MTurk Tutorial

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Introduction

Amazon Mechanical Turk (MTurk) provides an on-demand, scalable, human workforce to complete jobs that humans can do better than computers. MTurk formalizes job offers to the thousands of Workers willing to do piecemeal work at their convenience.—MTurk User Guide

More specifically, MTurk is an online platform where you can run your own surveys (or experiments).

Real Experiments

1. Which structure do people prefer: (Multiple Choice)

Link

From: Culbertson & Adger (2014)

2. Effects of L2 speech rate variability on intelligibility: (Transcribing) Link

From: Baese-Berk & Morrill (2016)

3. Rate foreign accentedness (Rating scale) Link

From: Gao & Weinberger (2018)

Validity of MTurk Results

1. Replicability of Lab-setting experiments

MTurk experiments replicated results of the same linguistic/psycholinguistic experiments conducted in Lab-settings. (Enochson & Culbertson, 2015).

We do however need more participants if the experiment is conducted online.

2. Workers

MTurk termed survey/experiment participants as "Workers" (Beware of legal implications). About 2,000 participants are active on MTurk at any given time. 51% of them are female, 49% of them are male. About 75% of the participants are from the United States. Indian participants represent 16% of the population. The rest are from Canada, Great Britain, Philippines and Germany. (Difallah et al., 2018)

Hardly any non-English speaking monolinguals are on the MTurk platform.

Get Started

1. Set up an Amazon AWS account (Have your credit card ready)
2. Create a Requester Account
3. Link your AWS account to your Requester account
4. Create Security Credentials (See User guide for details pp.4-5)

Sign in as a Requester

Sign in : https://requester.mturk.com/

Let's take a look at the existing templates. Click the "New Project"" tag.

Problems with the project templates: 1. cannot randomize stimuli (that's a big problem to any psycholinguistic studies) 2. customization issues (e.g., ISI, Reaction Time, coloring etc.)

Sign in as a Worker

Sign in https://worker.mturk.com

Now we are logged in as a worker, which means we can participate in the experiments. Let's take a look some real-time MTurk HITs (i.e., experiments).

S3 Storage

This service provides storage for hosting 'static' websites, including those using JavaScript.

Activate the S3 storage service on AWS. It is Amazon's Dropbox service. The difference is that the S3 storage also proivde some basic web-hosting functions. We are going to upload our experiments there and link the experiments to MTurk.

Design Your Own Experiment

MTurk experiments are conducted online. Perception studies are the most suitable. Although it is possible to collect speech samples from participants, the quality of the recordings cannot be guaranteed. This tutorial only introduces a perception experiment.

Program the experiments in HTML (CSS+Javascript), becuase HTML is universally supported by all browsers. Flash files are not.

Here's an example

Layout

The basic layout of a perception experiment includes

1. an introduction page, telling potentially participants what the experiment is about, how long it takes, and how much you are going to pay them.
2. general instruction of the experiment
3. the experiment
4. demographic survey.

Introduction page:

Check BeginExperiment.js

1. What the experiment is about
2. How long it takes to complete
3. How much you are willing to pay (the going rate is $0.50 for 10-15 mintues)
4. What knid of participants you want (optional)

General Instruction

Detailed description of the task. Avoid jargons!

Experiment Interface

Check the jQuery package for possible inputs (e.g., rating scale, box input, buttons etc.)

Demographics Questionnaire

Age, Gender, L1/L2, Speech/hearing disorder, etc.

Sample codes

Include:

1. Read list via JavaScripts
2. Randomization (block randomization) via JavaScripts
3. Submit Demographics Questionnaire results to MTurk

Set up MTurk account

Get AWS shell

Click HERE for methods of installing

Get it to work

Once you got it installed, you need to configure it using your AWS security credentials, which means you need to register an AWS account on Amazon (Have your credit card ready). Once that's done, you will be able to get the security credentials.

type the credentials in your aws shell

```
$ aws-shell
aws> configure
AWS Access Key ID [None]: your-access-key-id
AWS Secret Access Key [None]: your-secret-access-key
Default region name [None]: region-to-use (e.g us-west-2, us-west-1, etc).
Default output format [None]:
aws>
```

example configurations for mturk experiment

```
mturk create-hit --endpoint-url https://mturk-requester-sandbox.us-east-1.amazonaws.com \
  --max-assignments 9 \
  --auto-approval-delay-in-seconds 86400 \
  --lifetime-in-seconds 7200 \
  --assignment-duration-in-seconds 3600 \
  --reward 1.00 \
  --title "GMU Demo zgao" \
  --description "Demo Experiment ZGao." \
  --question '
  <ExternalQuestion
  xmlns="
  http://mechanicalturk.amazonaws.com/AWSMechanicalTurkDataSchemas/2006-07-14/ExternalQuestion.xsd">
  <ExternalURL>
  https://s3.amazonaws.com/fap2018/demo/mturk.html?condition=${condition}&amp;list=${list
  }</ExternalURL>
  <FrameHeight>600</FrameHeight>
  </ExternalQuestion>
```

```
'
```

The "–endpoint-url https://mturk-requester-sandbox.us-east-1.amazonaws.com " means we are testing the experiment in the sandbox.

Remove this line if you want to do it for real.

other configurations you might want

```
--qualification-requirements
"QualificationTypeId=00000000000000000071,
Comparator=EqualTo,LocaleValues=[{Country=US,Subdivision=VA}]"
```

More about the available comments

The AWS shell also allows

1. get results directly through –get-hit
2. review the work
3. approve works (i.e., pay the participants)
4. reject works (i.e., refuse payment)

check HERE for details

References:

Baese-Berk, M. M., Morrill, T. H., & Bradlow, A. R. (2016). Intelligibility, fluency, and variability in non-native speech. *The Journal of the Acoustical Society of America*, 139(4), 2162-2162.

Culbertson, J., & Adger, D. (2014). Language learners privilege structured meaning over surface frequency. *Proceedings of the National Academy of Sciences*, 111(16), 5842-5847.

Difallah, Djellel, Elena Filatova, and Panos Ipeirotis (2018). Demographics and Dynamics of Mechanical Turk Workers. *Proceedings of the 18th ACM International Conference on Web Search and Data Mining (WSDM)*, 135–143

Enochson, K., & Culbertson, J. (2015). Collecting psycholinguistic response time data using Amazon Mechanical Turk. *PloS one*, 10(3), e0116946.

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