

Crowdsourcing and Information Visualization Evaluation

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Crowdsourcing

- A marketplace whereby anyone having Internet access could contribute to the completion of a task for free or in exchange for a monetary reward
- Can overcome several limitations of controlled laboratory experiments



amazon
beta
mechanical turk

The logo for Amazon Mechanical Turk features the word "amazon" in a bold, black, sans-serif font. Below it is the orange curved arrow logo. To the right of the arrow, the word "beta" is written in a smaller, grey, sans-serif font. Below the entire logo, the words "mechanical turk" are written in an orange, sans-serif font.

figure
eight

The logo for Figure Eight consists of the words "figure" and "eight" stacked vertically. Both words are written in a dark green, sans-serif font. The letters are closely spaced, and the "e" in "figure" is slightly larger than the others.

Heer & Bostock (2010)

- Goal: assess the viability of crowdsourcing graphical perception experiments
- Replicated prior laboratory studies on spatial data encodings and luminance contrast
- Provided novel insights for optimizing display parameters
- Crowdsourcing reduces money and time costs

Use Of Crowdsourcing For Empirical Evaluations Of Visualizations (Borgo et al., 2018)

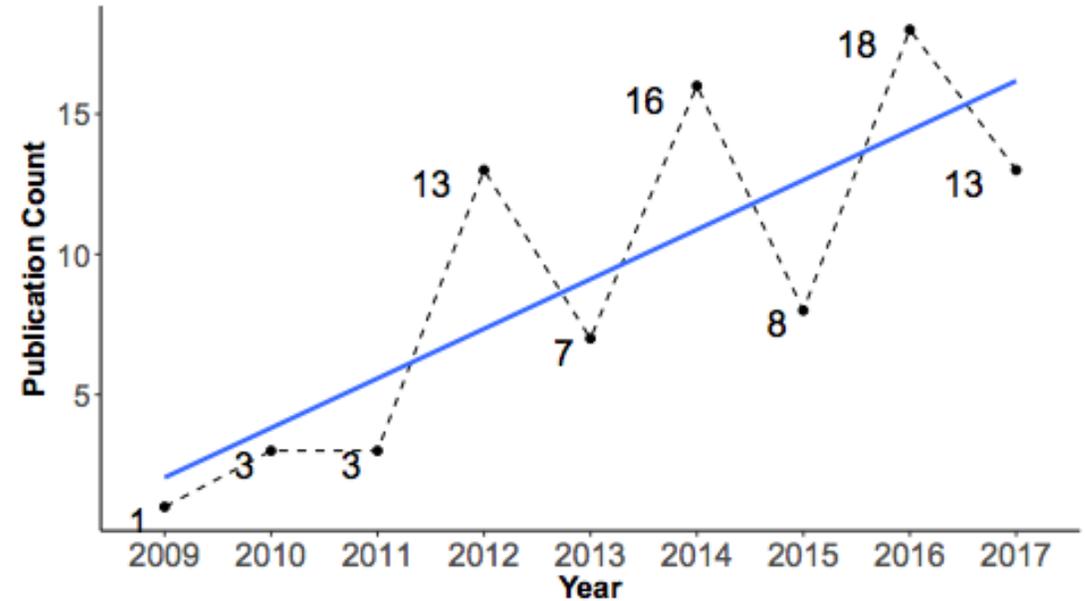


Figure 1: *The number of papers employing crowdsourcing experiments has followed an upward annual trend. While we analyzed papers published between 2006 and 2017, the first paper with a crowdsourcing experiment for visualization was published in 2009.*

Critical Aspects of A Crowdsourcing Experiment for Visualization Research

Study design

Tasks

Participants

Study procedure

Quality assurance

Compensation

Measure and metrics

Opportunities and Challenges

1

Find the right workforce

2

Consider other possible covariates

3

Adopt novel quality assurance technique

4

Share resources with the community

5

Leverage advances in technology

References

Borgo, R., Lee, B., Bach, B., Fabrikant, S., Jianu, R., Kerren, A., ... & Zhou, M. (2017). Crowdsourcing for information visualization: Promises and pitfalls. In *Evaluation in the crowd. Crowdsourcing and human-centered experiments* (pp. 96-138). Springer, Cham.

Borgo, R., Micallef, L., Bach, B., McGee, F., & Lee, B. (2018). Information visualization evaluation using crowdsourcing. *Computer Graphics Forum*, 37, 573-595.

Heer, J., & Bostock, M. (2010). Crowdsourcing graphical perception: using mechanical turk to assess visualization design. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 203-212).