

# Crowdsourcing and Human Computation

Tuesdays and Thursdays  
3pm-4:30pm

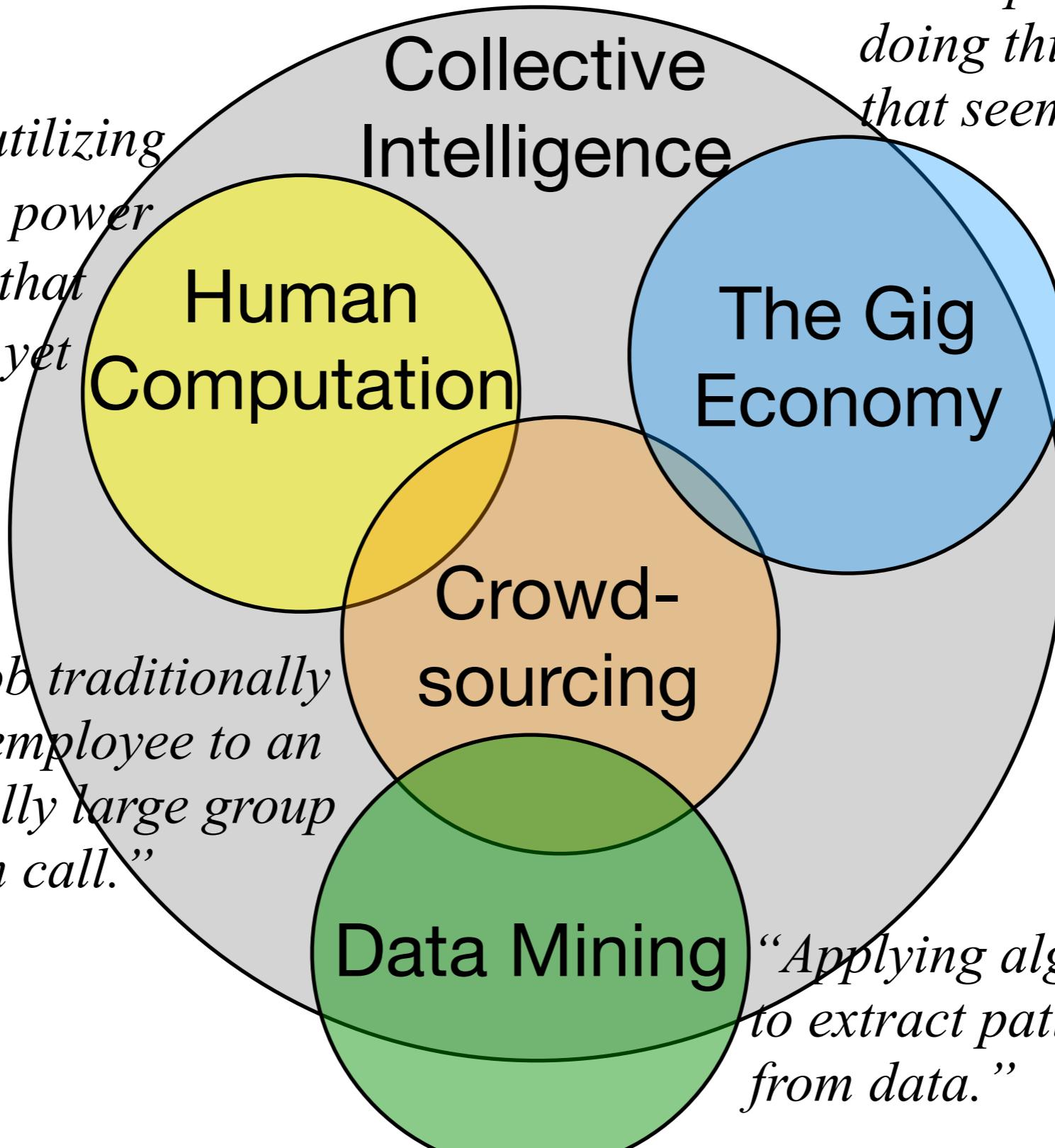
3401 Walnut St room 401B

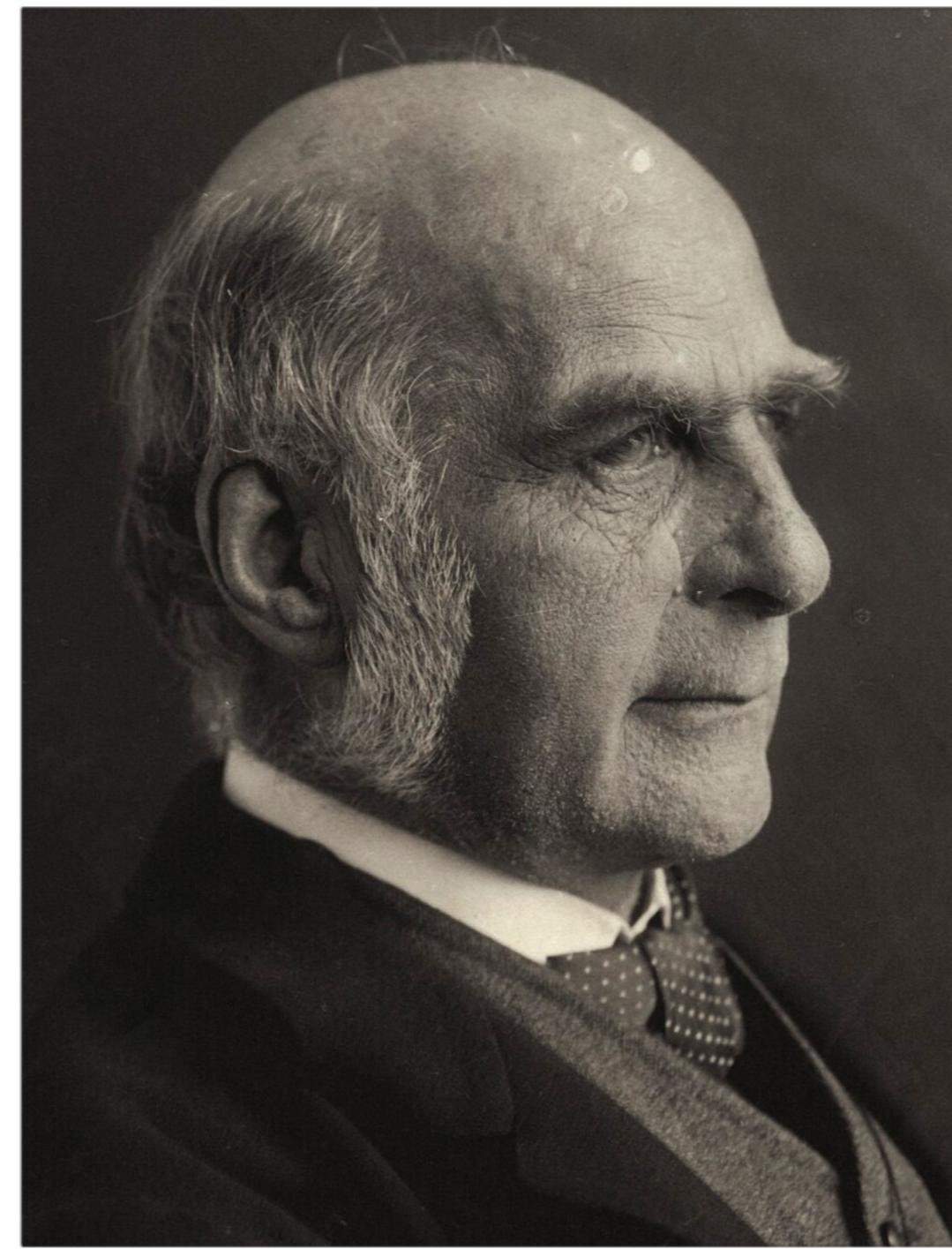
Instructor: Chris Callison-Burch

Website: [crowdsourcing-class.org](http://crowdsourcing-class.org)

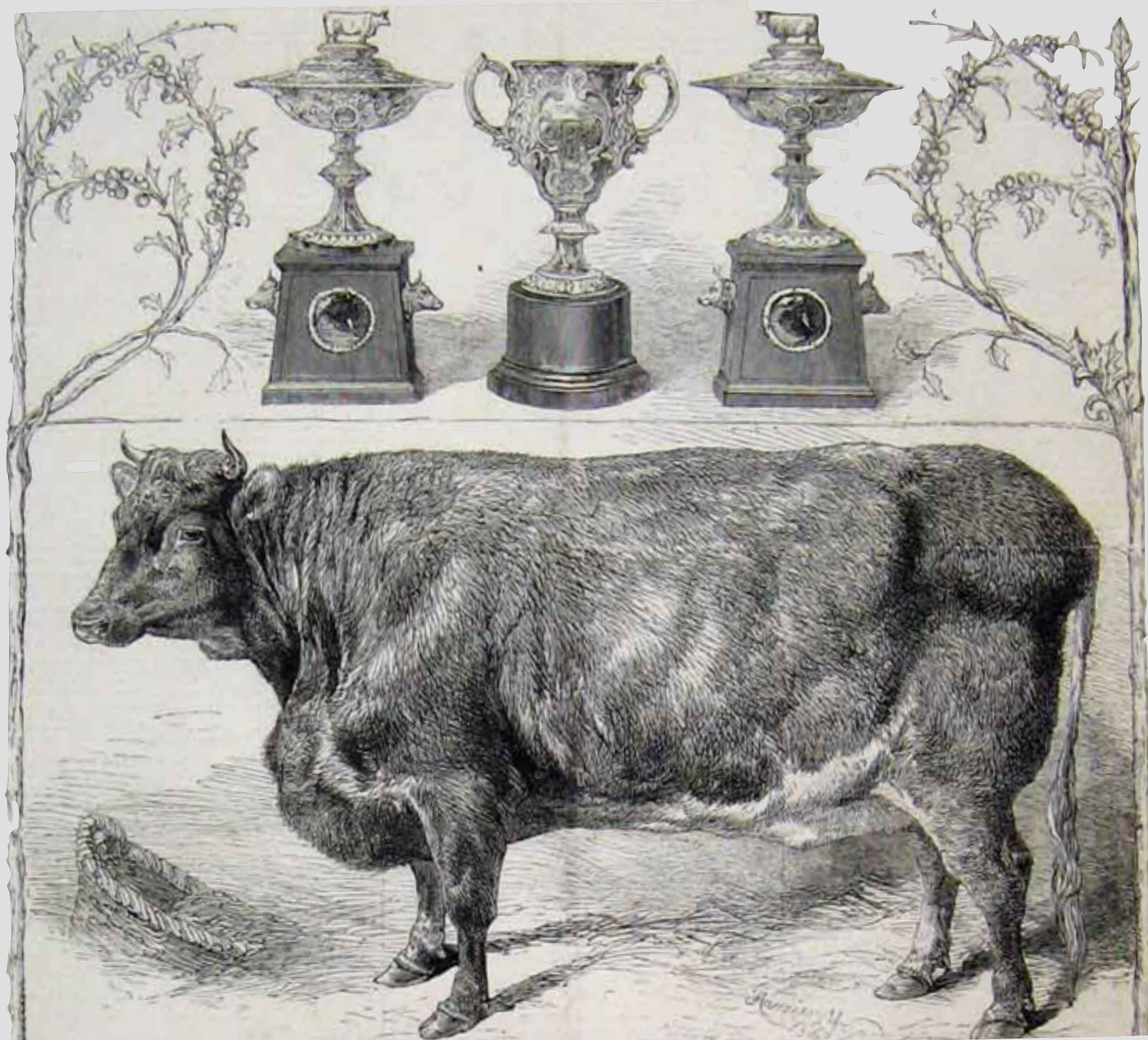
# Inter-related concepts

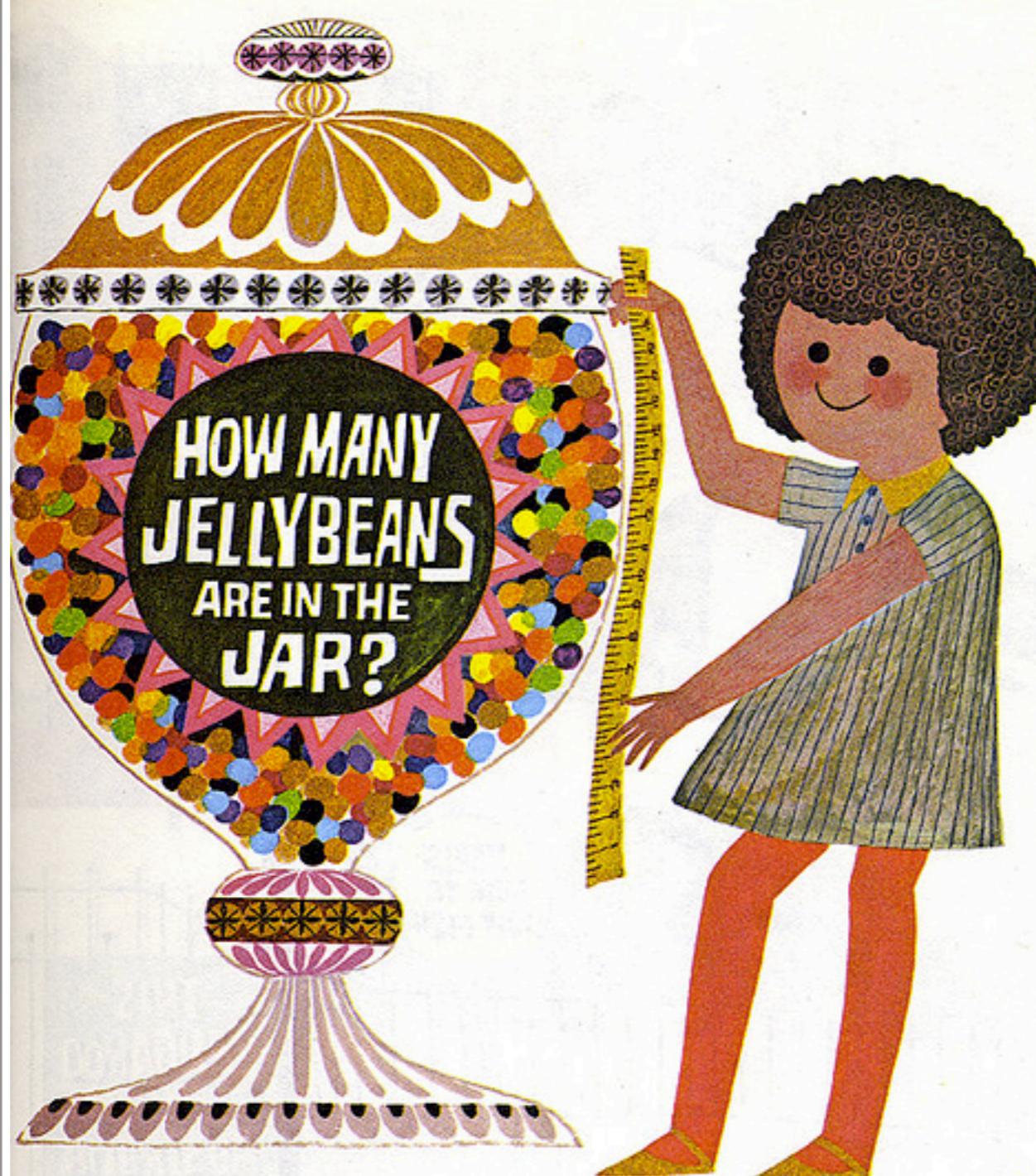
*“A paradigm for utilizing human processing power to solve problems that computers cannot yet solve.”*





