

Sorting it All Out with Humans in the Loop

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ABSTRACT

From an early age, we sort jellybeans with friends, placing watermelon flavor at the top of our list, and pushing licorice to the bottom. We contribute to larger-scale ranking operations when we rate a product in an online catalog. Given the prevalence of human-powered ranking in the digital realm, it is important to study the most effective user interfaces and algorithms for eliciting rankings from humans.

In experiments [2] involving Mechanical Turk [1] workers, we found that average ratings (e.g., “On a scale from one to seven”) have a cost linear in the input and result in high-accuracy rankings. Comparison-based sorts (e.g., “Which of these pairs of glasses is cooler?”) have a cost up to quadratic in the input, but result in perfect rankings. We found that a hybrid of the two, where one rates the input and then runs comparisons on the nearly ranked data as a budget allows, is both cost- and accuracy-effective.

Lest we leave you with the foul-tasting notion that people are simply binary comparator-computing cogs in an algorithm-powered machine, there’s more to humans than that! Humans are effective at batch-processing data in ways that machines are not. We take advantage of this ability to reduce the complexity of both rating- and comparison-based rankings by showing crowd workers five to ten items at a time and having them rate or compare all of the items.

There is more to this story, but it’s time for a snack!

BODY

*When ranking with humans,
ratings are cheap and nice.
To improve quality,
please compare, for a price.*

Hammertime.

REFERENCES

- [1] Amazon’s Mechanical Turk website, July 2012. <http://mturk.com/>.
- [2] A. Marcus, E. Wu, D. R. Karger, S. Madden, and R. C. Miller. Human-powered sorts and joins. *PVLDB*, 2011.

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