Mturk training

Overview

What is it:
Mturk is a crowdsourcing system designed and owned by Amazon. It was designed to have humans do tasks (called HITs, Human Intelligence Tasks) too intricate or challenging for a computer to do (e.g. tag images, write original content, transcribe audio etc.). This concept can easily include doing experimental research, and Mturk is increasingly being used by academic institutions (Harvard, UCLA, Stanford, Washington Univ. of St. Louis, etc.). As researchers, we would use Mturk to either run short HTML based surveys directly in Mturk (called an Internal HIT), or direct people to external sites like Qualtrics (called an External HIT). Internal and External HITs are created in the same system, but require the use of different methods. Since we will create primarily External HITs, that is what this tutorial deal with (mostly).

What to expect and not expect:

The good: Mturk will give you cheap, fast, arguably high-quality data. Cheap means roughly 1/10 what it costs to recruit undergraduates ($2/hour is usually more than sufficient). Fast means, depending on how much you pay, getting 500 subjects in 4 hours. (Note: Recent Mturk runs have actually shown a slowdown in recruitment when paying less than 50 cents per HIT. A 25 cent HIT was projected at getting 400 subjects in 7 days, while a 50 cent HIT was projected at 1 day. Also note that survey length seems less important than payment amount. For instance a 25 cent survey that states it takes 5 minutes will not recruit any faster or slower than a 25 cent survey that states it takes 15 minutes.) Quality means half to a quarter the percentage of people failing attention filters compared to our undergraduates. Also, a recent Psych Science article was also published regarding Mturk.

Findings indicate that (a) MTurk participants are slightly more demographically diverse than are standard Internet samples and are significantly more diverse than typical American college samples; (b) participation is affected by compensation rate and task length, but participants can still be recruited rapidly and inexpensively; (c) realistic compensation rates do not affect data quality; and (d) the data obtained are at least as reliable as those obtained via traditional methods (Burhmester, Kwang, & Gosling, 2011).

The bad: Mturk has been in beta mode for the last 6 years, with no end in sight. Because of this you will notice the site seems incomplete in many ways. There are a number of features of Mturk (qualifications for instance) that are not available on the Requester User Interface (the main website), and are only usable if you can custom program software to use their API.

Mturk also has no technical support. When you contact them, they can only help with things like if a transaction has not gone through yet. If you ask a technical question, they will give you a canned response with links to a couple how-to documents that are out of date. Thus, learning Mturk from scratch is a little difficult.
Demographics

While the Psych Science article provides some demographic information about Mturk workers, Panos Ipeirotis at Stern at NYU conducted a demographic study of Mturk recruiting 1,000 people.

- Turkers are younger. 54% of Turkers are between 21-35 years old, compared to 22% of the general population.
- Turkers are mainly female. 70% of the Turkers are female, compared to 50% of the general population.
- Turkers have lower income. 65% of Turkers have household income less than 60K, compared to 45% of the general population.
- Turkers have smaller families. 55% of Turkers do not have children, compared to the 40% of the general population.
- Geographical distribution of Turkers and Internet users is similar.
- Race composition of Turkers and Internet users is similar, although there are slightly more Asians on Mechanical Turk.

It is also worth noting that only about 46% of users are from the US. 34% are from India. 20% are scatter throughout the rest of the world. While you can set your HITs to be only open to those in the US, where the person is, is based on self-report, and it is likely that at least some people in India simply claim to be in the US. Also, from past experience, most Canadian users state they are in the United States. If it is pertinent to exclude all those from other countries, we can use an IP address locator to figure out the general vicinity of the computer they are using access the study.

Using Mturk

IRB:

You need to have Mturk recruitment added to you IRB protocols before running studies. I have sample text that you can mostly copy and paste into your protocols when creating an amendment. You can change any text you need (e.g. different payment scheme). This text has worked on 7 different submissions, so you should not hear anything back from Dasha about it. Here is a link to a file containing the text you will need:

http://faculty.msb.edu/arl45/Mturk/Mturk%20Recruitment.pdf

Starting an account:

If you shop Amazon, you have an Mturk account.