Francis Galton





If you guess the right number of jellybeans,  
you may win a prize.

# Collective Intelligence?



Buzzle.com

**Groupthink** is a phenomenon where people tend to confirm with group decisions to avoid feeling outcast, leading to errors in decision making.

## Group Think

# Collective Intelligence?



Mob Mentality

# Collective Intelligence?



Fake News

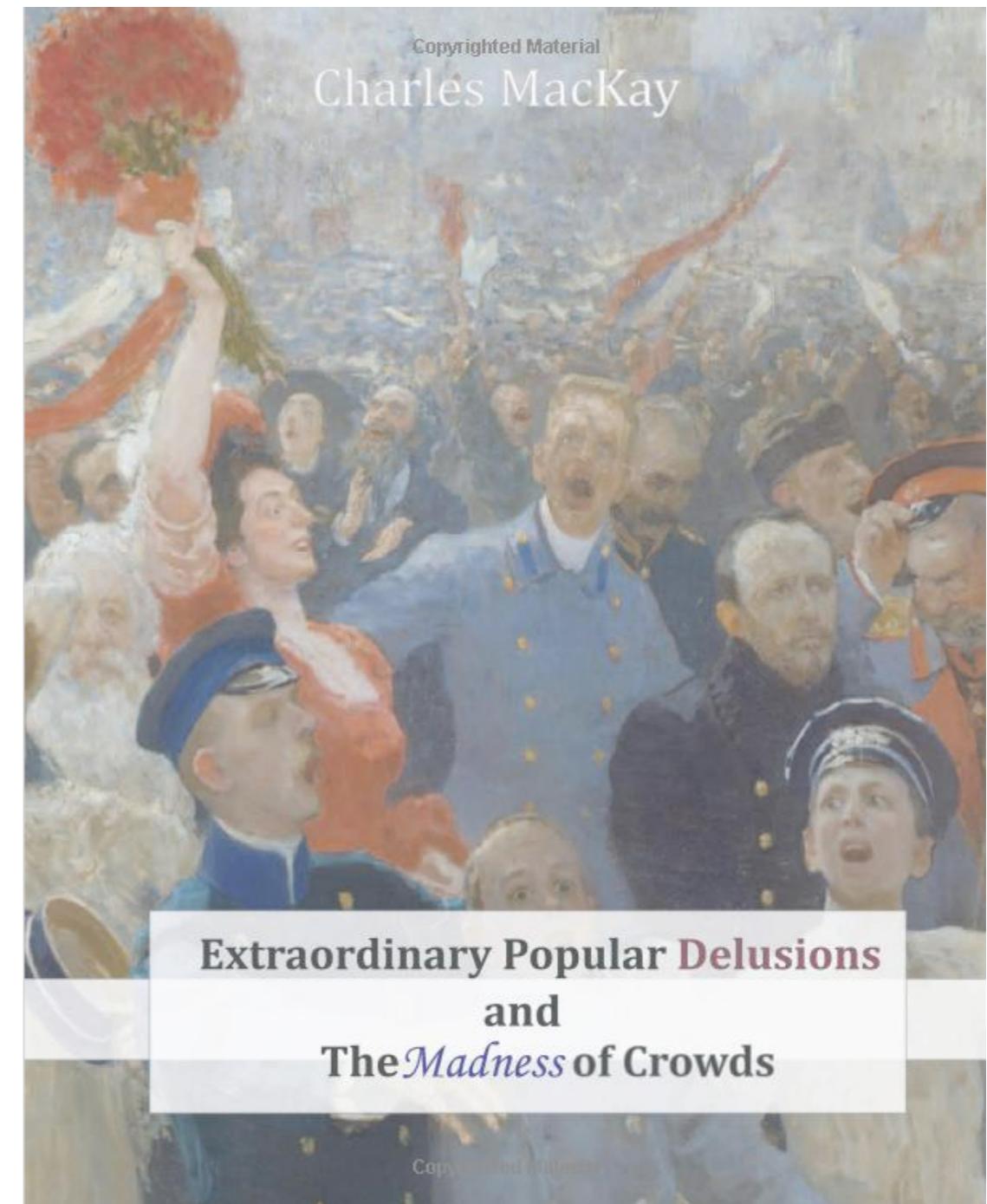
# Collective Intelligence?



Misinformation campaigns

# Popular Delusions and the Madness of Crowds

- Economic bubbles
- Alchemy & Psuedoscience
- Witch hunts
- Prophecies



# Tulip Mania



*“A tulip, known as "the Viceroy" displayed in a 1637 Dutch catalog. Its bulb was offered for sale between 3,000 and 4,200 guilders depending on size. A skilled craftsworker at the time earned about 300 guilders a year.”*

# Plush Life

## Why did people lose their minds over Beanie Babies?



10.1k

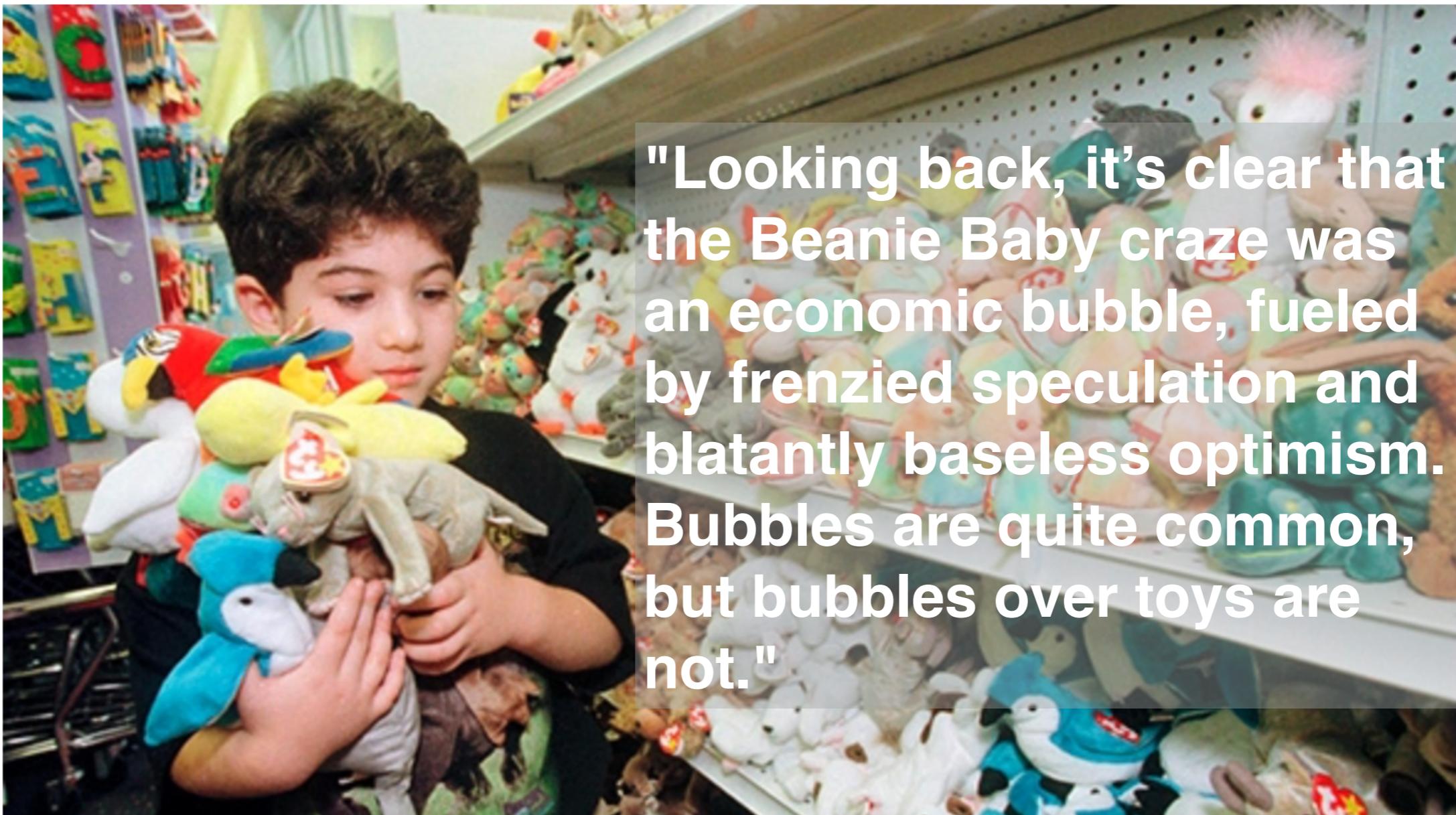


10.1k



601

By *Mark Joseph Stern*

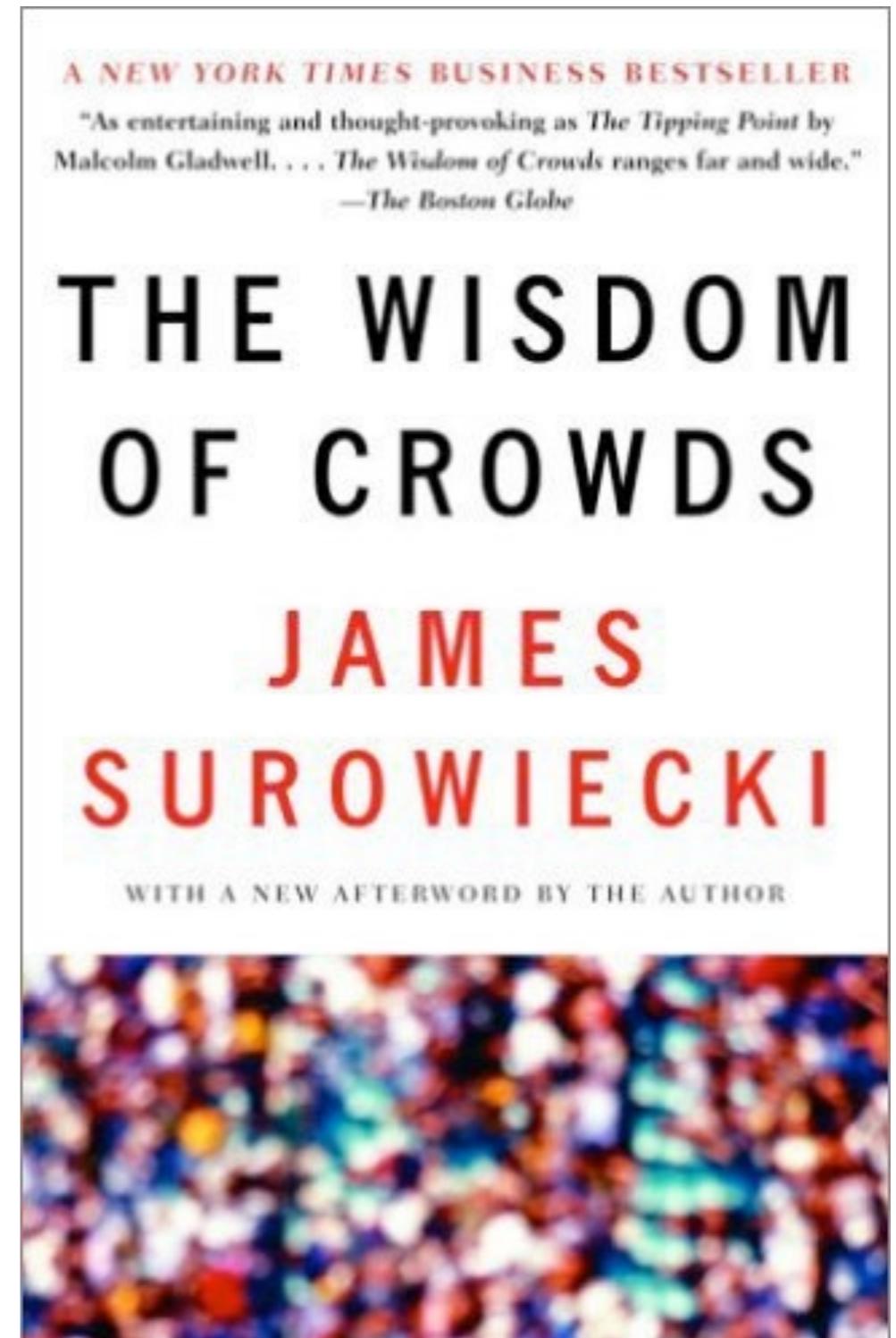


"Looking back, it's clear that the Beanie Baby craze was an economic bubble, fueled by frenzied speculation and blatantly baseless optimism. Bubbles are quite common, but bubbles over toys are not."

