0.06	2h ago	<a href="#">Preview</a> <a href="#">Qualify</a>

# amazon mechanical turk

amazon mturk Requester

Create   Manage   Developer

New Project

Select a customizable template to start a new project

**Survey**

- [Survey Link](#)
- Survey

**Vision**

- Image Classification
- Bounding Box
- Semantic Segmentation
- Instance Segmentation
- Polygon
- Keypoint
- Image Contains
- Video Classification
- Moderation of an Image
- Image Tagging
- Image Summarization

**Language**

- Sentiment Analysis
- Intent Detection
- Collect Utterance
- Emotion Detection
- Semantic Similarity
- Audio Transcription
- Conversation Relevance
- Document Classification
- Translation Quality
- Audio Naturalness

**Other**

- Data Collection
- Website Collection

**Survey Link Instructions (Click to expand)**

**Survey link:** <http://example.com/survey345.html>

**Provide the survey code here:**  
e.g. 123456

You must ACCEPT the HIT before you can submit the results.

**Create Project**

# amazon mechanical turk

Select a customizable template to start a new project

## Survey

[Survey Link](#)

[Survey](#)

## Vision

[Image Classification](#)

[Bounding Box](#)

[Semantic Segmentation](#)

[Instance Segmentation](#)

[Polygon](#)

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[Image Contains](#)

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## Language

[Sentiment Analysis](#)

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[Semantic Similarity](#)

[Audio Transcription](#)

[Conversation Relevance](#)

[Document Classification](#)

[Translation Quality](#)

[Audio Naturalness](#)

[Instructions](#)

[Shortcuts](#)

Choose the correct category



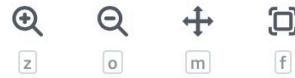
Select an option

Cat 1

Dog 2

Bird 3

None of the Above 4



[Submit](#)

[Create Project](#)

# amazon mechanical turk

Select a customizable template to start a new project

## Survey

Survey Link

## Survey

## Vision

Image Classification

Bounding Box

Semantic Segmentation

Instance Segmentation

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Image Contains

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Image Summarization

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Document Classification

Translation Quality

Audio Naturalness

Instructions

Shortcuts

How similar is the meaning of these two pieces of text?



**Text 1:** The sky is blue.

**Text 2:** The sky was the color of blue.

## Select an option

1 - Not Similar At All 1

2 2

3 3

4 4

5 - Highly Similar 5

Submit

Create Project

# amazon mechanical turk API

## PHP (Hypertext Preprocessor) API

<https://docs.aws.amazon.com/AWSMechTurk/latest/AWSMTurkAPI/Welcome.html>

more complicated experiments possible than using the templates

# PsychoPy Builder and Pavlovia



*PsychoPy*<sup>3</sup>

[Forum](#)

[Download](#)

[Documentation ▾](#)

## Running and sharing studies online

In January 2018 we began a [Wellcome Trust](#) grant to make online studies possible from PsychoPy. This is what we call PsychoPy3 - the 3rd major phase of PsychoPy's development.

The key steps to this are basically to:

- generate a JavaScript experiment ready to run online
- upload it to Pavlovia.org to be launched
- set up your recruitment procedure

Those steps are covered in detail here:

- [Creating online studies from Builder](#)
- [Using Pavlovia.org](#)
- [Manual coding of PsychoJS studies](#)
- [Recruiting participants and connecting with online services](#)
- [Counterbalancing online](#)

but you should also be aware of the following:

- [Caveats and cautions](#)
- [Status of online options](#)
- [How does it work?](#)

[Back to top](#)

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[Source](#)

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Last updated on Nov 21, 2020.  
Created using [Sphinx](#) 3.3.1.

