Continuous Real-Time Crowdsourcing
(and Interactive Crowdsourcing)
Real-Time Crowdsourcing

Seaweed

Figure 22 Screen of "Rock Paper Scissors" showing the timer with 10 seconds remaining
Real-Time Crowdsourcing

Seaweed

VizWiz
Real-Time Crowdsourcing

Seaweed

VizWiz

Adrenaline
Real-Time Crowdsourcing

Single-instance problems
  - Context contained in the task itself

Quick response needed
Continuous Tasks

On-going tasks (no clear ending point)

- Keep going, and going, and going, and going…

Maintain context over time
Examples of Continuous Tasks

Activity recognition / prompting

Lasecki et al., CSCW 2013
Interactive Tasks

[Often] Continuous, real-time

Must react to their environment

Must be consistent

- Otherwise it can just get confusing
Examples of Interactive Tasks

Robot navigation
Examples of Interactive Tasks

Conversational interaction / dialog systems
Crowd Agents

To the rescue!
What do we need?

To solve continuous tasks:
  - We need people to **remain available**

To maintain context / be consistent:
  - We need the **same people** (memory)

To react to our environment:
  - We need **quick, reliable responses**
What do we need?

To solve continuous tasks:
  - We need people to remain available

To maintain context / be consistent:
  - We need the same people (memory)

To react to our environment:
  - We need quick, reliable responses
Crowds Behind the Scenes
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Crowd Agents

Mediate worker input to be:

- Reliable
- Fast
- Continuous / on-going
- Consistent
Crowd Agent Model

[Diagram showing the Crowd Agent Model with various components and arrows indicating the flow of tasks, worker inputs, and feedback.]
**Legion**: Control any existing UI
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Legion:Gaming - Collective Gaming
Twitch Plays Pokemon
Scribe - Realtime Captioning by Non-Experts
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Merging Incomplete Captions

C1: the brown fox jumped
C2: quick fox lazy dog
C3: fox jumped over the lazy

Combiner

Final Caption

the quick brown fox jumped over the lazy dog
Legion:AR - Realtime Activity Recognition
Chorus - Conversational Assistant
Chorus - Conversational Assistant
Chorus - Conversational Assistant

crowd: I'm good, how about you?
requester: Good! I'm on vacation in Los Angeles and was hoping you could help me find a good place for lunch tomorrow.
crowd: Which part of Los Angeles are you at?
requester: I'm in Westwood, near UCLA.
crowd: OK, what kind of food do you prefer?
requester: Almost anything is fine, but I'm allergic to shellfish and peanuts, so places that serve that are off my list.
crowd: Try Pizzacotto
requester: Excellent. Thank you so much for your help!
crowd: Its Italian. You said you are allergic to shellfish and peanuts. You should be fine. They have a menu that has no peanuts
requester: I'm going to head out. Have a good one.
Instructions are likely on the other side of the box.

Box is mostly out of frame to the right.

Preheat to 400, remove from box, cover edges with foil and put on tray, cook 70 minutes
Chorus: View - Conversational Q&A
Crowd Agent Model
Next Class...

Hybrid Systems