# Wisdom of Crowds

Requirements for a crowds to be wise

- Diversity of Opinion
- Independence
- De-centralization
- Aggregation



# Groups / Crowds

- Employees of a business
- Participants in a poll
- Sports fans betting on games
- Independent stock market investors
- Internet users linking to sites
- Citizens in a democracy

# Ways of aggregating collective intelligence

- Point spreads / parimutuel odds
- Stock prices
- Futures contracts
- Voting
- Computer algorithms, interfaces

# 2010 Haitian Earthquake



# Disaster Response

The maps are bad



Jan 12



**Ushahidi**  
Robert Munro

# Disaster Response

Better maps from Crowdsourcing



# Disaster Response

The responders don't speak Kreyol

- Fanmi mwen nan Kafou, 24 Cote Plage, 41A bezwen manje ak dlo • My family in Carrefour, 24 Cote Plage, 41A needs food and water
- Moun kwense nan Sakre Kè nan Pòtoprens • People trapped in Sacred Heart Church, PaUP
- Ti ekipman Lopital General genyen yo paka minm fè 24 è 24 hrs. supplies • General Hospital has less than 24 hrs. supplies
- Fanm gen tranche pou fè yon ptit nan Delmas 31 • Undergoing children delivery Delmas 31

# Disaster Response

## Maps + Translation + Local Knowledge

Workers collaborated to find locations:

Dalila: I need Thomassin Apo please

Apo: Kenscoff Route: Lat:

18.495746829274168,

Long:-72.31849193572998

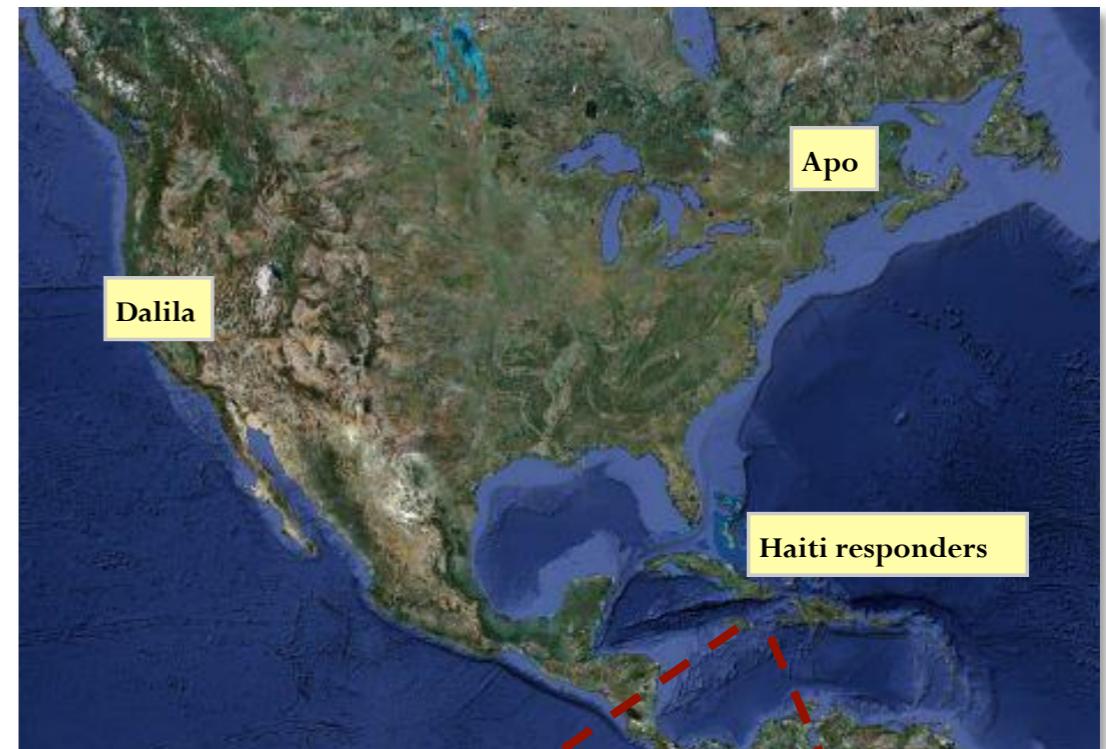
Apo: This Area after Petion-Ville and Pelerin 5 is not on Google Map. We have no streets name

Apo: I know this place like my pocket

Dalila: thank God u was here

Feedback from responders:

"just got emergency SMS, child delivery, USCG are acting, and, the GPS coordinates of the location we got from someone of your team were 100% accurate!"



# Disaster Response

- Clark Craig of the Marine Corps:
  - “I cannot overemphasize to you what the work of the Ushahidi/Haiti has provided. It is saving lives every day.”
- Secretary of State Hillary Clinton:
  - “The technology community has set up interactive maps to help us identify needs and target resources. And on Monday, a seven-year-old girl and two women were pulled from the rubble of a collapsed supermarket by an American search-and-rescue team after they sent a text message calling for help.”
- Craig Fulgate, FEMA Task Force:
  - “[The] Crisis Map of Haiti represents the most comprehensive and up-to-date map available to the humanitarian community.”
- Ushahidi@Tufts :
  - “The World Food Program delivered food to an informal camp of 2500 people, having yet to receive food or water, in Diquini to a location that 4636 had identified for them.”

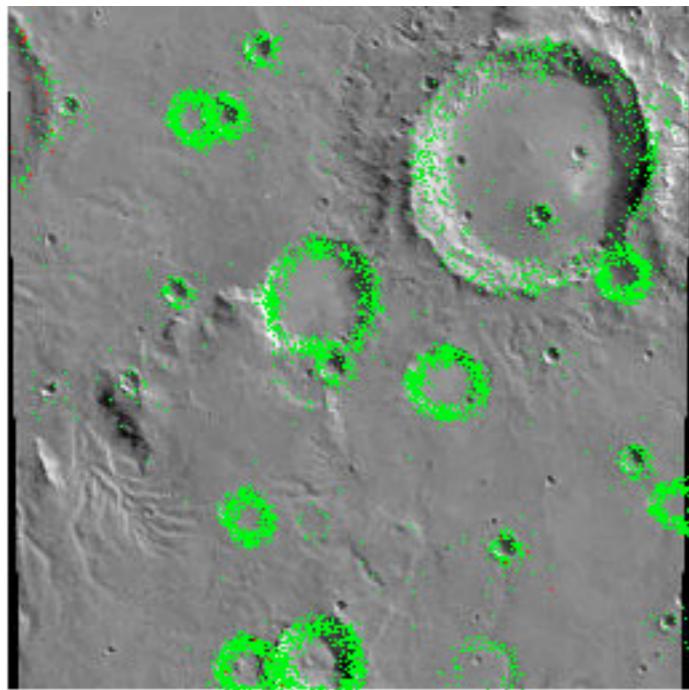
How can computer  
science and economics  
help facilitate collective  
intelligence?

# NASA Clickworkers (2000)

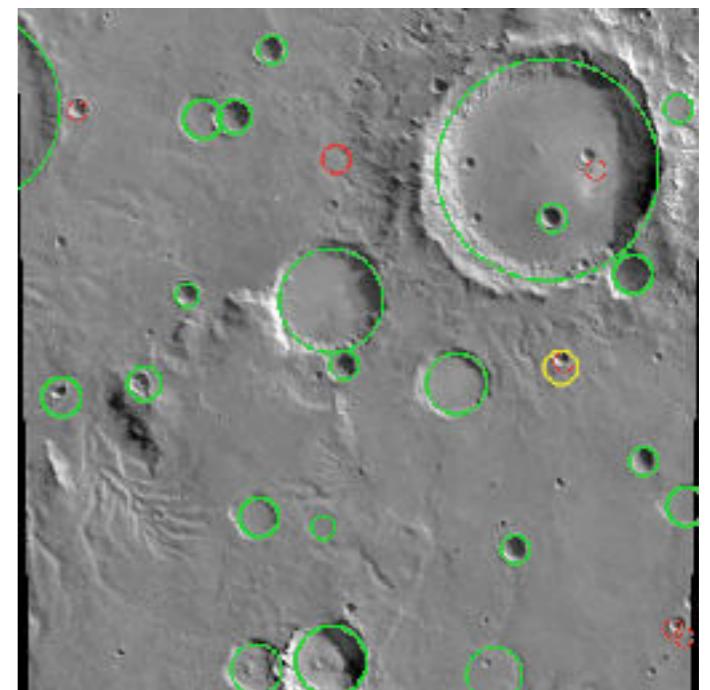
NASA showed that public volunteers could do routine science analysis that would normally be done by a graduate student working for months on end. From 11/2000 to 1/2002, they had **101,000 clickworkers** volunteering **14,000 work hours**, **612,832 sessions**, and **2,378,820 entries**!

We try to have several people cover each region on Mars so that we can compute a consensus, throwing out any mistaken or frivolous entries and averaging out the inaccuracies.

Here are all  
the clicks we  
received for  
this region

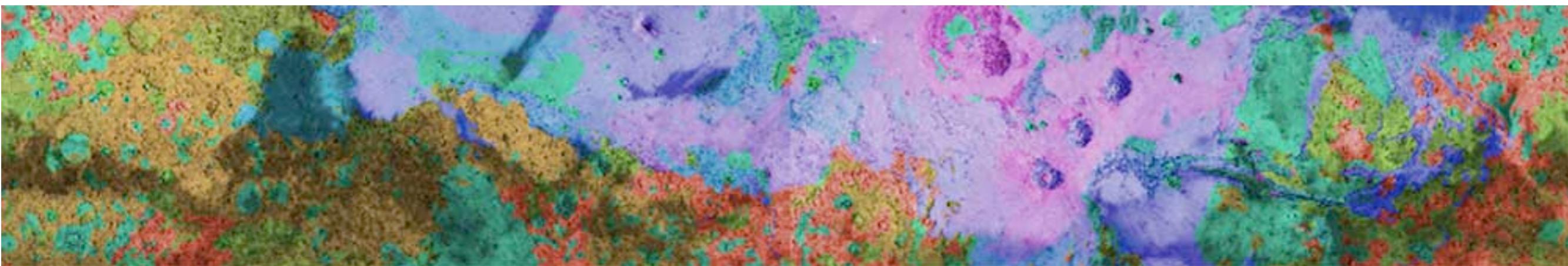


Here is the consensus

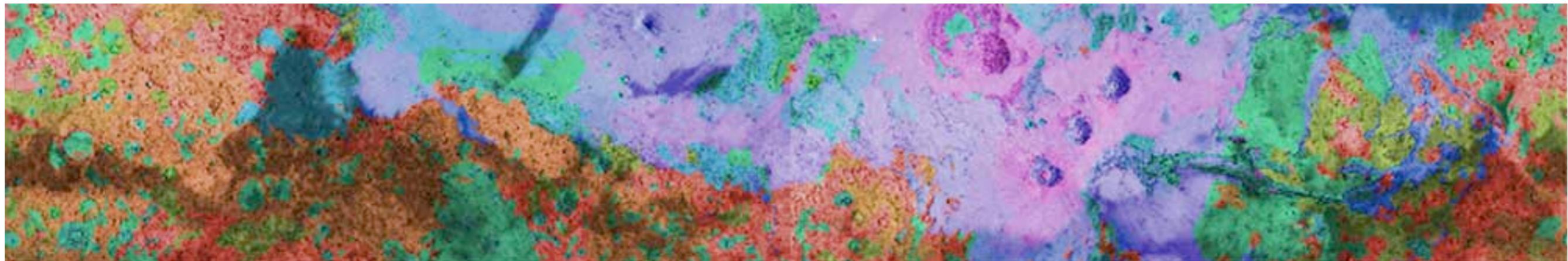


# NASA Clickworkers (2000)

**Mars age map produced directly from clickworker inputs.**



**Mars age map produced from scientists**



*Color guide: red=heavily cratered (old), green=medium, violet=lightly cratered (young).*



## Classify surface features on Mars

[Learn more](#)

9 people are talking about COSMIC right now.