<https://www.psychopy.org/online/>

# PsychoPy Builder and Pavlovia

The screenshot shows the PsychoPy Builder application window. The top menu bar includes File, Edit, View, Tools, Experiment, Demos, Pavlovia.org, Window, and Help. The title bar indicates the file is "stroop.psyexp - PsychoPy Builder". The interface is divided into several sections:

- Routines:** A list of routines: feedback, instruct, instructPractice, thanks, and trial.
- Components:** A sidebar titled "Components" with sections for Favorites, Stimuli, Responses, Custom, and I/O. Favorites include Image, Keyboard, Sound, Text, Mouse, and Slider. Other sections are collapsed.
- Timeline:** A timeline from 0 to 1 second labeled "t (sec)". It shows two events: "message" (red double-headed arrow) occurring between 0.0 and 0.1 seconds, and "feedback\_2" (blue T icon) occurring from 0.0 to 1.0 seconds.
- Flow:** A flowchart at the bottom shows the sequence of events: "instructPractice" leads to "trial", which leads to "feedback (1.00s)". This is followed by a loop: "practice" leads to "trial", which leads to "instruct". Finally, "instruct" leads to another loop: "trials" leads to "trial", which leads to "thanks (2.00s)".

# PsychoPy Builder and Pavlovia

```
/*
 * Stroop Test *
 */

import { PsychoJS } from './lib/core-2020.2.js';
import * as core from './lib/core-2020.2.js';
import { TrialHandler } from './lib/data-2020.2.js';
import { Scheduler } from './lib/util-2020.2.js';
import * as visual from './lib/visual-2020.2.js';
import * as sound from './lib/sound-2020.2.js';
import * as util from './lib/util-2020.2.js';
//some handy aliases as in the psychopy scripts;
const { abs, sin, cos, PI: pi, sqrt } = Math;
const { round } = util;

// init psychoJS:
const psychoJS = new PsychoJS({
    debug: true
});

// open window:
psychoJS.openWindow({
    fullscr: true,
    color: new util.Color('black'),
    units: 'norm',
    waitBlanking: true
});

// store info about the experiment session:
let expName = 'stroop'; // from the Builder filename that created this script
let expInfo = {'participant': '', 'session': '01'};

// schedule the experiment:
psychoJS.schedule(psychoJS.gui.DloFromDict({
    dictionary: expInfo,
    title: expName
}));

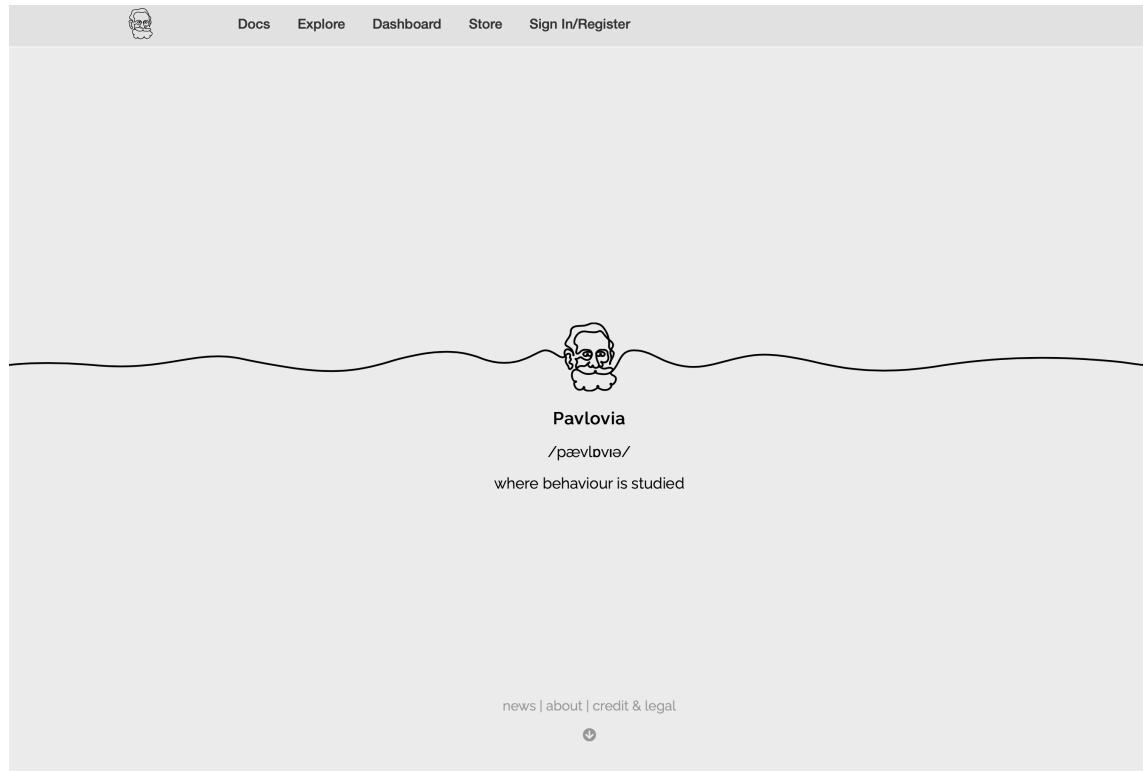
const flowScheduler = new Scheduler(psychoJS);
const dialogCancelScheduler = new Scheduler(psychoJS);
psychoJS.scheduleCondition(function() { return (psychoJS.gui.dialogComponent.button === 'OK'); }, flowScheduler, dialogCancelScheduler);

// flowScheduler gets run if the participants presses OK
flowScheduler.add(updateInfo); // add timestamp
flowScheduler.add(experimentInit);
flowScheduler.add(instructPracticeRoutineBegin());
flowScheduler.add(instructPracticeRoutineEachFrame());
flowScheduler.add(instructPracticeRoutineEnd());
const practiceLoopScheduler = new Scheduler(psychoJS);
flowScheduler.add(practiceLoopBegin, practiceLoopScheduler);
flowScheduler.add(practiceLoopScheduler);
flowScheduler.add(practiceLoopEnd);
flowScheduler.add(instructRoutineBegin());
flowScheduler.add(instructRoutineEachFrame());
flowScheduler.add(instructRoutineEnd());
const trialsLoopScheduler = new Scheduler(psychoJS);
flowScheduler.add(trialsLoopBegin, trialsLoopScheduler);
flowScheduler.add(trialsLoopScheduler);
```