If you do not, or you want a separate log in for Mturk, go to Mturk.com click Sign in as a Requestor (upper right). Here it asks you to log in using your Amazon account, or you can “I’m a new user” to create a new account.
Creating a separate account for your research needs is probably best. The reason is that both Amazon and Mturk use Amazon Payments to process transactions. In short, this means you may accidentally use your Mturk funds to buy books on Amazon (it is relatively difficult to do this, though).

If you want, you can use an email address that you already have an Amazon account for to create your new account (for instance, you can have 2 accounts that both use your Georgetown email address to log in). You just need to use a different password. When you sign in, the system will direct you to the correct account based on the password you typed in.

Once you have an account you can log in on the homepage (mturk.com). In the upper-right corner click “Requester” and log in.

Creating HITs:

After you log in, you will see your homepage. This is mostly marketing material and links to some tutorials. There are 6 tabs along the top you will use to navigate the site. To create a HIT, you will click the Design tab.

Note: at the time of writing, the RUI was not compatible with Internet Explorer 8/9 (the most recent version(s)). While most of the site will work, pertinent sections may lose information for seemingly no reason. It is suggested you use Google Chrome or Firefox when using Mturk.

Before creating a HIT, you should know that Mturk was not designed to be used through the Requester User Interface (the site you are at after signing in as a Requester). There are actually two additional methods for creating HITs, the Application Programming Interface (API) and the Command Line Tools (CLT). Most Mturk HITs are created by research companies who have developed programs that use the API. Using the API is beyond most of the needs we have, but if it useful in the future, I am familiar with it and can give training (it requires knowledge of Java, PERL, or .NET programming, however). The Command Line Tools are a set of operations that use the Command Prompt to post HITs. CLT has a few additional benefits compared to the RUI, but we will probably never have need of it.

Since Mturk is still in Beta, and the API is Mturk’s primary money maker, the RUI is a little behind in development. The main drawback is that you have to know some HTML and the basics of object-oriented programming to do anything besides adding text. Luckily, not much HTML and programming is necessary, and most or all of it I have written already.

Starting from the beginning, after going to the Design tab, you will need to start with a template (click any template, we will be deleting all the code in it anyways; ironically the “Blank” template is not blank and has the most code of all the templates).

There are three pages you will go through to create a HIT. The first has general properties of your HIT. Fill out the descriptive information at the top. The Template Name is for you, and does not show to participants. The Title is what the participants will see in the search page. If the participant clicks the Title, then the description is shown. This should be short; like a sub-title. The Keywords will also show at
this point. Keywords also serve the purpose of boosting search results for your HIT. Use as many words as can to describe your HIT, and that you think people will use to search for HITs (survey is a good one).

The middle section deals with restrictions. First you set how long the HIT is available, and how long people can work on it. For availability set it to whatever deadline you like (1 week is usually more than enough). For maximum length, give participants enough time, but also not so much time that they can accept the HIT and then walk away and do it later or the next day. 1 or 2 hours for a short survey is generally sufficient.

Below that are qualifications. Mturk is only set up with 4 qualifications: Approval rating, location (based on self-report), Adult content (tells people the HIT may contain adult content and they need to be 18 or older), and number of HITs approved. It is generally good to set approval rating to 95% or higher and location to US.

Other than those you have to create your own qualifications. There are two kinds, assigned and test-based. Assigned qualifications are just a simple name that you create; like a badge that has no meaning other than the fact that you gave it to someone. These types of qualifications you have to personally give individual workers, thus they are not very useful (they are mostly for creating a pool of trusted workers that you will repeatedly offer HITs to). The other type of qualification is test-based. A simple example is if you want only females, you create a test that asks for their sex. If they respond male they fail, if they respond female they pass and receive that qualification. These are difficult to make (they need to be programmed in Java or C# and are only able to be posted using the API). They are also looked down upon by users (they add unpaid time to doing the HIT and are usually only used once). In short, if they are necessary, they are doable, but it is best to not use them and simply weed out the participants you don’t want in your data after the fact.

The bottom section allows you to set the payment (only in US dollars), number of assignments per HIT (this is how many people you want to take your survey), and the automatic approval time.