[Join in](#)COSMIC STATISTICS

2% Complete

579

Volunteers

10,701

Classifications

14,512

Subjects

30

Completed Subjects

## WORDS FROM THE RESEARCHER



*"Planetary change detection is like a game of Memory with millions of cards. But instead of looking for pairs, you keep checking the same cards to see if they're still as you remember."*

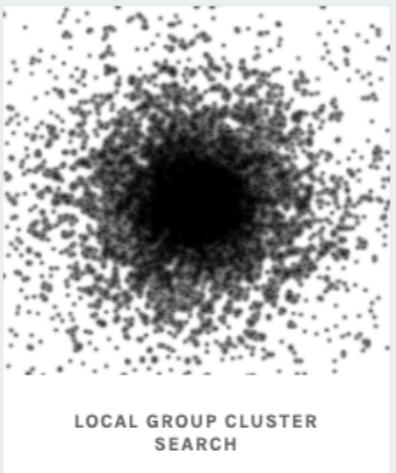
## ABOUT COSMIC

The Content-based Object Summarization to Monitor Infrequent Change (COSMIC) project aims to enable the future of NASA/JPL orbital autonomy. By training machine learning (ML) algorithms to recognize scientifically interesting landforms that change and evolve over time, a COSMIC orbiter will be able to build an onboard encyclopedia of where and when they were observed. Then, on the next pass, it can compare these notes to new observations to make discoveries like "This impact crater is new," "That looks like a fresh impact just by its pattern," "This gully wasn't actively flowing before," etc. These discoveries will be made on using high-resolution images onboard without first requiring that they be sent to Earth. When interesting landforms or change are detected, scientists on Earth be notified, enabling selective download if desired. This conserves both downlink bandwidth and human time, paving the way for an in-situ planetary change detection system.

Naturally, these ML algorithms require a lot of training data, and that's where your labels come in! We need high-quality boundaries to be drawn around each currently known landform example so the ML algorithms can get very good at recognizing what scientists want to find. There will be many tasks created, each focusing on a single type of interesting landform. We look forward to your contributions!



COSMIC



LOCAL GROUP CLUSTER SEARCH



CEDAR CREEK: EYES ON THE WILD



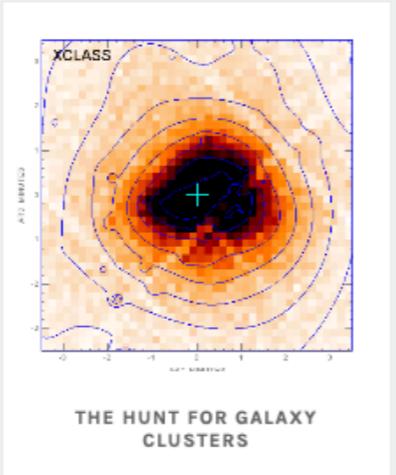
PLANET HUNTERS TESS



EARTHQUAKE DETECTIVE



DECODING PUNCH CARDS



THE HUNT FOR GALAXY CLUSTERS



SOUTHERN WEATHER DISCOVERY



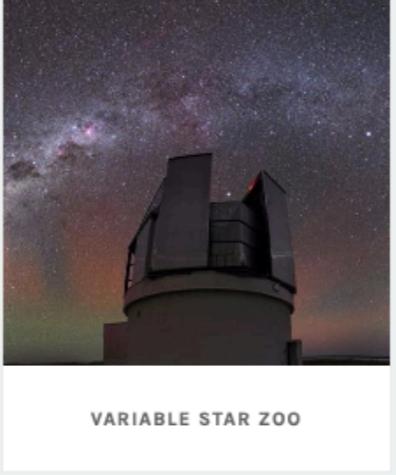
MONKEY HEALTH EXPLORER



PELICAMS



SUPERWASP VARIABLE STARS



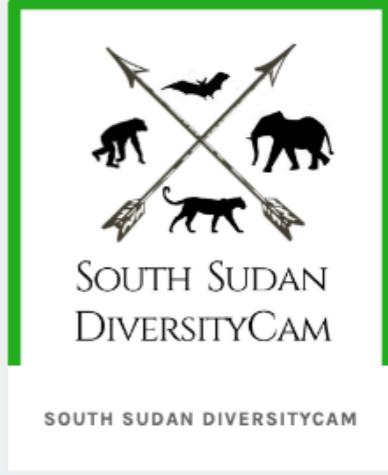
VARIABLE STAR ZOO



SOUNDS OF NEW YORK CITY (SONYC)



WHERE ARE MY BODY ORGANS?



SOUTH SUDAN DIVERSITYCAM



LONDON BIRD RECORDS



1961 CENSUS



SNAPSHOT HOGE VELUWE



RAINFOREST FLOWERS



THE AMERICAN SOLDIER

[Introduction](#) | [Dashboard](#) | [Status](#) | [Account Settings](#)

## Mechanical Turk is a marketplace for work.

We give businesses and developers access to an on-demand, scalable workforce.

Workers select from thousands of tasks and work whenever it's convenient.

**37,649 HITs** available. [View them now.](#)

## Make Money by working on HITs

HITs - *Human Intelligence Tasks* - are individual tasks that you work on. [Find HITs now.](#)

### As a Mechanical Turk Worker you:

- Can work from home
- Choose your own work hours
- Get paid for doing good work

**Find an interesting task**



**Work**



**Earn money**



[Find HITs Now](#)

or [learn more about being a Worker](#)

## Get Results from Mechanical Turk Workers

Ask workers to complete HITs - *Human Intelligence Tasks* - and get results using Mechanical Turk. [Register Now](#)

### As a Mechanical Turk Requester you:

- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITs completed in minutes
- Pay only when you're satisfied with the results

**Fund your account**



**Load your tasks**



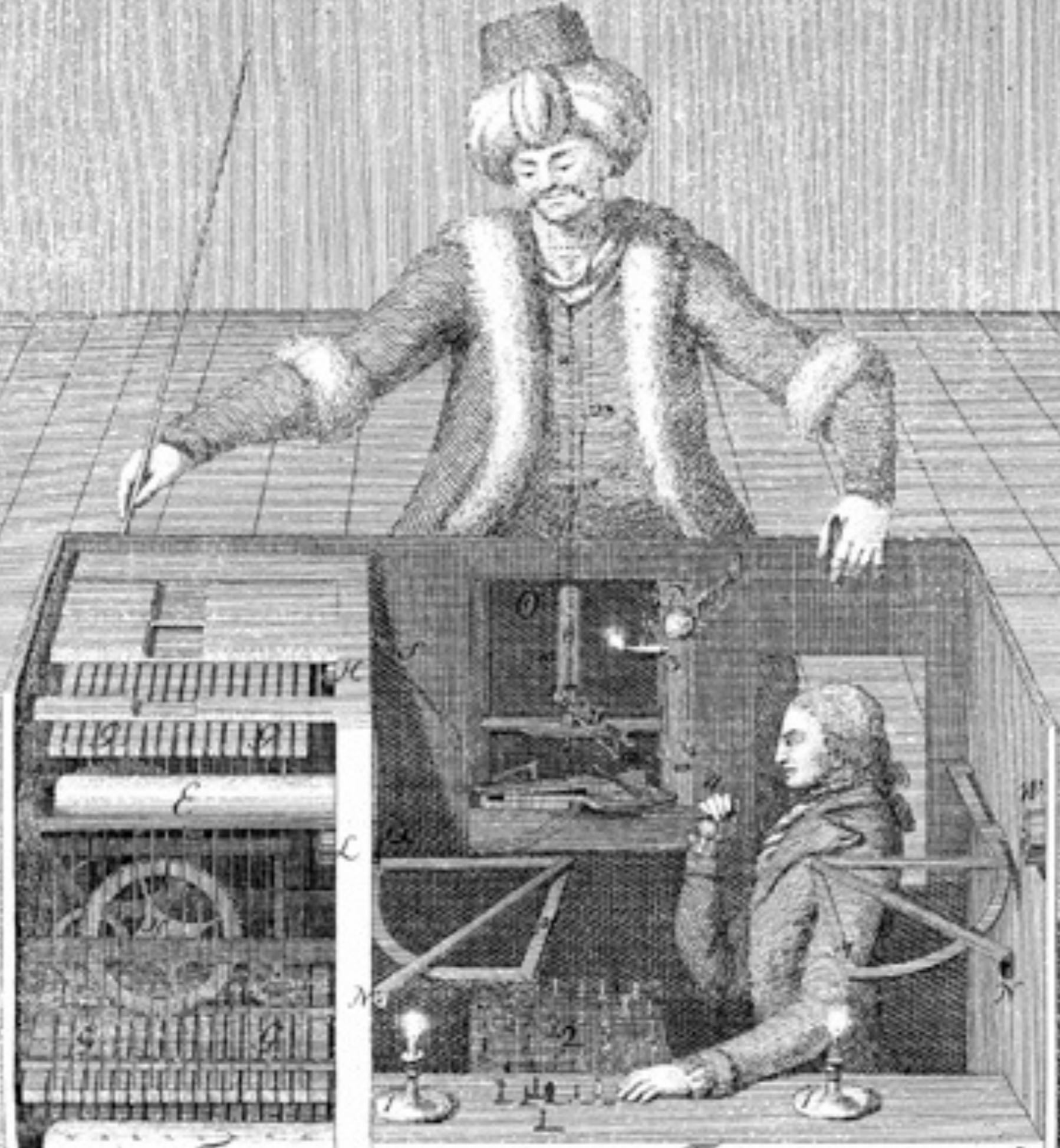
**Get results**



[Get Started](#)

or [learn more about being a Requester](#)





[All HITs](#) | [HITs Available To You](#) | [HITs Assigned To You](#)Search for **HITs** containing  that pay at least \$  0.00 for which you are qua**Timer:** 00:00:00 of 5 minutes Want to work on this HIT? Want to see other HITs?**Total Earned:** Unavaila**Accept HIT****Skip HIT****Total HITs Submitted:** 0

## Enter Postmark &amp; Stamp Information for a Postcard

**Requester:** Cardcow**Reward:** \$0.01 per HIT**HITs Available:** 2**Duration:** 5 minutes**Qualifications Required:** Data Entry for Postcards has been granted**Enter Postmark & Stamp Information for this card****Postmark City:****Postmark State:  
(or Country)****Postmark Date:  
(Ex: Nov-09)****Postmark Year:  
(Ex: 1909)****Stamp: (Ex: 1c, 2c,  
half penny)**

(month &amp; day)

[All HITs](#) | [HITs Available To You](#) | [HITs Assigned To You](#)Search for  HITs  containing  that pay at least \$  0.00 for which you are qu:Timer: 00:00:00 of 5 minutes Want to work on this HIT? [Accept HIT](#) Want to see other HITs? [Skip HIT](#)

Total Earned: Unavaila

Total HITs Submitted: 0

Enter Postmark &amp; Stamp Information for a Postcard

Requester: Cardcow

Reward: \$0.01 per HIT

HITs Available: 2

Duration: 5 minutes

A reward has been granted

**Postmark City:**

Barre

**Postmark State:**

MA

**Postmark Date:**

Oct-11

**Postmark Year:**

1886

**Stamp:**

1c

Postmark City:

Postmark State:  
(or Country)Postmark Date:  
(Ex: Nov-09)

\$ 0.01

(month &amp; day)

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**Work**



**Earn money**



[Find HITs Now](#)

or [learn more about being a Worker](#)

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**Load your tasks**



**Get results**



[Get Started](#)

or [learn more about being a Requester](#)



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\$1.50/minute

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\$2.50/minute

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We catch the difficult words, do the research, and produce rocking transcripts. And it shows - our transcripts rated 4.34/5★ stars from 3739 customer [reviews](#).

Our transcripts are 99% accurate - and if for any reason you don't like the result you can request a new edit right from the customer center with just the click of a button.

## EASIER WORKFLOWS

**Choose from Web, Email, Dropbox & FTP** uploads, or take advantage of [RSS](#), [Zapier](#) and a **full transcription API** to take the hassle out of managing your transcription process.

## SIMPLE TRANSCRIPT DELIVERY

Transcripts are emailed to you - and can be picked up here at the site.

We were constantly surprised that phrases or names that other companies missed, from "*tabula rasa*" to "*turducken*" (it's a Cajun specialty), were identified and spelled correctly.

