Realtime Crowdsourcing

Retainer Recruitment

Realtime crowdsourcing techniques make it possible to begin returning results in as little as 500 milliseconds. (Bernstein, Brandt, Miller & Karger, UIST 2011) (Bernstein, Karger, Miller & Brandt, Collective Intelligence 2012)

The retainer model pays workers a small wage to be on call and respond quickly when asked.

Realtime crowds can support systems that need responses in seconds. Adrenaline is a camera that captures a short video instead of one frame, then uses the crowd to decide on the best moment.

Applying queueing theory models allows systems to optimize their cost/performance tradeoff. For example, they can keep as few workers on call as necessary to guarantee a maximum probability of a non-realtime response.

Evaluating Crowdworkers

Instrumenting the Crowd (Rzeszotarski & Kittur, UIST 2011)

Example Log: "Hello"

• System for observing crowd worker behavior and predicting outcome measures such as performance
• Observation system is invisible and task agnostic
• Identified workers who wrote low quality tags for an image by only the time they spent and keys they pressed
• Applied to a range of tasks from simple identification to examining the cognitive strategies of test-takers

CrowdScape (Rzeszotarski & Kittur, UIST 2012)

• Interactive visualization for exploring how crowd workers work and their products
• Helps organizers understand their tasks
• Dynamic querying supports rich interactions
• Reveals subtle relationships between workers through cluster-by-example tools

Complex Crowd Work

CrowdForge (Kittur, Smus, Khamkar & Kraut, UIST 2011)

• Framework for the crowd to decompose, produce, and integrate complex tasks
• Inspired by distributed computing (e.g., MapReduce)
• Produces crowd-written articles rated higher than individual-written and as high as Simple Wikipedia articles
• Applied to article writing, product comparison, science journalism

CrowdWeaver (Kittur, Khamkar, Andre & Kraut, CSCW 2012)

• Toolkit for visually creating and managing complex crowd workflows
• Supports iteration and reuse of flows
• Integrates human and machine templates
• Supports tracking crowd factors (latency, price, time, quality)

Collabode: A Crowd in the IDE

Collabode is a web-based integrated development environment that supports close synchronous collaboration between software developers. (Goldman, Little & Miller, UIST 2011)

Multiple developers can view and edit the same source file simultaneously, sharing their changes in real time, simply by visiting the same URL.

Collabode provides the features of a familiar Java IDE, isolating developers from each other’s compilation errors with error-mediated integration.

When joining a project is as easy as browsing to a URL – no check out, no build – the barrier to contribution is substantially lower.

In micro-outsourcing, one programmer draws on the distributed expertise of a crowd of other programmers who make small contributions.