in the same way the "Builder" can export an experiment to Python (.py),  
it can export an experiment to JavaScript (.js)

can run on a web server (suitably configured) or on [pavlovia.org](https://pavlovia.org)

# PsychoPy Builder and Pavlovia



**Pavlovia Credits**

[ experiments      £0.20 ]

Credits allow participants to run experiments.

1 credit is consumed each time 1 participant's results are saved.

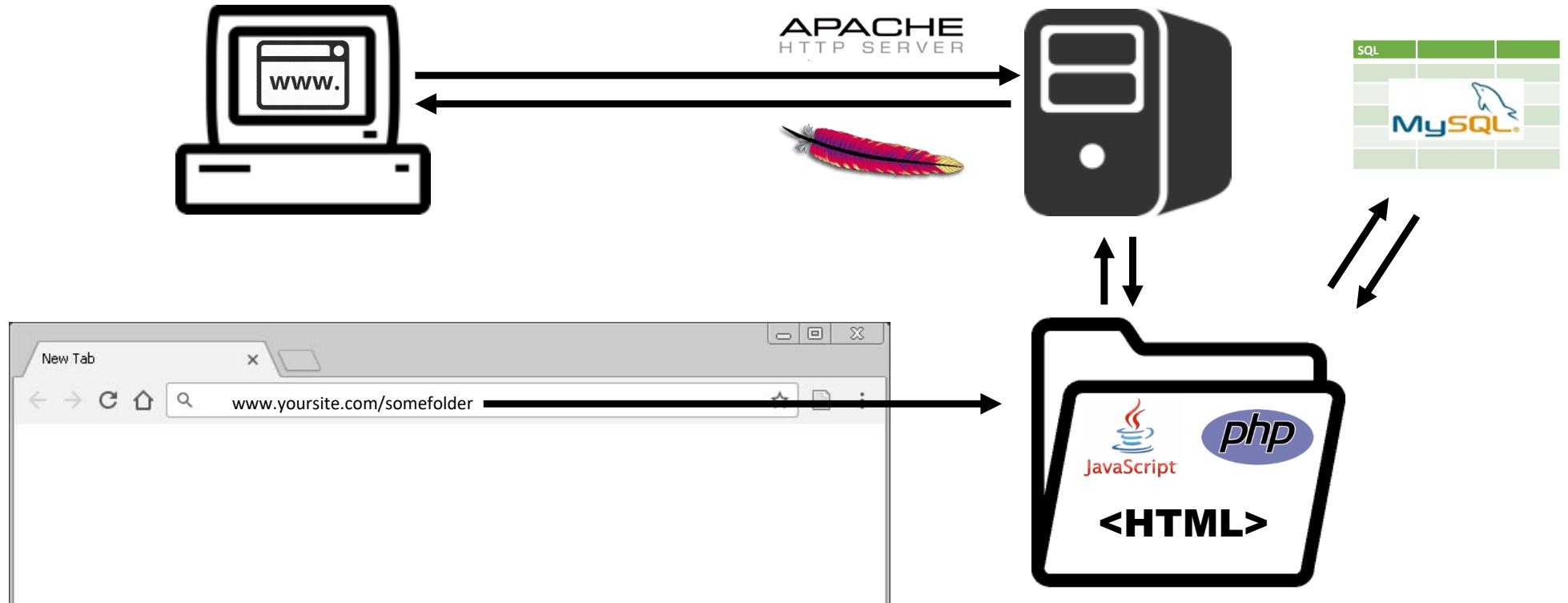
**Institution License**

[ licenses ]      £1,500.00

An institutional site licence allows participants to run all experiments designed by members of that institution, without credits being consumed.

<https://pavlovia.org>

# custom code on a custom server



Apache  
php and html  
MySQL  
JavaScript

# recruiting participants for online experiments



cloud-based participant management system  
in-person or online experiments, university or community participants

**amazon mechanical turk**



run on amazon or direct to another web server

## **traditional advertising, targeted advertising**

for example, we recruited from birding societies and birding newsletters  
for some studies of perceptual expertise (directed to our web server)

<https://www.prolific.co/>



Researchers Participants Resources ▾

Log in

Sign up

# A higher standard of online research

Conduct research with 130,000+ vetted participants.

Gain insights you can rely on.



Which advert do you prefer?

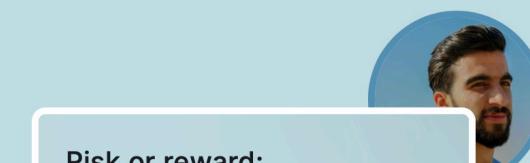
\$11.00/hour



The US vs UK: Which is more susceptible to misinformation online?



£6.50/hour



Risk or reward:  
How will you choose?

\$10.00/hour



subjects are well-paid and vetted

# prolific is a subject recruitment/payment portal

need to host experiment/survey/study on another platform with a link

## Apps & Integrations

Search All categories