**WALL STREET JOURNAL**



# Help African Refugees

you send  
samasource a  
project

1



samasource  
breaks it down  
into microwork

2



work is allocated to  
our service partners

3



women, youth, and  
refugees complete  
work

4



samasource  
compiles work and  
assures quality

5



your project gets  
delivered and helps  
reduce poverty

6



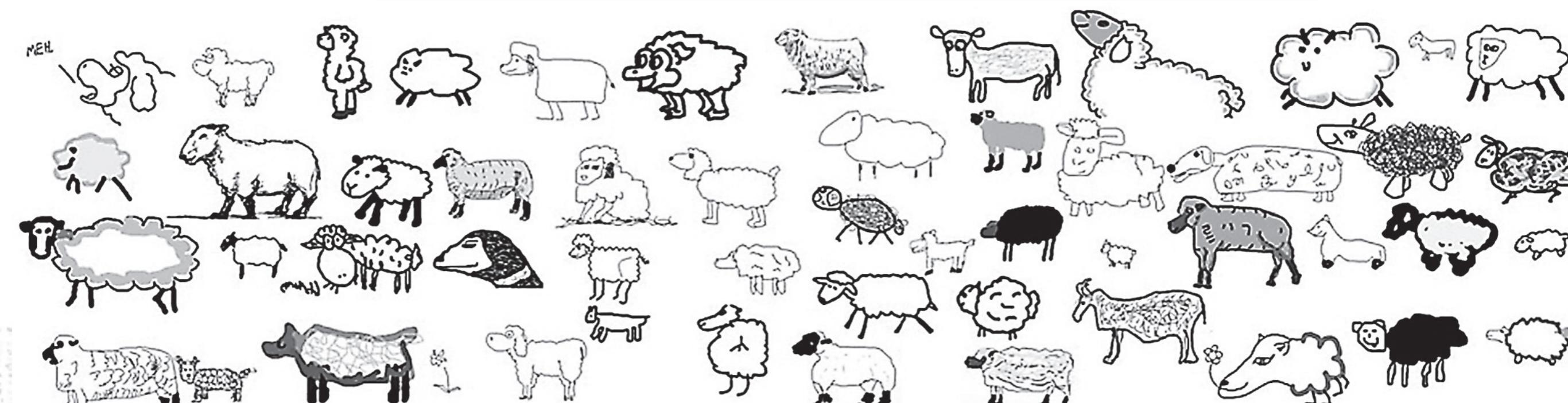
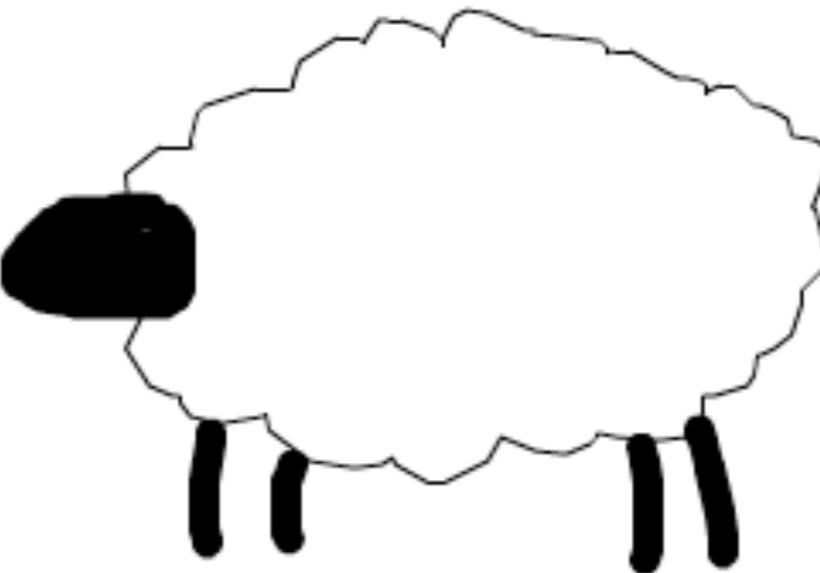
# choose the right word

Dolores Labs

## THE SHEEP MARKET

10,000 sheep created  
by online workers.  
[More...](#)

# Catch some zzzzs



# QUICK, DRAW!



Can a neural network learn to recognize doodling?

Help teach it by adding your drawings to the [world's largest doodling data set](#), shared publicly to help with machine learning research.

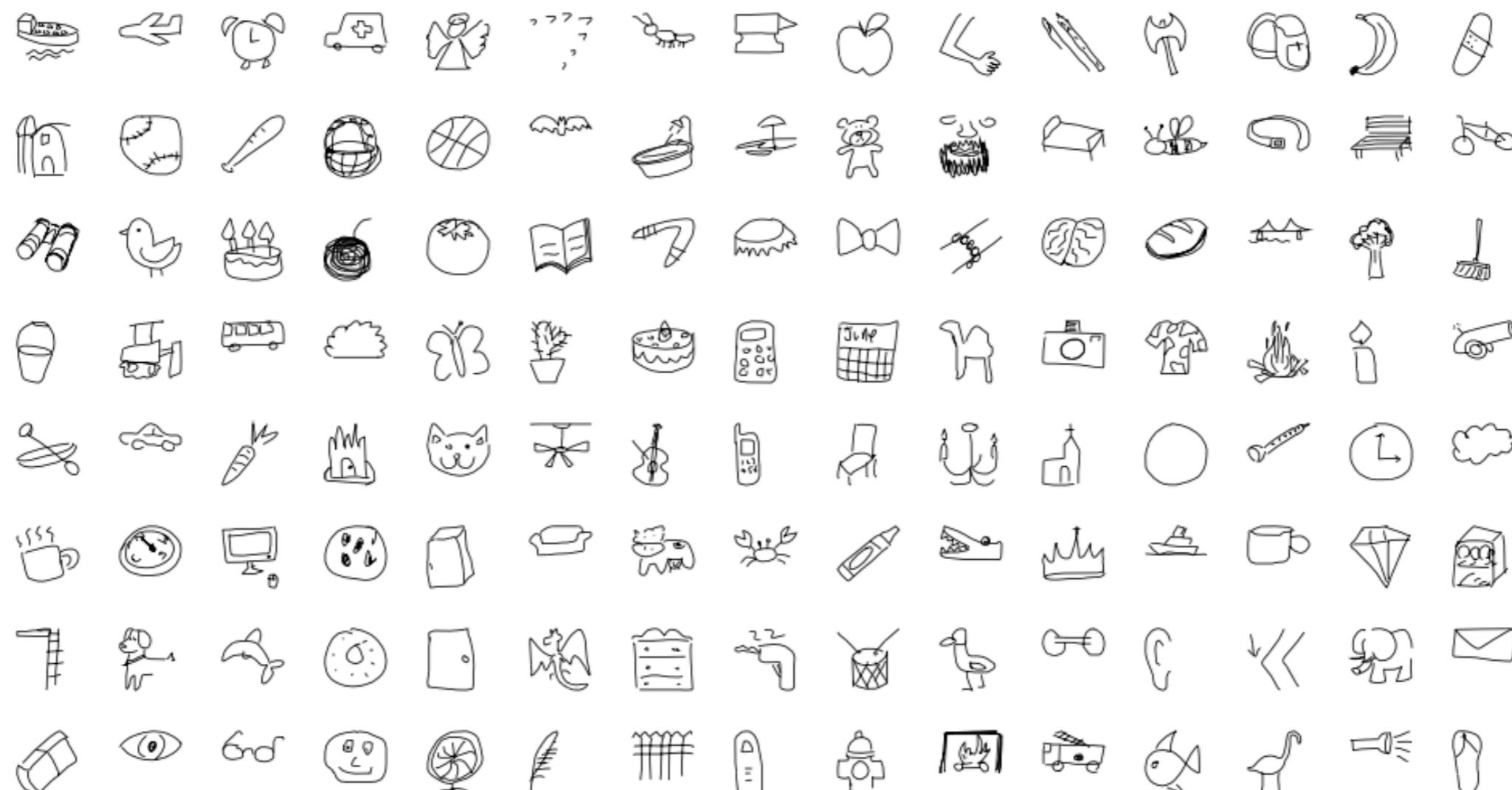
This is an  
A.I.  
Experiment

Made with  
some friends from  
Google

# What do 50 million drawings look like?

Over 15 million players have contributed millions of drawings playing [Quick, Draw!](#). These doodles are a unique data set that can help developers train new neural networks, help researchers see patterns in how people around the world draw, and help artists create things we haven't begun to think of. That's why [we're open-sourcing them](#), for anyone to play with.

Select a drawing

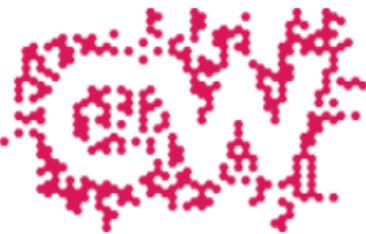


# Dark Side of Crowdsourcing



Real Time with Bill Maher: The "Sharing" Economy – August 21, 2015 (HBO)

# Are Workers Treated Fairly?



**Crowd Workers** of the world, unite! Join with other workers to help make Mechanical Turk a better place to work. You can make it easier for everyone to find good work, and to make a fair wage

[Get started by installing our extension](#)

<https://crowd-workers.com/>



New Work    Analytics    Favorites/Blacklist

HITGroup info	Requester	HITs available	Reward	Total Workers	Submitted By All ▾	Hourly Rate ⓘ
<a href="#">Product to Interest Audit (single yes/no per HIT)</a>	Amazon Requester Inc. - Customer Interests TO: 2.55 / 5	23886	\$0.01	168	72549	\$10.26
<a href="#">Extract summary information from 8 shopping receipts (Business, Total, Date)</a>  Extract summary information from 8 shopping receipts (Business, Total, Date) image,receipt,categorize,transcribe,extract,digitize,data,entry,transcription,text,easy,qualification,secure,jon,breig,prod	ScoutIt TO: 2.25 / 5	1169	\$0.05	281	36343	\$1.22
<a href="#">Transcribe up to 35 Seconds of Media to Text - Earn up to \$0.17 per HIT!!</a>  Transcribe up to 35 seconds of Media into text. Reward amount is variable based on media length. Additional reward amounts will be paid as a bonus. Transcribe,transcription,media,audio,type,typist,caption,subtitle,English	Crowdsurf Support TO: 3.25 / 5	22820	\$0.05	167	33680	\$2.61
<a href="#">Extract purchased items from a shopping receipt (Per item bonus!)</a>	411Richmond TO: 3.41 / 5	577	\$0.01	300	30495	\$0.30
<a href="#">Type the text from the images, carefully. Productivity and bonuses guaranteed.</a>	CopyText Inc. TO: 2.40 / 5	431	\$0.01	343	27004	\$0.85
<a href="#">Classify Receipt</a>  Looking at a receipt image, identify the business of the receipt image,receipt,categorize,transcribe,extract,data,entr	ScoutIt TO: 2.25 / 5	2036	\$0.03	239	23512	\$3.87





# A Data-Driven Analysis of Workers' Earnings on Amazon Mechanical Turk

## CHI-2018



Kotaro Hara



Abigail Adams



Kristy Milland



Saiph Savage



Chris Callison-Burch



Jeffrey P. Bigham



## ABSTRACT

A growing number of people are working as part of on-line crowd work. Crowd work is often thought to be low wage work. However, we know little about the wage distribution in practice and what causes low/high earnings in this setting. We recorded 2,676 workers performing 3.8 million tasks on Amazon Mechanical Turk. Our task-level analysis revealed that workers earned a median hourly wage of only ~\$2/h, and only 4% earned more than \$7.25/h. While the average requester pays more than \$11/h, lower-paying requesters post much more work. Our wage calculations are influenced by how unpaid work is accounted for, *e.g.*, time spent searching for tasks, working on tasks that are rejected, and working on tasks that are ultimately not submitted. We further explore the characteristics of tasks and working patterns that yield higher hourly wages. Our analysis informs platform design and worker tools to create a more positive future for crowd work.

# Takeaways

< \$2/h

Crowd workers are underpaid and they often earn below \$2/h



Unpaid work, particularly returning tasks has a large impact on the hourly wage



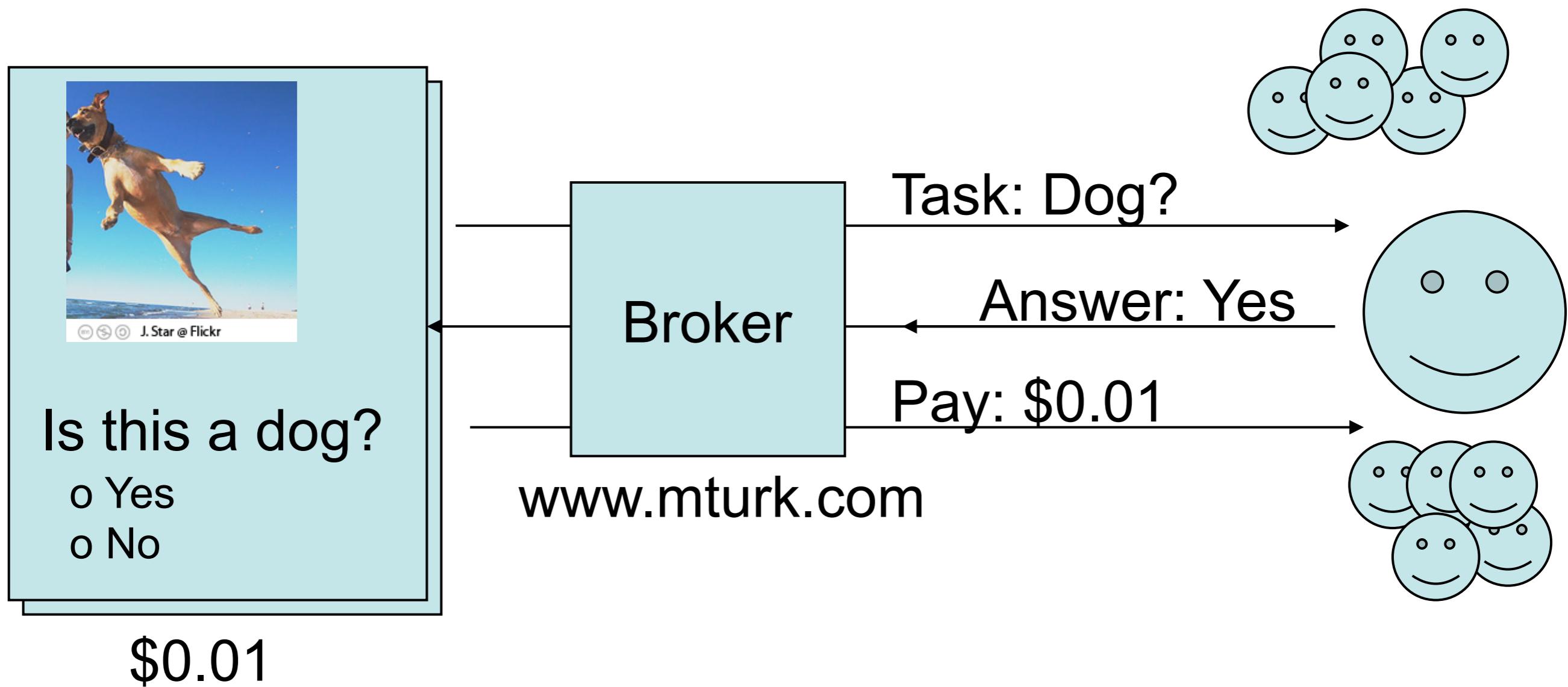
Majority of the requesters reward workers below \$5/h

How to put  
crowdsourcing  
towards good uses

# Use of MTurk-like systems in research

- Participant pool for user studies, polling, cognitive science experiments
- Annotation for machine learning tasks like computer vision or NLP
- Human Computer Interaction: worker pools are hardwired into the UI
- New Programming Languages Concepts
- Study markets themselves for economics research, cost-optimization

# Annotation for machine learning / artificial intelligence tasks





Mark Zuckerberg

Follow

January 6 at 4:23pm · Palo Alto ·

2016 is a big year for launching the future technology we've been building.