The next page is where you design what the user actually sees. There is a rich-text editor for text, but everything else needs to be done in HTML (click the edit HTML source button, if you are in a premade template, delete everything). You are required to have at least one question in your HIT. A question is any type of user input. I always have a comment box at the bottom. Here is the HTML code for it:

```
<p>If you have any comments or questions, please write them in the textbox below.</p>

<p><textarea rows="3" cols="80" name="comment"></textarea></p>
```

To make a survey in Mturk, you just program as you would for a form in HTML (e.g. input tags). For external surveys, like Qualtrics, you need to somehow send them to the external site. Below is the easiest method (a simple hyperlink using HTML that displays the text “Click here”).

```
<p><a target="_blank" href="REPLACE WITH YOUR URL">Click here</a></p>
```
There are some other methods that solve multiple problems at the same time, and are generally better. These will be discussed later.

Other than those two things all you need is to describe your study, any restrictions (e.g. no one under 18), and any instructions (e.g. click the link below). At the end of this document is the HTML text I use. You can copy and paste the entire code and then edit it in the rich-text editor.

The third and final tab is simply a preview. It will show you the HIT mostly how users will see it. Hit Finish and it will automatically take you the Publish tab on the dashboard.

**Creating HIT Batches:**

Mturk has the capability of taking templates you create and creating hundreds or thousands of individual HITs based on it (called Batches). This is actually what Mturk's original purpose was, and is still how most HITs are created. An example of when this would be necessary is if you have 1000 images of products, and you want to know what the products are without going through them yourself. You would create a template with a variable place holder for your image. Then you would create a .csv spreadsheet with the URLs of all the images and upload it to Mturk. Mturk then takes your .csv file and template creates an individual HIT for each image, with the image inserted into the HIT. When posted, workers can then go through as many images as they want in a random order, and Mturk will keep track of how many people submit a HIT for each image. Thus, you can set how many people see each image.

I suspect we will not use this feature too much. For detailed instructions on how to use this feature, contact me or go to [http://docs.amazonwebservices.com/AWSMechTurk/latest/RequesterUI/](http://docs.amazonwebservices.com/AWSMechTurk/latest/RequesterUI/).

**Playing around in the Sandbox:**

If you want to test HITs, you cannot do this at the regular Mturk site. Mturk has a mirror site http://sandbox.mturk.com. There you'll find a link to the Requester Sandbox. This site will look mostly the same as Mturk.com, but when you post things no one gets paid (your account also automatically has 10,000 fake dollars in it). The downside is that the two sites are not connected. If you make something in the sandbox, you have to remake it on the regular site by copy and pasting all the data fields and design field.

**Getting subjects:**

To post a HIT, go to the Publish tab on the dashboard. Select the template you want to use (when you are in the Design tab you are creating templates not HITs themselves). Next will be another preview of what your HIT will look like (it is good to test the link if you have one, at this point). Last, it takes you to a confirmation page. The only thing you can change on this page is the name given to this particular batch. If you want to change the amount of participants or the amount paid, you have to go back to the template. After going over all the information on the page hit Publish HITs, and it will make your HIT active and take you the Manage tab where you can review the batches you have posted. Note it will only let you publish the HIT if you have enough money in your Amazon Payments account.
**Funding your Account:**

First, figure out how much money you need (it is best to only fund your account with the exact amount as the refund process is rather annoying). To figure this out, multiply your # of participants by the amount you are paying them and then add 10% of that amount (this is how Mturk makes money). If you are math person:

\[
\text{Funds to add} = N \times $ + .1(N \times $)
\]

There is a minimum commission per HIT of $0.005. If you paying less than 5 cents per HIT, your commission will be above 10% then. To fund your Mturk account, click Account Settings in the top right of the screen. Then click Prepay for Prepay for Amazon Mechanical Turk HITs. Then enter the amount you want to add. Click Continue to Amazon Payments and it will ask you to sign in then enter payment information.

Once you have confirmed everything, your account will be funded. Sometimes it takes a few minutes to process the transaction. If that is the case you will receive an email when the transaction has been completed. You may now go back and post your HIT.

**Managing posted HITs:**

Before your batch is completed you can Cancel it (if you made a mistake), check Results (if you are impatient), and review the information regarding the HIT (by clicking the batch name). The results refer to any information obtained by Mturk. This includes useless information like the HIT serial number and instance serial number, almost useless information like the worker’s ID number, and useful information like any input field you have in your HIT (like the comment box above) and IP addresses. After the HIT is done, the cancel option changes to Delete. You can now look at all your Mturk data.

