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Using a Predictive Computational Model to Improve the Results of Cooperative Work

Traditionally, experiments are constructed based on the intuition of a small group of domain experts. The drawback of this approach is that factors influencing the phenomenon of interest are often missed because of pre-conceived notions. Though crowds have been shown able to contribute to knowledge generation through `citizen science' projects, they are traditionally barred from altering the parameters of most experiments. This is likely due to the increased cost of testing the many poorly conceived hypotheses generated by non-experts. This research project tested a web-based system that allowed the crowd to propose contributing factors to an outcome (such as `eating habits', or 'favorite color' on body-mass index) as well as collectively filter out spurious factors (e.g. 'favorite color').

In this project an online questionnaire is created in which the very people providing the answers create the questions. If any of the proposed questions contribute to correct prediction of the outcome then those better questions are posed to new visitors to the website. Questions are ranked using a predictive computational model that takes as input the answers provided by users. This continuously evolving questionnaire is able to benefit from both the data provided by the crowd, but also from its collective understanding of the phenomenon being studied.