Internet.org



AI



Oculus

# Human Computer Interaction

[Overview](#)[Dataset](#)[Challenge](#)[Publications](#)[Contact Us](#)

## Answering Visual Questions from Blind People



**Q:** Does this foundation have any sunscreen?  
**A:** yes



**Q:** What is this?  
**A:** 10 euros



**Q:** What color is this?  
**A:** green



**Q:** Please can you tell me what this item is?  
**A:** butternut squash red pepper soup



**Q:** Is it sunny outside?  
**A:** yes



**Q:** Is this air conditioner on fan, dehumidifier, or air conditioning?  
**A:** air conditioning



**Q:** What type of pills are these?  
**A:** unsuitable image



**Q:** What type of soup is this?  
**A:** unsuitable image



**Q:** Who is this mail for?  
**A:** unanswerable



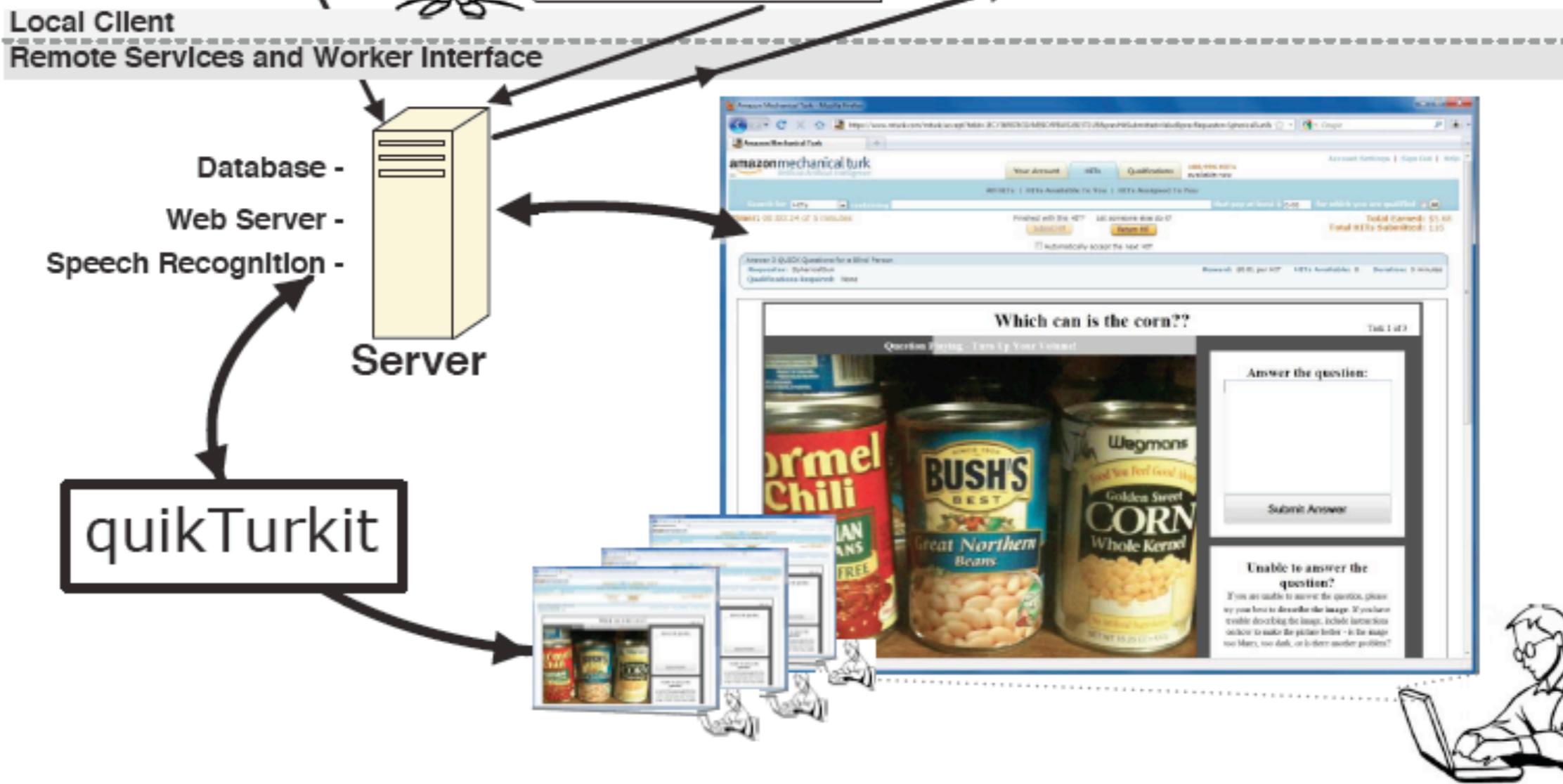
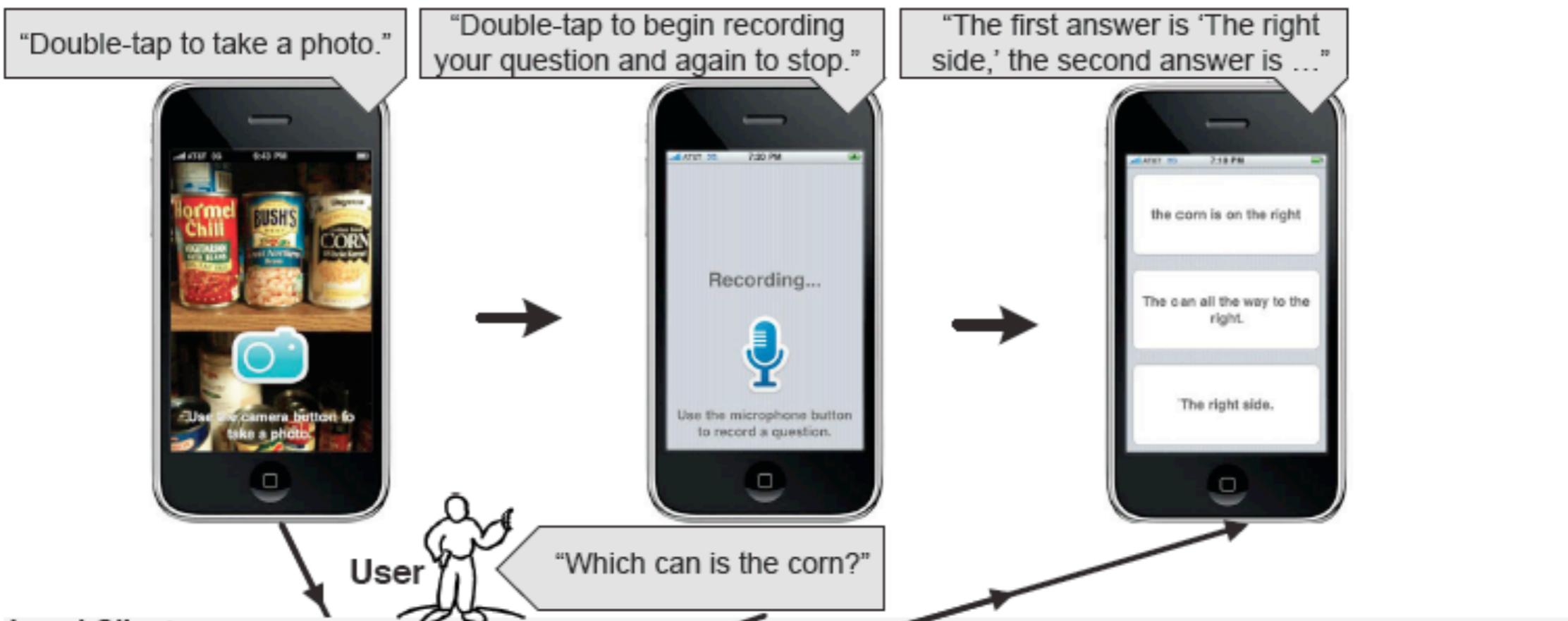
**Q:** When is the expiration date?  
**A:** unanswerable



**Q:** What is this?  
**A:** unanswerable



**Q:** Can you please tell me what the oven temperature is set to?  
**A:** unanswerable



# Soylent

A Word Processor with a Crowd Inside

Soylent is a crowd-powered interface: one that embeds workers from Mechanical Turk into Microsoft Word.

**Join the Beta**

Today's user interfaces are limited: they only support tasks when we know how to write matching algorithms or interface designs. Microsoft Word is good at laying out your document, but poor at understanding writing and suggesting edits to it. But, it is now feasible to embed on-demand human computation within interactive systems. Crowd workers on services like **Amazon Mechanical Turk** will do tasks for very small amounts of money. **Soylent** is a word processor with a crowd inside: an add-in to Microsoft Word that uses crowd contributions to perform interactive document shortening, proofreading, and human-language macros. Underlying Soylent is a new programming design pattern called **Find-Fix-Verify** that splits tasks into a series of generation and review stages to control costs and increase quality.

 **Bernstein, M.**, Little, G., Miller, R.C., Hartmann, B., Ackerman, M., Karger, D.R., Crowell, D., and Panovich, K. **Soylent: A Word Processor with a Crowd Inside.** In Proc. UIST 2010. ACM Press. **Best Student Paper award.**

Soylent is available open-source under the MIT license, and is hosted on [Google Code](#). Contact us at [soylent@csail.mit.edu](mailto:soylent@csail.mit.edu).

Press for the project:

**WIR ED**

**Technology  
Review**

**Harvard's Nieman  
Journalism Lab**

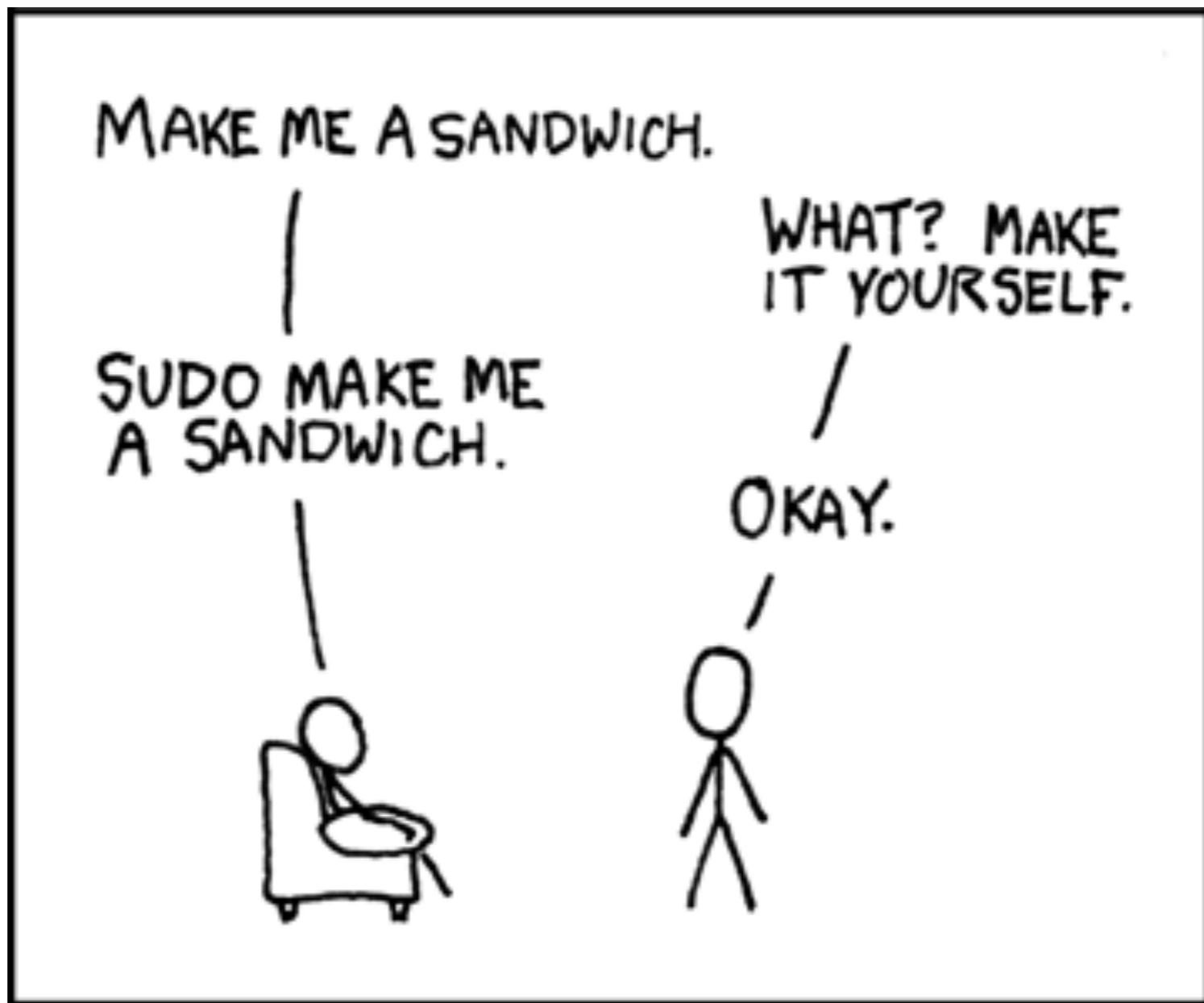


The screenshot shows a user interface for Soylent, featuring three cards:

- Shortn:** Describes a paper introducing architectural and interaction patterns that span many levels of conceptual complexity. It mentions the Find-Fix-Verify crowd programming pattern.
- Crowdproof:** Describes a paper that allows people to be able to control the software developed, mentioning nothing about programming.
- The Human Macro:** Describes a paper that allows people to control the software developed, mentioning nothing about programming.