Mturk workers base their impressions of Requester mainly on how quickly the Requester approves their work. Because of this, it is good practice to do approvals at least once per day. You can approve a HIT any time after the HIT has been submitted, even before your batch is complete.

**Approving workers:**

At any point after a worker has submitted their HIT, you can approve it or reject it. There are two ways to do this. The manual way is to select all the users in the list that you want to approve and click Approve (there is an Approval All button as well). The second method is more flexible if you are not simply approving everyone. First, download the CSV file of your results (hit Download CSV). Once open on the far right is an Approve column and Reject column. To approve a person put an “x” in that column. To Reject, type the feedback you would like to give the person (i.e. why you rejected them).

After all workers have something in either the accept or reject column, save the file and click Upload CSV on the Manage Batch page. Once the system has processed your file, it will ask you to confirm. There is no way to reverse an acceptance or rejection, so double check your work before doing this.
How do I know which worker to accept and which to reject?

If you are running your study on an external site, you will have no idea who to accept and who to reject. I have come up with two methods for linking the files. The more primitive one is to create a random ID number in whatever you are using for your survey (e.g. in Qualtrics you can create a random number, see appendix C). You then display that number to the participant (after the data has been saved, in Qualtrics, put it in a custom end of survey message). When you display it, also ask the participant to enter the number in the correct field in the Mturk hit window. If you want to use this method, here is the HTML code for putting the text entry field in your HIT:

\[
\text{\textless p><u>Once you have completed the survey, enter your participant number here</u></p>\]

\[
\text{\textless p><input id="ptid" size="30" name="ptid" type="text" />&nbsp;}</p>\]

This method has the drawbacks of requiring the user to do extra work which causes errors, and you have to come up with a way to give the person an ID number.

I have recently come up with an easier method. I have created a Flash program that you can embed in your HIT replacing your hyperlink. The Flash program gets the user’s worker Id which will already be stored in the Mturk data file. It then appends it to the URL of your study as a query variable which your study can then easily access and save automatically to the data file. Here is the code you must enter into your HIT (appendix B has this code as well as all the other necessary code to copy and paste):

\[
\text{\textless script type="text/javascript"}\\
\text{var url="REPLACE WITH YOUR URL";}\\
\text{\textgreater /script}\]

\[
\text{\textless p><object classid="clsid:d27cdb6e-ae6d-11cf-96b8-444553540000" codebase="http://fpdownload.macromedia.com/pub/shockwave/cabs/flash/swflash.cab\&version=8,0,0,0" width="350" height="75" id="preloader" align="middle">\\
\text{\textless param name="allowScriptAccess" value="always" /}>\\
\text{\textless param name="movie" value="http://faculty.msb.edu/arl45/Mturk/workerId.swf" /}>\\
\text{\textless param name="quality" value="high" /}>\\
\text{\textless param name="bgcolor" value="#FFFFFF" /}>\\
\text{\textless embed src="http://faculty.msb.edu/arl45/Mturk/workerId.swf " quality="high" bgcolor="#FFFFFF" width="350" height="75" name="test2" align="middle" allowScriptAccess="always" type="application/x-shockwave-flash" pluginspage="http://www.macromedia.com/go/getflashplayer" /}>\\
\text{\textgreater /object}\]

The only thing you have to change is the URL at the top.

To save the worker Id in Qualtrics all you have to do is go to Survey Flow and add an Embedded Data element. Name the element workerId (lower case w, capital I, lower case d). Do not set it to a value (it should say “Value will be set by panel or URL” next to it). Just save and you are done.
You can now look at the data in your data file and decide if you need to reject anyone, and go to the Mturk data file and find which row to reject.

**Bonuses:**

You can also bonus workers individually. For experimental purposes, this is mostly used when you are doing incentive-compatible payment schemes in your study. To do this, click on the worker’s ID and on that page click “Bonus Worker.” After putting an amount you can also put feedback. Make sure you have enough money in your account before doing this. Also, there is a maximum bonus amount. I have tried to figure out what it is, and the Customer Serve rep would not tell me (it is somewhere around $40 though). You can bonus multiple times, though, if your desired bonus is too high.

