

Crowdsourcing systems

- Requesters, Tasks, Crowd (workers)
- Example: Amazon Mechanical Turk (AMT)

The screenshot shows the Amazon Mechanical Turk website. At the top, there's a navigation bar with the Amazon Mechanical Turk logo, navigation links for 'Your Account', 'HITS', and 'Qualifications', and a sign-in prompt for 'Worker' or 'Requester'. Below the navigation bar, a yellow banner states 'Mechanical Turk is a marketplace for work.' and provides a link to view 583,842 available HITs. The main content area is split into two columns. The left column, titled 'Make Money by working on HITs', describes HITs as individual tasks and lists benefits for workers, such as working from home and flexible hours. It includes a flow diagram: 'Find an interesting task' (with a circular icon containing text about supply chain and tasks) -> 'Work' (with a gear icon) -> 'Earn money' (with a dollar sign icon). A 'Find HITs Now' button is below the diagram. The right column, titled 'Get Results from Mechanical Turk Workers', describes how requesters can use workers to complete tasks. It lists benefits for requesters, such as access to a global workforce and fast completion times. It includes a flow diagram: 'Fund your account' (with a wallet icon) -> 'Load your tasks' (with a document icon) -> 'Get results' (with a star icon). A 'Get Started' button is below the diagram. At the bottom, there's a footer with links for 'FAQ', 'Contact Us', 'Careers at Mechanical Turk', 'Developers', 'Press', 'Policies', 'Blog', and 'Service Health Dashboard', along with copyright information and the Amazon logo.

amazonmechanicalturk Artificial Intelligence

Your Account HITS Qualifications

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.
583,842 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. [Get Started.](#)

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](#)

FAQ | Contact Us | Careers at Mechanical Turk | Developers | Press | Policies | Blog | Service Health Dashboard

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Crowdsourcing: Requester's experience

- No information about workers

The screenshot shows the Amazon Mechanical Turk Requester interface. The browser address bar displays <https://requester.mturk.com/mturk/create>. The page header includes the Amazon Mechanical Turk logo and the word "REQUESTER". A navigation bar contains links for Home, Create, Manage, Developer, and Help. The main content area is titled "Describe Your HIT" and contains the following fields:

- Title:** A text input field with the placeholder text "What do you want to call your HIT?".
- Description:** A text input field with the placeholder text "What is your HIT about? Enter a short description of the task you want completed."
- Keywords:** A text input field with the placeholder text "What keywords do you want to associate with your HIT? Enter terms that will help workers find your HIT."
- Expires in:** A dropdown menu set to "days" with a "days" label and a dropdown arrow. Below it is the text "How long do you want your HIT to be available on Amazon Mechanical Turk?".

The next section is "Provide Detailed Instructions". It contains a large text area with the placeholder text "What do you want workers to do? Be sure to include all information required to complete your HIT." To the right of this text area, there is a list of prohibited actions:

You may not ask Workers to:

- Provide personally identifiable information
- Violate the terms of service of another site
- Click on affiliate links or ads

Below this list, it states: "These are violations of the Mechanical Turk Participation Agreement and can result in the termination of your account."

Below the instructions text area, there is a field for "Workers will have" followed by a dropdown menu set to "hours" and the text "to complete this HIT". Below this are three buttons: "Add Picture", "Add Audio", and "Add Video".

The next section is "Select an Answer Format". It contains six options, each with a small icon and a label:

- Free Text Answer (represented by a document icon)
- Multiple choice - text (represented by a list of three checkboxes, with the first two checked)
- Multiple choice - pictures (represented by a list of three checkboxes, each with a picture icon, the first two checked)
- Single choice - text (represented by a list of three radio buttons, with the first one selected)
- Single choice - pictures (represented by a list of three radio buttons, each with a picture icon, the first one selected)
- File Upload (represented by a document icon with an upload arrow)

The final section is "Pay For Your HIT". It contains a field for "Assignments:" followed by a text input field and the text "each paying \$" followed by another text input field. Below this is the text "How many workers do you want to complete your HIT, and how much do you want to pay for each result?" and a link "What's this?". Below that is a field for "Rewards: \$0.00" and the text "Amount you will pay workers."

