Crowdsourcing

September 24, 2018

Today

Introduction to crowdsourcing

What is it?

Platforms

Applications

Challenges and Issues

3rd Case Study from Wed (if time)

Crowdsourcing

.. the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call.

- Howe, 2006

Crowdsourcing

the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.

-- Merriam Webster

Crowdsourcing Platforms

Aim to encourage and/or support crowdsourced work

Differ according to their:

- Level of organization
- Size of community
- Incentives

Example Platform : Amazon Mechanical Turk

Name origin: 18th century "automatic" Chess-playing machine

Requestors (aka employers) post tasks known as Human-Intelligence Tasks (HITs)

Workers (aka online users) complete tasks for small financial reward

Mechanical Turk

2010 Data:

~ five million tasks completed per year at 1-5¢ each [Ipeirotis 2010]

Population: 40% U.S., 40% India, 20% elsewhere

Gender, education and income are close mirrors of overall population distributions [Ross 2010]

Mechanical Turk

More recent data:

~ 600k people participating

2018 study on wages [Hara 2018]

Median: ~$2/h

Mean: $3/h

The following website has live demographics data:

http://demographics.mturk-tracker.com/

Harnessing Crowds

Example application domains

Crowd work

Crowd-powered interfaces

Online experiments

User-generated content

Citizen science

Crowdfunding

Crowd work

Using crowd workers to complete work that would be difficult to complete otherwise

Why?

Volume of work

Tedious tasks

Expertise / abilities involved

Need for outsider insight

Can be explicit (e.g., through crowdsourcing platforms) or implicit

Crowd work: Examples

One of the earliest examples is Luis Von Ahn's ReCaptcha

Crowd-powered interfaces: Examples

WizViz [Bigham et al.]

Crowd-powered interfaces: Soylent [Berstein et al.]

A crowd-powered word processor

Text Shortening

Proof-reading

While GUIs @ le computers more intuitive and easier to learn, they didn't let people be able to control computers efficiently.

Crowdsourced Experiments

https://www.experiencedynamics.com/sites/default/files/
blog_images/ED-Website-Shoot_030414_40.jpg

Crowdsourced Experiments

Why?

Potential to:

  Increase sample sizes

  Increase participant diversity

User-Generated Content
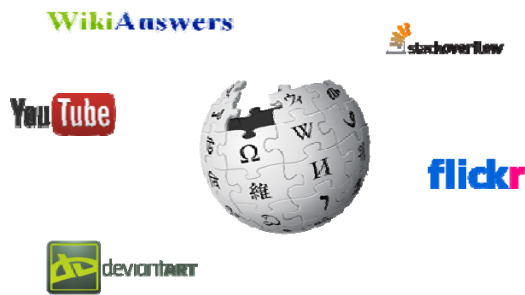
Citizen Science

Science conducted in whole, or in part, by non-professional scientists

Citizen Science
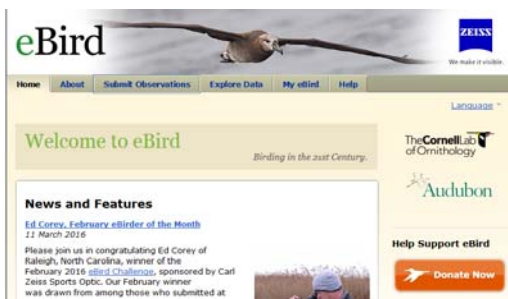
Citizen Science
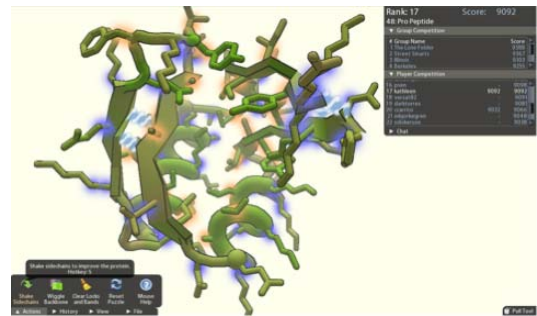
Crowdfunding

The practice of funding a project or venture by raising money from a large number of people, often via web-based platforms

Crowdfunding: High-Profile Examples

Crowdsourcing

Challenges / Issues

Motivating contributions

Data / work quality

Workflows and coordination

Performance

Motivating Contributions

How to get people to participate?