 <b>Alchemer</b> Experiment From survey software to customer feedback - understand their engagement with markets, customers, and employees	 <b>Cognito Forms</b> Survey From simple surveys to complex registration forms - no code required	 <b>FindingFive</b> Experiment FindingFive powers online research studies that uncover how our minds work
 <b>Google Form</b> Survey Create simple surveys for free	 <b>Gorilla</b> Experiment All-in-one platform for behavioural science. Surveys, reaction time tasks, games, shopping simulations, multiplayer and more.	 <b>Heroku</b> Cloud Cloud platform that lets you build, deliver, monitor and scale apps from idea to URL
 <b>Inquisit</b> Experiment Precision software for cognitive, social, neurophysiological and online psychological experiments	 <b>Jotform</b> Survey Free Online Form Builder & Form Creator	 <b>Labvanced</b> Experiment Cloud solution for professional web based experiments used by universities
 <b>Lime Survey</b> Survey Online survey tool for research institutes, universities and other educational institutions	 <b>Microsoft Forms</b> Survey Easily create surveys and polls to collect customer feedback	 <b>OTree</b> Experiment Open-source platform for web-based interactive tasks for behavioral research and experiments
 <b>Pavlovia</b> Experiment Run, share, and explore experiments online for researchers in the behavioural sciences	 <b>Prolific Survey Builder</b> Survey Create up to five questions for quick, frictionless data collection. Available in select countries.	 <b>PsyTester</b> Experiment Online repository of Psychology experiments created in Unity and built as WebGL applications
 <b>PsyToolKit</b> Experiment Free-to-use toolkit for demonstrating, programming, and running cognitive-psychological experiments and surveys	 <b>Qualtrics</b> Survey Create simple surveys for free	 <b>QuestionPro</b> Survey From basic surveys to complex research, customer experience and employee engagement