Below the cards, there is a button labeled "allow people to control".

# New Programming Languages Concepts



# New Programming Languages Concepts

```
ideas = []
for (var i = 0; i < 5; i++) {
    idea = mturk.prompt(
        "What's fun to see in New York City?
        Ideas so far: " + ideas.join(", "))
    ideas.push(idea)
}

ideas.sort(function (a, b) {
    v = mturk.vote("Which is better?", [a, b])
    return v == a ? -1 : 1
})
```

# New Programming Languages Concepts

- Latency
- Cost
- Parallelization
- Non-determinism
- Iterative improvement

# Study Markets Themselves

- What predictions of economics hold true on MTurk?
- What incentives can we give to increase throughput, quality, worker retention?
- What is the cost-optimal solution to a problem?

What will we cover in  
this class (and should  
you take it)?

# Topics

- Taxonomy of crowdsourcing and human computation
- Microtasking platforms like Mechanical Turk and Figure-eight
- Programming concepts for human computation
- The economics of crowdsourcing
- Crowdsourcing and machine learning
- Applications to human computer interaction
- Crowdsourcing and social science

# Who should take this class

- Anyone who wants to be on the cutting edge of this new field
- Entrepreneurial students who want to start their own companies
- Students from the business school who want to experiment with markets
- Students from the social sciences who want to conduct large-scale studies with people

# Course Requirements

Weekly assignments

Writing and Coding

Presentations

Company profile,  
project pitch

Final project

Self-designed,  
groups of 4-5

Final presentation

Show off your work

# How much programming is required?

- Programming assignments are in Python
- We provide code that you modify
- We want everyone to be able to participate, regardless of programming experience
- For most assignments, you can work with a partner (turn in only one assignment - you'll both get the same grade)

# Gun Violence Database

In 2016, the programming assignments for NETS213 formed a sequence

Build a machine learning classifier to identify newspaper articles that describe gun violence

Have crowd-workers verify its predictions

Have crowd-workers extract structured information from the text of the articles

Analyze the data and build visualizations about gun violence in the USA



THE NEW OLD AGE  
As Their Numbers Grow,  
Home Care Aides Are  
Stuck at \$10.11



Will Women Play Major  
League Baseball? (And Not  
Just on TV)



WELL  
Too Old to Donate Blood?



HEALTH | VITAL SIGNS: CAUSE AND EFFECT

## VITAL SIGNS: CAUSE AND EFFECT; *Linking Guns and Gun Violence*

By ERIC NAGOURNEY MAY 27, 2003



People with guns in their homes are almost twice as likely to be killed by guns as people who do not keep them at home, researchers reported yesterday in *The Annals of Emergency Medicine*.

And, the researchers found, people with guns are 16 times as likely to commit suicide using guns.

The explanation may lie in the unforgiving nature of firearms, said the author of the study, Dr. Douglas J. Wiebe, who conducted the research at the University of California at Los Angeles and is now at the University of Pennsylvania.

"People who are shot are substantially more likely to die than people injured with nongun weapons," Dr. Wiebe said.

The study was based on a review of the deaths of 1,720 homicide victims and 1,959 suicide victims and a sampling of American adults.

It found that most of the victims, over 56 percent, knew their assailants. A fifth of the homicides occurred during robberies, 6 percent during drug deals and about 15 percent during family arguments.

The study also found that women were significantly more likely than men to be victims of gun homicides. "This likely reflects the singular danger faced by women in abusive relationships," Dr. Wiebe wrote.



Douglas Wiebe  
Professor of Epidemiology  
University of Pennsylvania  
Perelman School of Medicine

# Congressman Who Restricted Gun Violence Research Has Regrets

“Compared to five years ago, the funding picture for a few of us who have done this work for a long time is rosy,” Wintemute said. “Compared to what it requires, it is still bleak. We have lost 20 years of concentrated effort.”

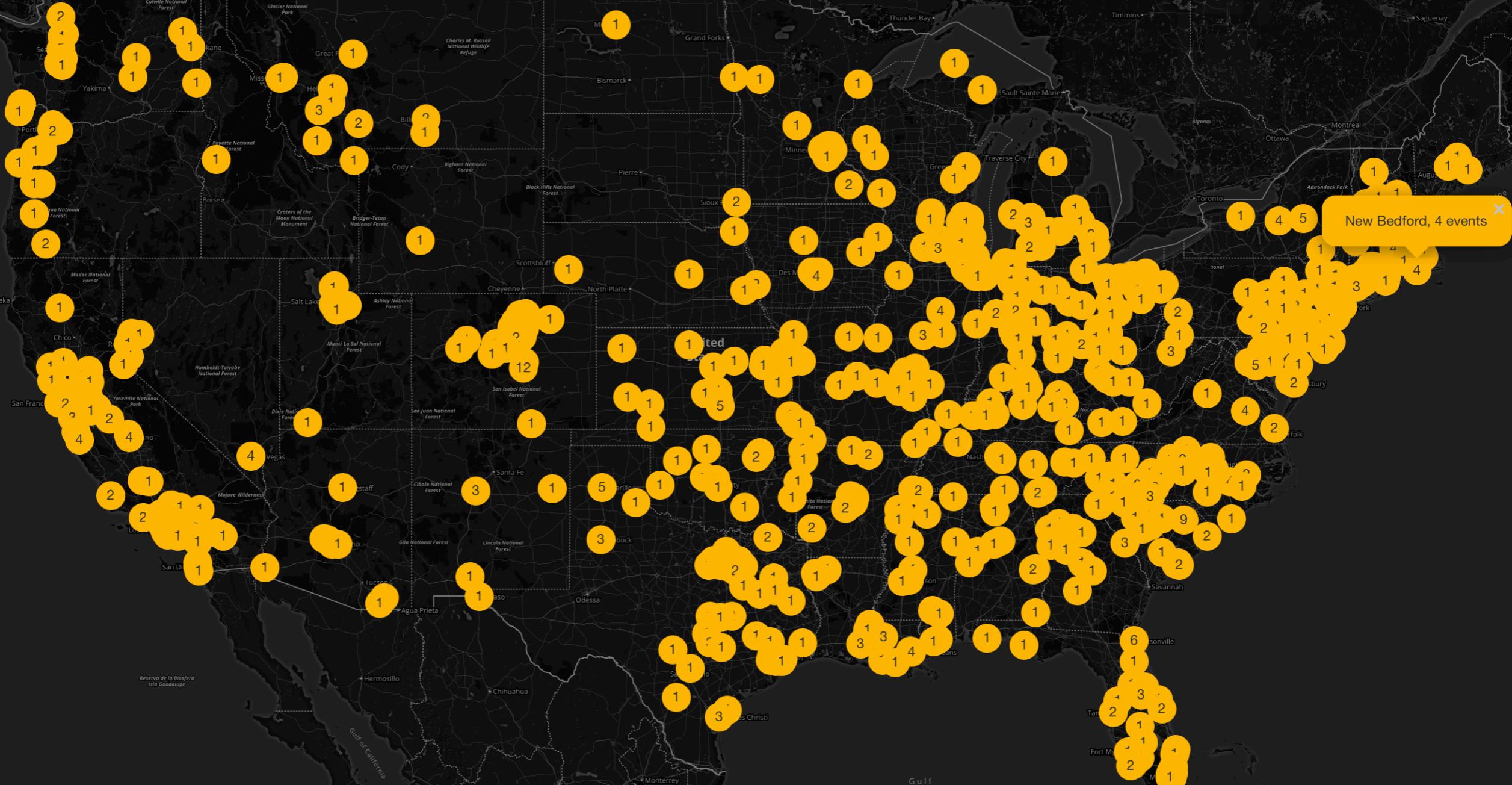
Others have found the field fairly difficult to traverse. Dr. Douglas Wiebe, an associate professor of epidemiology at the Perelman School of Medicine at the University of Pennsylvania, worked on [a 2009 study](#) on the link between gun possession and gun assault that is believed to have sparked Congress’ interest in applying the Dickey amendment to the NIH. He called the restriction of funds “not fatal” to his field, “but very close to it.” Investigators, he explained, are being forced toward less-politically contentious studies, which makes it close to impossible to conduct sound epidemiological research.

**Table 1** Major NIH research awards and cumulative morbidity for select conditions in the US, 1973–2002

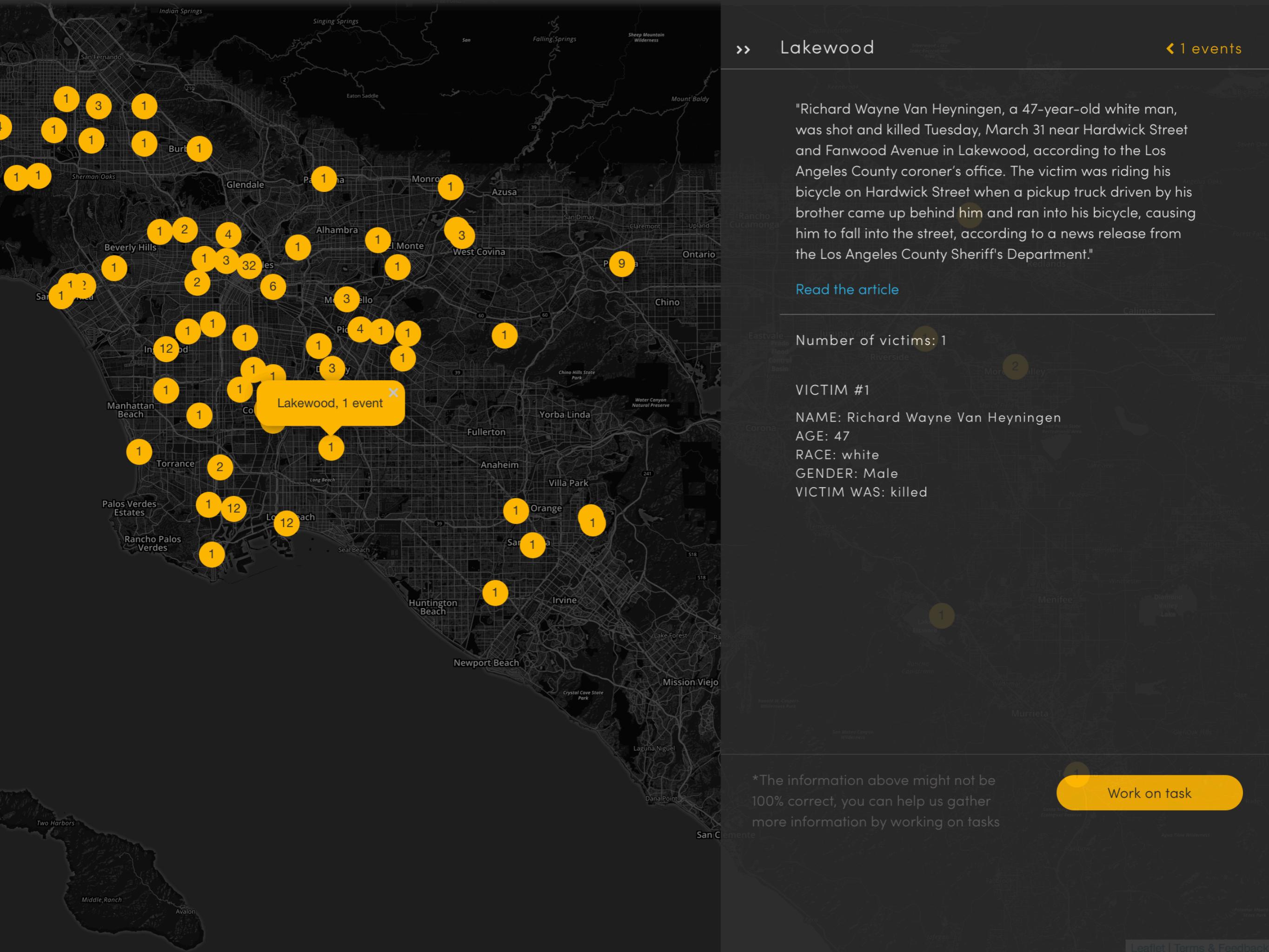
Condition	Total cases	NIH research awards
Cholera	373	101
Diphtheria	1337	54
Polio	266	106
Rabies	55	59
<b>Total of four diseases</b>	<b>2031</b>	<b>320</b>
Firearm injuries	>3000000	3