Some strategies

Payment

Gamification

Community building

Ensuring personal benefit

Embedding crowd work into another task

Data Quality

Data and/or work coming from crowds has the potential to be "noisy"

Components / solutions:

- Ensure clear task descriptions
- Establish checks
- Include redundancy
- Incorporate voting
- Have intrinsic motivations align with task goals

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Workflows

How can crowd work benefit from Divide & Conquer?

Considerations:

- Task decomposition
- Sequencing
- Ensuring task coverage
- Providing sufficient context
- Worker coordination?

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Performance

Performance requirements will vary dramatically base on application

Solutions explored

- Over-recruiting
- Having workers on hand
- Different pricing models

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Other Considerations

What are the ethical and/or legal considerations of crowdsourcing?

E.g.,

- Demographics of crowd workers
- Imbalance of benefit
- Data storage

We will cover these in more detail later...

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Relevance to HCI

Crowdsourcing HCI work

    E.g., interface evaluation, user studies

HCI of crowdsourcing

    Interface/interaction design

    Lots of interesting socio-technical questions

Intro to crowdsourcing: Recap

Now you are:

    Familiar with the term crowdsourcing and example platforms

    Are aware of a number of HCI-relevant application domains

    Are familiar with some of the challenges and issues

Case Study 3: Switter

General research methodology

    Exploratory study

    Prototype design / implementation addressing a subset of challenges / issues raised in study

    Limited field deployment

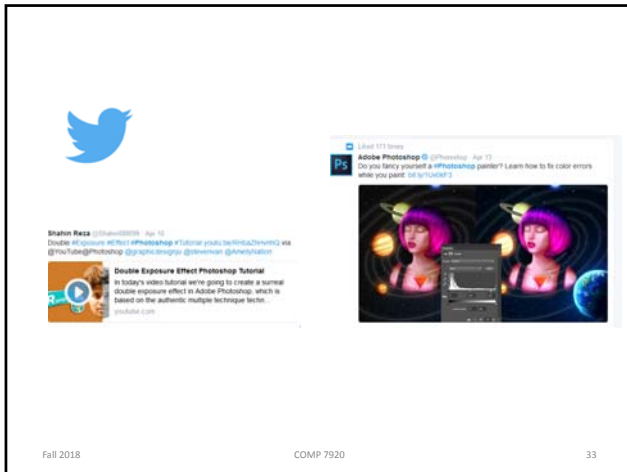expert designers continually seek to learn new things

even after 10 years of experience

Challenges

Large volume of content

Assessing utility is difficult

Switter

Supporting Exploration of Software
Learning Materials on Social Media

Field Study

Deployed Switter to 9 design practitioners

Used at least once per day over 7 days

"Wizard of Oz" content population (~30 tweets/day)

Data collection
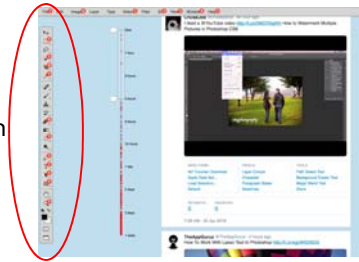
    Logs, journal entries, semi-structured interviews

Findings

Exploration based on popularity
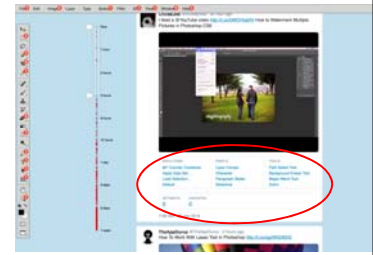
Addressing known weaknesses

Command comparisons

Findings

Quickly assess the content

unexpected/ unknown use-cases

Discussion

Wizard-of-oz components

Missing features

Choice of evaluation method