**Reimbursement:**

The reimbursement process is currently the same for Mturk as it is for other expenses you may have that you paid for with a personal credit card. I have been talking with Pam Carter about setting up a way to directly fund Mturk using an MSB credit card or other means, but thus far that has not been set up.

The three things you will need is a brief explanation of the expense (I think a sentence like “Funds to pay participants for research” will suffice), a credit card statement proving the expense came from your personal card, and a receipt from Amazon that your money was paid to someone/something else (so that someone does not fund their Amazon account, get reimbursed, then refunds the money from their Amazon account).

There has been some confusion in the past as to what constitutes a receipt from Amazon (since they don’t actually give you one). Pam Carter has said she will accept one of two things. Both require you to go to Account Settings, and then click Transaction History. On this page you can fiddle with the dates until it shows all the transactions you need reimbursement for. It will show payments to Amazon and payments, in aggregate, from Amazon to workers. Take a screen shot of this (try to include the Amazon logo), paste it into MS Paint and print. This method is difficult if it does not fit on one page. If, instead, after finding the correct dates, you hit Download All Data, you will get a very detailed CSV spreadsheet file that will also work as a receipt (this file is actually a much better receipt since it shows each individual transaction to workers; however, there has been some objections in the past from people processing reimbursements since there is no Amazon logo or anything to confirm authenticity).

Send the three things mentioned above to Julian Mendoza (jm498@msbmail.georgetown.edu).

**Refunds:**

The refund process is another area of the site that is lacking. The only way to get a refund is to email customer support (located in the very bottom left is a link called Contact Us). The user name and email address should already be filled out. For subject, select Payments and Refunds. In the text box state exactly what you would like refunded, then send your message.
Amazon policy is to refund transactions to wherever they came from. If you use multiple cards to fund your account, Amazon will keep track of how much money is left from certain transactions, and you may get $5 back on one card and $10 back on another, depending on the funds in your account. Also Amazon defaults to refunding all the money left in your account, so if you only want $20 of the $50 you have in your account, tell them that in the message box.
Appendix A: Sample Basic External HIT HTML code

Instructions for use:

Copy and paste this code into the HTML editor. Replace the URL where it is marked. Edit the text in the text editor to your liking.

<h1>Complete a Study On Consumer Behavior</h1>
<p>You will be participating in a survey about consumers' perception of services. The study takes, on average, 7 minutes to complete. You will receive 50 cents in payment for completion of the study. You must be at least 18 years of age to participate. You will be asked to complete a survey that will be administered on the internet. More information is provided at the beginning of the actual study.</p>
<p>In order to complete this HIT, you will do the following:</p>
<ol>
<li>Accept the hit <b>FIRST</b></li>
<li>Click the link below, and navigate to the survey website.</li>
<li>Complete the survey, answering all questions, and completing all tasks, truthfully and honestly, to the best of your ability.</li>
<li>At the conclusion of the study you will be shown your 6-digit participant number. This a number used to identify your data so that no actual identifiable information about you is saved.</li>
<li>You must enter the participant number below upon completion of the survey.</li>
<li>Once you have entered the participant number the HIT is complete, may be submitted, and will be accepted upon review that the study was completed.</li>
<li>Note: HITs may take up to one week to be approved.</li>
</ol>
<p>&nbsp;</p>
<p><u><b>To begin, after accepting the HIT click this link:</b></u></p>
<p><a target="_blank" href="REPLACE WITH YOUR URL">Click here for the study</a></p>
<p>&nbsp;</p>
<p><u><strong>Once you have completed the survey, enter your 6-digit participant number here:</strong></u></p>
<p><input id="ptid" type="text" size="30" name="ptid" /></p>
<p>&nbsp;</p>
<p>If you have any comments or questions, please write them in the textbox below.</p>
<p><textarea rows="3" cols="80" name="comment"></textarea></p>
Appendix B: Sample External HIT HTML code with workerId locator program (preferred HIT template)

Instructions for use:

Copy and paste code below. Change the URL (marked “REPLACE WITH YOUR URL”). Edit instruction and other text as necessary. To save the worker ID in your data file, for Qualtrics, go to Survey Flow in your survey, add an Embedded Data element, for name enter “workerId” (lower case w, capital I, lower case d). Hit save. For anything besides Qualtrics, contact arl45@georgetown.edu.

```html
<h1>Complete a Study On Consumer Behavior</h1>
<p>You will be participating in a survey about consumers' perception of services. The study takes, on average, 7 minutes to complete. You will receive 50 cents in payment for completion of the study. You must be at least 18 years of age to participate. You will be asked to complete a survey that will be administered on the internet. More information is provided at the beginning of the actual study.</p>
<p>In order to complete this HIT, you will do the following:</p>
<ol>
<li>Accept the hit <b>FIRST</b></li>
<li>Click the link below and navigate to the survey website.</li>
<li>Complete the survey, answering all questions, and completing all tasks, truthfully and honestly, to the best of your ability.</li>
<li>Once you have completed the survey, the HIT is complete and can be turned in.</li>
<li>Note: HITs may take up to one week to be approved.</li>
</ol>
<p>If you have any comments or questions, please write them in the textbox below.</p>
<p><textarea rows="3" cols="80" name="comment"></textarea></p>
```

<script type="text/javascript">
var url="REPLACE WITH YOUR URL";
</script>
<p>Object classid="clsid:d27cde6e-ae6d-11cf-96b8-444553540000"
codebase="http://fpdownload.macromedia.com/pub/shockwave/cabs/flash/swflash.cab\/version=8,0,0,0" width="350" height="75" id="preloader" align="middle">
<param name="allowScriptAccess" value="always" />
<param name="movie" value="http://faculty.msb.edu/arl45/Mturk/workerId.swf" />
<param name="quality" value="high" />
<param name="bgcolor" value="#FFFFFF" />
<embed src="http://faculty.msb.edu/arl45/Mturk/workerId.swf" quality="high"
bgcolor="#FFFFFF" width="350" height="75" name="test2" align="middle"
allowScriptAccess="always" type="application/x-shockwave-flash"
pluginspage="http://www.macromedia.com/go/getflashplayer" />
</object>
</p>
<p>Object classid="clsid:d27cde6e-ae6d-11cf-96b8-444553540000"
codebase="http://fpdownload.macromedia.com/pub/shockwave/cabs/flash/swflash.cab\/version=8,0,0,0" width="350" height="75" id="preloader" align="middle">
<param name="allowScriptAccess" value="always" />
<param name="movie" value="http://faculty.msb.edu/arl45/Mturk/workerId.swf" />
<param name="quality" value="high" />
<param name="bgcolor" value="#FFFFFF" />
<embed src="http://faculty.msb.edu/arl45/Mturk/workerId.swf" quality="high"
bgcolor="#FFFFFF" width="350" height="75" name="test2" align="middle"
allowScriptAccess="always" type="application/x-shockwave-flash"
pluginspage="http://www.macromedia.com/go/getflashplayer" />
</object>
</p>
```
Appendix C: Creating a random participant number in Qualtrics

- Go into survey flow.
- Add element anywhere before you need your random number (I usually put it at the beginning).
- Select Web Service for element type.
- In the URL put: http://reporting.qualtrics.com/projects/randomNumGen.php
- Underneath enter: min in the left box and your minimum value in the right box
- Underneath that enter: max in the left box and your maximum value in the right box
- In Set Embedded Data enter a name for your new variable (e.g. random, but it can be anything you want)
- In the right box enter: random
- To display your number enter this code pretty much anywhere in a survey (replacing random with whatever you named your variable, in the left box): ${e://Field/random}
- If you are using this to display a participant ID number to a participant, it is generally best to do so after data has been saved. This means you need to create a custom end of survey message and enter it in that. To do so, go to Qualtrics and then go to the Library tab. At the bottom, in the Message Library, click on your name.
- In the top right click Create a New Message. In the drop down menu, click End of Survey Messages. In description, name your message. In the text editor, create your message. When you want to display the random number enter the code for your variable (e.g. ${e://Field/random}).
- If something is not working, here is Qualtrics’ tutorial: http://www.qualtrics.com/university/random-number-generator/