

# Incentives in Human Computation & Crowdsourcing

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# People are "lazy" and strategic

#### Report outcome of a private coin flip [Rob Miller, CI 2012] 70 heads, 29 tails, 1 other

Report outcome of a private die roll [Fischbacher & Heusi 2008] Pay 1, 2, 3, 4, 5, or 0 CHF One-shot: 27% 4, 35% 5, 6.5% 6 Repeated: 52% 5

ESP game

Game-theoretic analysis: players choose easy words [Jain & Parkes 2008,2012]



Increasing payment improves participation but generally not quality [Ariely, 2009; Mason & Watts, 2009] A result of fixed payment Anchoring effect

Shaw, Horton, D. Chen (2011) experimented with 14 different incentives in Mturk

Only two affected performance: Punishment Agreement and Bayesian Truth Serum



### Iterative Workflow

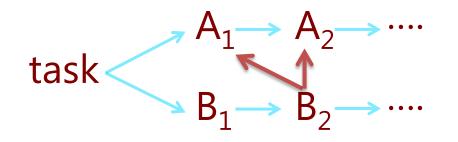
Iterative workflow was proposed by Little, Chilton, Goldman, and Miller (2010).

task  $A_1 \rightarrow A_2 \rightarrow \cdots$ 



### Iterative Workflow

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[Liem, Zhang, Chen 2011]

score by similarity to recent answers on other path

Result: 96.6% word accuracy for speech-to-text transcription



### Understanding incentives

# A theory of design for human computation and crowdsourcing



Two important goals:

- Encourage employees to work hard
- Get accurate predictions about how long projects will take







# Getting Employees to Work Hard

#### Principal-Agent Problem





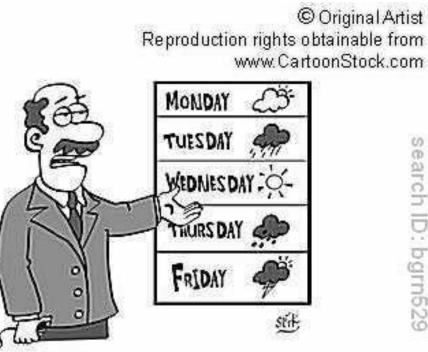


Effort cannot be directly observed What do optimal contracts look like?



## Getting Accurate Predictions

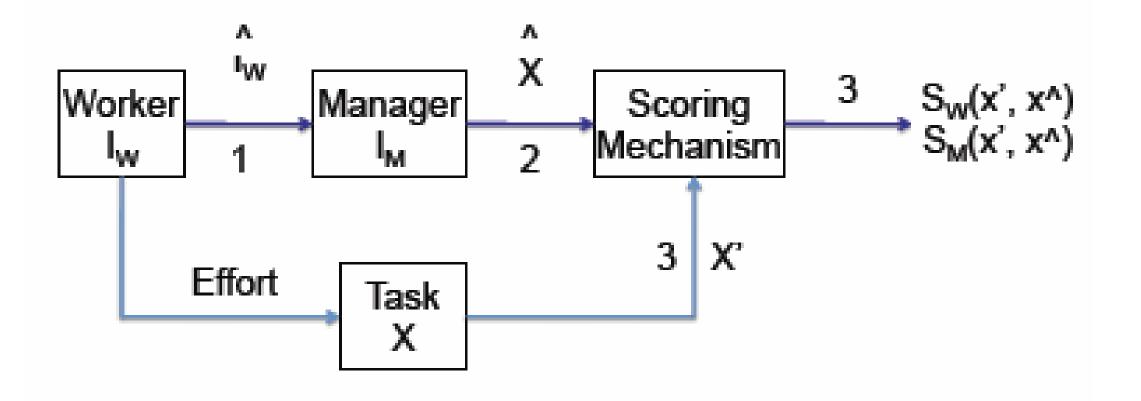
### Proper Scoring Rules



search ID: bgrn529

Here's the 5 day forecast. To be honest, after tomorrow, your guess is as good as mine!





Characterized all scoring mechanisms that can achieve both. [Bacon, Chen, Kash, Parkes, Rao, and Sridharan, 2012]



# Eliciting preference / information → Eliciting effort / actions



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