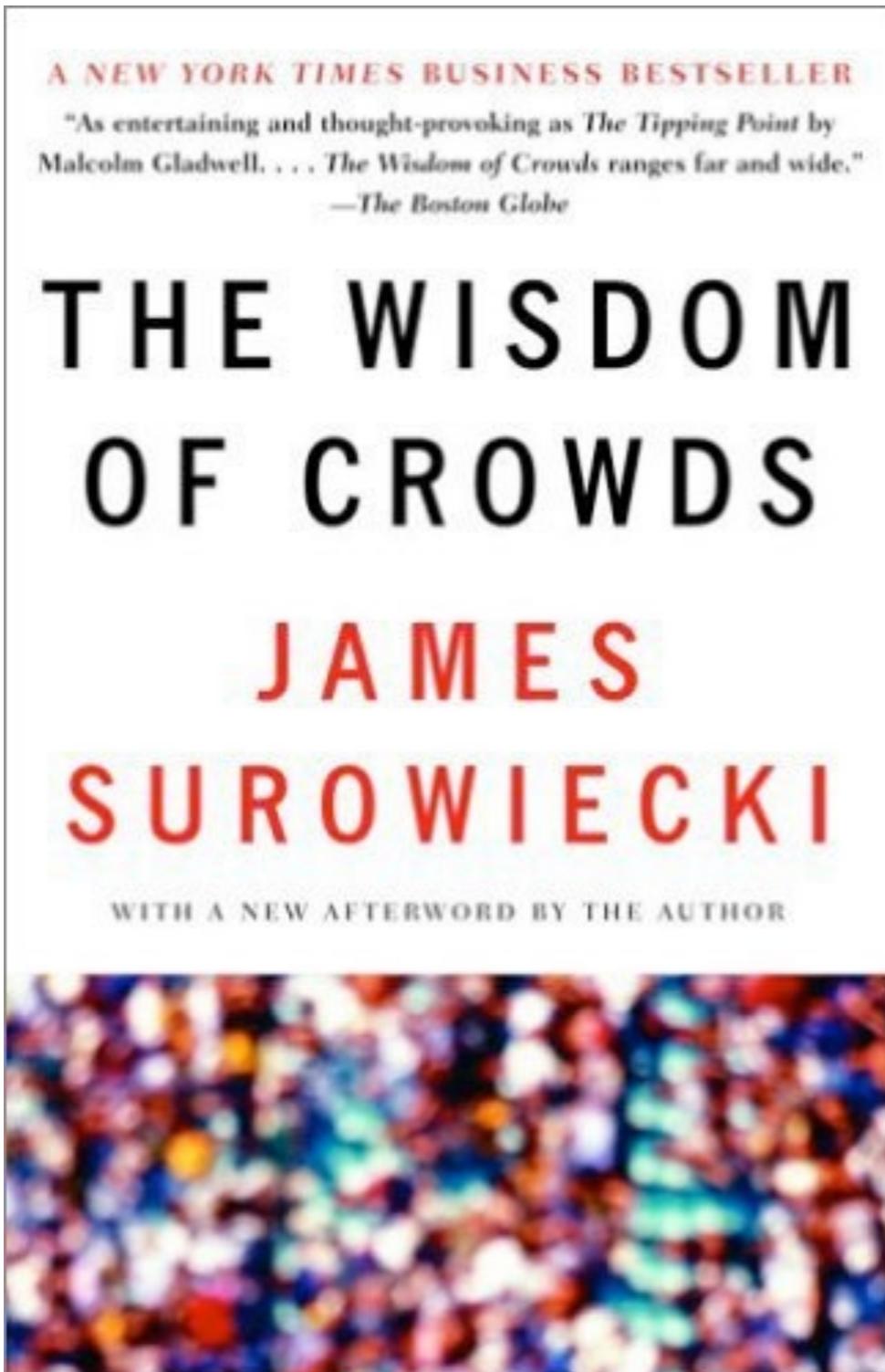
# The Gun Violence Database



<http://gun-violence.org/>



# Reading assignments



We will be using *The Wisdom of Crowds* as the course reader, and supplementing it with readings from academic papers.

You will have to replicate one academic paper.

# What will you get out of this class?

- Understanding of an emerging field of CS
- Basic python and machine learning skills
- Ideas that you could transform into a startup company or academic research
- A new way of thinking about collective decision making by companies and countries

Who are we?

# Professor Callison-Burch

## (not Professor Burch)

Bachelors from Stanford

PhD from University of Edinburgh

6 years at Johns Hopkins University

Joined Penn faculty in 2013

Research Interests: Crowdsourcing,  
Natural Language Processing



# Leaderboard

## Mechanical Turk Monitor: Top-1000 Recent Requesters

	General	Top requesters	Arrivals	Completed	Search	About		
	Requester ID	Requester			#Task	#HITs	Rewards	
1	<a href="#">Dolores Labs</a>	<a href="#">A2IR7ETVOIULZU (RSS)</a>			470	317857	33084.24	
2	<a href="#">ContentGalore</a>	<a href="#">A2XL3J4NH6JI12 (RSS)</a>			674	10622	17554.6	
3	<a href="#">SpeechInk</a>	<a href="#">A1AQ7EJ5P7ME65 (RSS)</a>			9019	13613	12876.67	
4	<a href="#">CastingWords</a>	<a href="#">A3MI6MIUNWCR7F (RSS)</a>			9454	14036	8947.02	
5	<a href="#">QuestionSwami</a>	<a href="#">AD7C0BZNKYGYV (RSS)</a>			629	4116	4750.37	
6	<a href="#">Chris Callison-Burch</a>	<a href="#">A32TTE4XXN6MQZ (RSS)</a>			11	9961	4458.02	
7	<a href="#">Smartsheet.com Clients</a>	<a href="#">A1197OGL0WOQ3G (RSS)</a>			434	38212	3118.28	
8	<a href="#">retaildata</a>	<a href="#">AD14NALRDOSN9 (RSS)</a>			8	50288	3110.85	
9	<a href="#">Classify This</a>	<a href="#">A1CTI3ZAWTR5AZ (RSS)</a>			25	94590	1891.8	
10	<a href="#">Andrew Stephen</a>	<a href="#">A1Y25F6MZCMQGY (RSS)</a>			3	22705	1131.25	
11	<a href="#">Dolores Labs 2</a>	<a href="#">A3JX8WONBL5N9X (RSS)</a>			34	8976	1043.27	
12	<a href="#">RelevanceQuest</a>	<a href="#">A8RMEN71ICE57 (RSS)</a>			15	47881	1029.92	
13	<a href="#">Crowd Task</a>	<a href="#">AFAOUHS65HNDS (RSS)</a>			4	2388	955.6	
14	<a href="#">nlds.soe.ucsc.edu</a>	<a href="#">A1HI9DWCF794RE (RSS)</a>			4	4702	933.9	

# TAs



**Danni Ma**



**Jie Gao**



**Paul Zuo**



**Yoni Nachmany**

A NEW YORK TIMES BUSINESS BESTSELLER

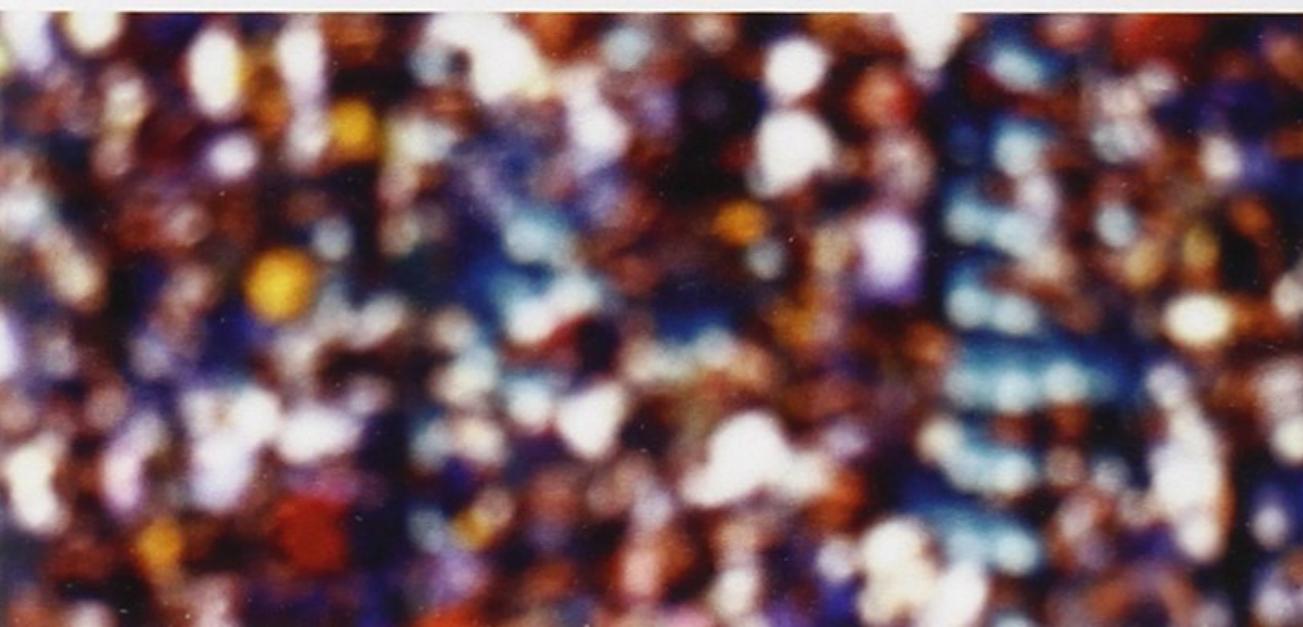
"As entertaining and thought-provoking as *The Tipping Point* by Malcolm Gladwell. . . . *The Wisdom of Crowds* ranges far and wide."

—The Boston Globe

# THE WISDOM OF CROWDS

# JAMES SUROWIECKI

WITH A NEW AFTERWORD BY THE AUTHOR



## Digital labour platforms

## and the future of work

Towards decent work  
in the online world



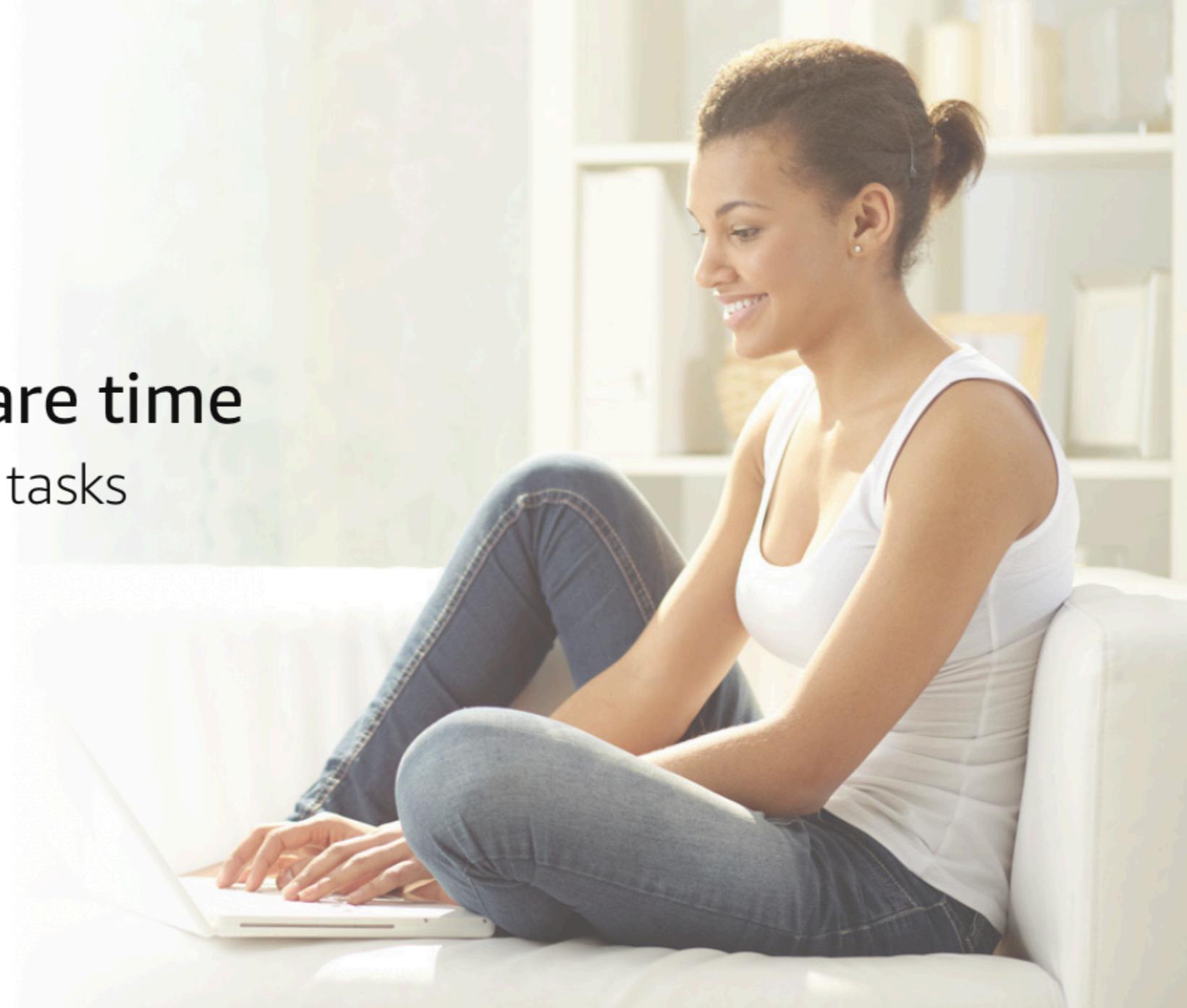
Janine Berg • Marianne Furrer • Ellie Harmon  
Uma Rani • M Six Silberman



# Make money in your spare time

Get paid for completing simple tasks

[Get Started with Amazon Mechanical Turk](#)



Want to make money in your spare time? Become an Amazon Mechanical Turk (MTurk) Worker and start applying your skills to the thousands of available tasks in the MTurk marketplace.