Crowdsourcing to Mobile Users: A Study of the Role of Platforms and Tasks

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Riva del Garda, 26/08/2013
Disclaimer

- Preliminary work
- Master’s thesis
- No conclusive results
- Also, not much about DB...
  - (I’m from IR)
- Hopefully inspiring
Outline

- Intro & Background
- Aims
- Two experiments
- Results
2 phenomena

- Crowdsourcing
- Mobile
Crowdsourcing

― "taking a task traditionally performed by an employee or contractor, and outsourcing it to an undefined, generally large group of people or community in the form of an open call"


Crowdsourcing is rather common and seems effective

- Kasparov versus the World (1999)
- Wikipedia
- Platforms: Amazon Mechanical Turk, CrowdFlower, ...
- Crowdsourcing in IR evaluation [competitions]
- ...

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Mobile

Mobile Traffic as % of Global Internet Traffic = Growing 1.5x per Year & Likely to Maintain Trajectory or Accelerate

Global Mobile Traffic as % of Total Internet Traffic, 12/08 – 5/13 (with Trendline Projection to 5/15E)

0% 5% 10% 15% 20% 25% 30%
% of Internet Traffic

12/08 12/09 12/10 12/11 12/12 12/13E 12/14E

0.9% in 5/09
2.4% in 5/10
6% in 5/12
10% in 5/13
15% in 5/13

Trendline

Source: StatCounter Global Stats. 5/13. Note that PC-based Internet data hindered by streaming.
Mobile

China –
Mobile Internet Access Surpassed PC, Q2:12

% of Chinese Internet Users Accessing the Web via Desktop PCs vs. via Mobile Phones, 6/07 – 12/12

- 96%
- 80%
- 76%
- 71%
- 60%
- 40%
- 28%
- 0%

Source: CNNIC, 1/13

http://www.slideshare.net/kleinerperkins/kpcb-internet-trends-2013
Mobile

Groupon N. America –
45% of Transactions on Mobile, Up from <15% Two Years Ago

Source: Groupon, as of 3/13.

http://www.slideshare.net/kleinerperkins/kpcb-internet-trends-2013
So, mobile...

- Widespread, increasing
- People on the go having free time
  - Waiting the bus, at a traffic light, ...
- Having a device with camera, microphone,...
  - Mobile phones
  - Tablets
  - Glasses, watches, etc.
- Seems the ideal workforce for crowdsourcing
  - (at least for short time, low payment tasks)
Aims

- Study the intersection of mobile and crowdsourcing
- Which **platforms** are more adequate to mobile?
- Which kinds of **tasks**?
- Two experiments
Experiment 1: Estimation

- We asked the participants to estimate the difficulty of some (crowdsourcing-like) tasks
  - On both mobile and desktop

Details:

- 16 participants
- 48 tasks from:
  - mturk.com
  - microworkers.com
  - minuteworkers.com
  - shorttask.com
- Each participant was assigned 12 tasks
- Difficulty on a 7-points scale
User interface

What is expected from Workers?
2. Stay on the website for 1-3 minutes
3. Click on a Google ad

Required proof that task was finished?
1. URL to which you have been redirected after you clicked on my Google ad
2. Your IP address - www.whatismyip.com
Task example

- Find the details for this Restaurant
  - For this restaurant below, enter the details below
  - You must confirm that the restaurant is still open
  - Include the full address, e.g. http://www.thecheesecakefactory.com
  - Do not include URLs to city guides and listings like Citysearch

- Restaurant: Akasha Organics 160 North Main St. Ketchum

- Fill in the text fields with this information: Still open, Restaurant name, Website Address, Phone number, Street Address, City, State, Zip code.
Results

Estimated difficulty

- mTurk
- microWorkers
- minuteWorkers
- shortTask

Desktop vs Mobile
Remarks

- Participants estimate that tasks on mobile are more difficult
- Nothing surprising...
- Confirmation
- Manual analysis of tasks:
  - Typical issues (too long description; scrolling problems; unsupported audio formats and/or plugins; pages with Adobe Flash; frames; layout, CPU requirements; etc.)
  - Without those, it might be different
Experiment 2: Execution

- Kinds of task
- Same participants
- Artificial tasks
  - No issues
  - Anyway realistic ones
- Tasks were actually performed
  - On both desktop and mobile
- Measure: average time to complete
Task categories

1. Content categorization
2. Moderation of an image
3. Sentiment
4. Image tagging
5. Transcription from an image
6. Writing
Desktop & mobile UIs

Categorization

Instructions:
Assign the correct categories to the following pictures:

- Africa
- America
- Asia
- Europe
- Oceania

Oceania

Europe
Average time to complete for each task category

- Categorization
- Moderation
- Sentiment
- Img Tagging
- Transcription
- Writing

Desktop vs Mobile

Time [s]

0 50 100 150 200 250 300

Results
Mobile-desktop differences in average time to complete for each task category

- Categorization
- Moderation
- Sentiment
- Img Tagging
- Trascription
- Writing
Remarks

- Different durations
  - Categorization, Moderation, Sentiment
  - Image tagging, Transcription
  - Writing
- All of them faster on desktop
  - But Writing!
  - Voice-to-text
- ...

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Summary

- Some crowdsourcing platforms seem slightly more adequate to mobile devices than others
  - But no huge difference
- Some inadequacy issues seem rather superficial
  - Can be resolved by a better task design, UI, formats, …
- Some kinds of tasks are more adequate than others
- There might be some unexpected opportunities with mobile devices
  - Like voice-to-text
Future

- Automatic task allocation to workers
  - Based on worker context/location/... and task features

- Other (speculative) advantages of mobile:
  - Position
    - “Go to ... and do...”
  - Camera and video
    - “Take a picture/video of...”
  - GPS
    - “Leave a trace of your movements” (already used for traffic)
  - ...