

Crowdsourcing: Combining Knowledge “Wisdom” of Multiple People

- ▶ Homer’s Iliad (circa 2000 BC) alludes to it
- ▶ Condorcet’s Jury Theorem (circa 1785 AD)
 - ▶ If each member has a probability $p > 0.5$ of being correct
 - ▶ The majority vote by jury is even more reliable
- ▶ Gaspard de Prony, around the French Revolution (~ 1793 AD)
 - ▶ First computational use—to compute logarithm tables
 - ▶ Out of work hair dressers
 - ▶ Well-defined steps
 - ▶ But not successful

Vox Populi

Francis Galton, 1907

Exercise: Identify problem characteristics under which we could replicate Galton's results

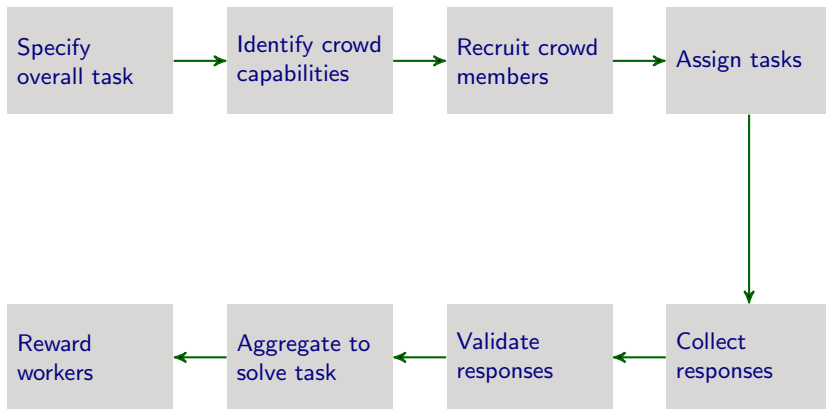
- ▶ Cornwall Plymouth County Fair
- ▶ Betting game to estimate dressed weight of an ox
 - ▶ Pay to get a ticket
 - ▶ Submit an estimate
 - ▶ Closest to actual wins
- ▶ Galton acquired the tickets after the competition
 - ▶ 780 or so legible tickets
 - ▶ Actual dressed weight
- ▶ Median would have won!

Crowdsourcing: Aggregation Methods

Compare these methods

- ▶ Median
- ▶ Mean
- ▶ Mode
- ▶ Any other?
- ▶ Debate between Hooker and Galton
 - ▶ Interesting comments about computing ease of medians and means

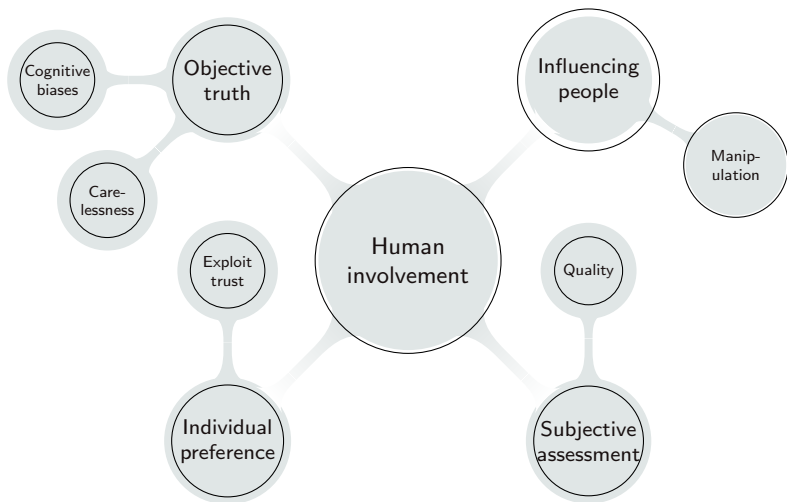
Crowdsourcing Workflow



Crowdsourcing vs. the Bus Stop Problem

Exercise: What's similar and what's different?

Varieties of Human Involvement and Associated Challenges



Creativity

Exercise: How can we apply crowdsourcing? Consider the workflow

- ▶ Creative expression: art and literature
- ▶ Innovation: problem solving
 - ▶ Novelty
 - ▶ Usefulness
 - ▶ Also feasibility and clarity of ideas

Creativity for Innovation

- ▶ Cognitive stimulation
- ▶ Brainstorming and asynchronous interaction
- ▶ Social loafing and maintaining active participation
- ▶ Crowd selection
- ▶ Task formulation
- ▶ Aggregation of responses