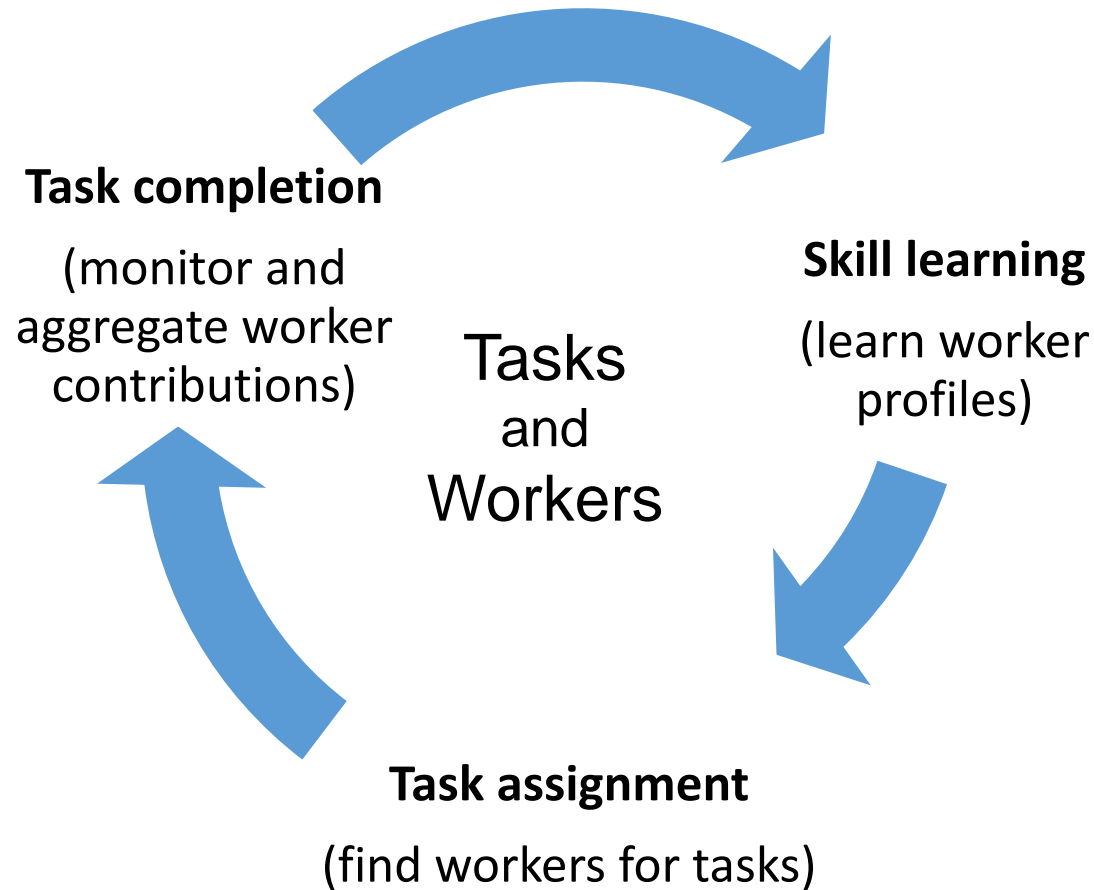
Crowdsourcing: Worker's Experience

- View of a raw list of HITs

The screenshot displays the Amazon Mechanical Turk website interface. At the top, there is a navigation bar with the Amazon Mechanical Turk logo, navigation tabs for 'Your Account', 'HITs', and 'Qualifications', and a notification for '584,136 HITs available now'. Below the navigation bar is a search bar with the text 'Find HITs containing' and a filter for 'that pay at least \$ 0.00'. The main content area shows a list of HITs, with the first three visible:

- Categorize a product.**
Requester: Jared | HIT Expiration Date: Jun 4, 2015 (1 week 5 days) | Reward: \$0.01
Time Allotted: 60 minutes | HITs Available: 206483
Description: Select the best category for a product based on pictures and a description.
Keywords: categorize, product, category, classify
Qualifications Required: Total approved HITs is not less than 10000, HIT approval rate (%) is not less than 98, Location is US
- Topic Assignment for a Paragraph**
Requester: Jeiran | HIT Expiration Date: May 24, 2015 (2 days 14 hours) | Reward: \$0.03
Time Allotted: 3 days | HITs Available: 32623
Description: Please read this paragraph and choose the most relevant topics from the list.
Keywords: topic, paragraph, text, article, news
Qualifications Required: HIT approval rate (%) is not less than 90
- Collect Product Information**
Requester: Grocery ROI | HIT Expiration Date: May 25, 2015 (3 days 8 hours) | Reward: \$0.03
Time Allotted: 60 minutes | HITs Available: 25882
Description: Collect various data points from product images on Amazon retail site.
Keywords: Data Collection, Amazon, Fast, Quick, Easy
Qualifications Required: Masters has been granted

Complex Crowdsourcing: an integrated view



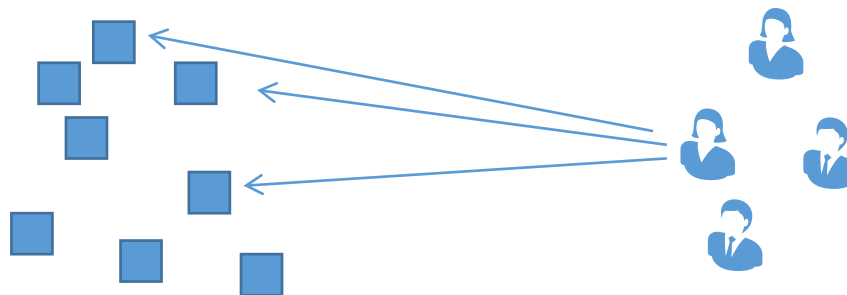
Motivation and Objective

- Improve worker's and requester's experience
 - Quality
 - Effectiveness
- Focus on Task Assignment
 - Increase worker's motivation (task-variety, task-relevance)
 - Increase requester's effectiveness (worker-relevance, worker-availability)

Proposal: Task assignment and CIs

- Task composition (for workers)

- Every item in a CI list is a micro-task - a worker is given *a holistic view of tasks* she could complete as opposed to seeing a ranked list of tasks.



- Worker summarization (for requesters)

- Every item in a CI is a worker that complies with requester-centric requirements in order to carry out a task – a requester is given *a holistic view of workers* she could hire for her tasks as opposed to no information about available workers.

- We will focus on task composition to start

Task Composition vs Task Decomposition

- Task Composition: find a set of micro-tasks that are appropriate for a worker
- Task Decomposition: identify the sub-tasks that form a task

Task Composition Examples

- Citizen journalism

- Objective: generate a bundle-shaped workplan for each worker such that the set of micro-tasks are diverse in order to maximize motivation
- Constraint: micro-tasks are relevant to the worker

