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Interface for collecting answers to equivocal questions for crowdsourcing

Constance THIERRY, Yolande LE GALL, Gery CASIEZ, Jean-Christophe DUBOIS, Sylvain MALACRIA, Arnaud MARTIN, Thomas PIETRZAK

Workshop Visualization & HCI for Crowd-Sourcing
25 June 2019
Scientific standing

- The difficulty of establishing a data collection system to collect reliable and relevant data
- The impossibility for contributors to express their contribution in detail in the event of indecision due to the limitations of the expression possibilities of the response collection interface.
- Data imperfections cannot be modeled and integrated into the information fusion process for optimal decision-making.

3 phases

- Uncertainty
- Imprecision
- Both uncertainty and imprecision
Members of the project

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Phase 1: Uncertainty

Which segment is the tallest?

What is your certitude?

- Totally uncertain
- Uncertain
- Slightly uncertain
- Neither certain nor uncertain
- Slightly Certain
- Certain
- Totally certain

Validate
2 campaign on Figure Eight platform [1]

- 1st campaign: 25 contributors of area 3 (the most serious ones)
- 2nd campaign: 107 contributors of area 1 (area 1 includes contributors of both 2 and 3)
- 3 HITs composed of 30 questions
- 2 different sets of delta
  - $\text{delta0} = [0, 300, 600, 900, 1200, 1500]$
  - $\text{delta1} = [0, 300, 600, 1200, 1800, 2400]$

Half of the contributors (66) performed the campaign with delta0 and the other half with delta1

Total data = $$(107 + 25) \times 3 \times 30 = 11880$$
Difficulty selecting the segment

For you specify the longest segment was:

- Very easy: 7.6%
- Easy: 23%
- Neither easy nor difficult: 26%
- Difficult: 39%
- Very difficult: 3.8%
Difficulty to express certainty

For you to express your certainty was:

- Very easy: 9.8%
- Easy: 34%
- Neither easy nor difficult: 27%
- Difficult: 27%
- Very difficult: 3%
Did you hesitated before answering?

- 11% almost always
- 25% often
- 30% occasionally
- 20% rarely
- 14% never
Certainty

![Graph showing the relationship between certainty and delta (um). The graph includes multiple lines representing different data sets such as Figure8 delta0, Figure8 delta1, Labo delta0, Labo delta1, and the Certainty mean.](image-url)
Group of contributor certainty

![Graph showing certainty levels for different delta (um) values. The graph compares the ability to give certainty across various categories such as All the contributors, Very easy, Easy, Neither easy nor difficult, Difficult, Very difficult, and Average certainty. Each category is represented by a different colored line on the graph.]
Good answers
Group of contributors according to their ability perceived to choose the good answer
Headworks [2]

- ANR project (2016-2021)
- Complex crowdsourcing systems
- Partners: Cesco (Musée National d’Histoire Naturelle), Wirk (FouleFactory), Valda (INRIA Paris), Druid (Rennes 1), Links (Inria-Lille), Sumo (Inria-Bretagne)
Conclusion

- Contributors are not accustomed to giving their certainty in their response
- The certainty provided is strongly correlated with the difficulty of the task
- The correct response rate is also correlated with the difficulty of the task
[1] Figure eight web site.
https://www.figure-eight.com/.

http://headwork.gforge.inria.fr/software.