- Crisis reporting

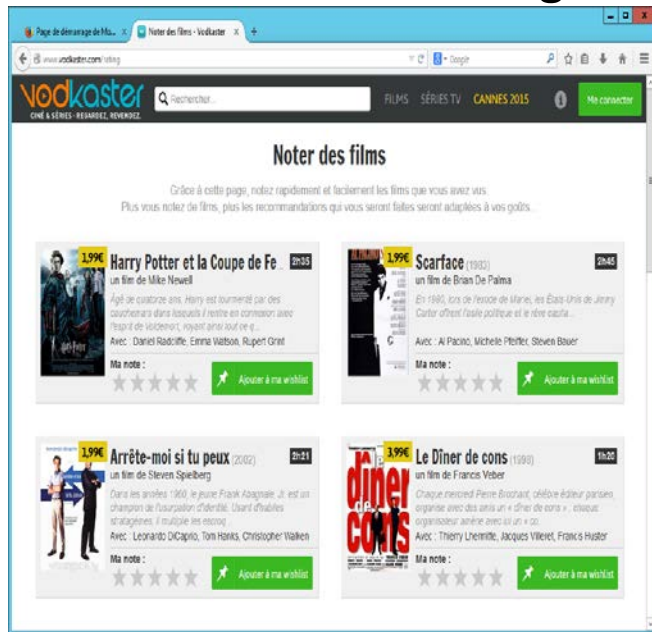
- Objective: generate the largest star-shaped workplan with satellite items representing reporting alternatives for a central task (e.g., flood reporting)
- Constraints: each micro-task is safe to report and complementary (covers a different area)

- Fansubbing

- Objective: generate a chain-shaped workplan for each worker such that successive tasks are as similar as possible to each other in order to maximize effectiveness
- Constraints: micro-tasks are relevant to the worker and total duration of micro-tasks assigned to a worker is within budget

Example: CIs and Crowdsourcing

- Vodkaster movie rating



- Crowdsourcing movie rating

- CI of movies with budget: $\langle 2 \text{ drama}, 1 \text{ comedy}, \infty \rangle$

CI	Year	Genre	Name
C1	1996	Drama	Big Night
	1995	Comedy	Welcome to the Dollhouse
	1997	Drama	Ice Storm, The
C2	1992	Comedy	League of their Own, A
	1998	Drama	Truman Show, The
	1996	Drama	Jerry Maguire
...			

- CI of workers with budget: $\langle 2 \text{ 20-30}, 1 \text{ 30-40}, \infty \rangle$

CI	Age	Sex	Skills/Preferences
C1	20	M	Adventures
	32	F	Films before 2013
	27	F	Comedies
C2	25	M	Adventures, Musicals
	37	M	Thriller, Horror
	26	F	Drama, Musicals
...			

Task Decomposition

- H. Zhang, P. Andre, L. B. Chilton, J. Kim, S. P. Dow, R. C. Miller, W. E. Mackay, and M. Beaudouin-Lafon. *Cobi: community sourcing large-scale conference scheduling*. In *CHI'13 Extended Abstracts on Human Factors in Computing Systems, 2013*.
- A. Kittur, B. Smus, S. Khamkar, and R. E. Kraut. *Crowdforge: crowdsourcing complex work*. In *Proceedings of the 24th annual ACM symposium on User interface software and technology, UIST '11, pages 43{52, New York, NY, USA, 2011. ACM*.
- Kulkarni, A., Can, M., Hartmann, B.: *Collaboratively crowdsourcing workflows with turkomatic*. *CSCW '12*

- Requester-specific
 - Programmatic workflow design: e.g., TurKit helps expert requesters deploy iterative tasks in AMT
 - Languages to implement complex workflows (expert requester):
 - Ruote for CrowdFlower
 - CyLog for Crowd4U
- Worker-specific
 - CrowdForge uses a MapReduce paradigm to divide complex work into smaller steps
 - Turkomatic uses a price-divide-solve recursive algorithm
 - Foldit, an online puzzle video game about protein folding
 - Soylent proposes a find-fix-verify strategy for text editing in a word processor

Task Composition Challenges and Workplan

1. Define a worker profile: personalised CIs will motivate workers
 1. Expected wage, acceptance ratio
 2. Demographics, tendencies, interests, preferences
2. Define and estimate skills (relative experience, history)
3. Update the KFC problem statement
4. Update the KFC algorithm
5. Find an appropriate dataset
6. Evaluation