

Conducting Massively Open Online Social Experiments with Volunteer Science

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Background

Volunteer Science is an online platform enabling anyone to participate in social science research. The goal of Volunteer Science is to build a thriving community of research participants and social science researchers for Massively Open Online Social Experiments (“MOOSEs”). The architecture of Volunteer Science has been built to be open to researchers, transparent to participants, and to facilitate the levels of concurrency needed for large scale social experiments. Since then, 14 experiments and 12 survey-based interventions have been developed and deployed, with subjects largely being recruited through paid advertising, word of mouth, social media, search, and Mechanical Turk. We are currently replicating several forms of social research to validate the platform, working with new collaborators, and developing new experiments. Moving forward our priorities are continuing to grow our user base, developing quality control processes and collaborators, diversifying our funding models, and creating novel research.

Motivation

Volunteer Science attempts to advance the laboratory model in the social sciences by broadening the participant pool, enabling larger scale experiments, capturing the benefits of cross-experiment participation, and taking advantage of information technologies for data collection. One perennial critique of traditional lab studies in the social sciences is that most participants are from Western, Educated, Industrialized, Rich, and Democratic (“WEIRD”) societies. In addition, because many social science experiments involve group behavior, they require a large number of individuals to participate, quickly raising the monetary and logistical costs of an in-person study drawn from local research pools. An open-access web-based experimental framework attempts to address these issues by enabling participants from any internet-connected device to participate. In addition, open,

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internet-based research has two added advantages. It allows users to participate in multiple experiments while linking their results. And, it integrates with other technologies, including Facebook, gathering data in other domains for analysis.

Implementation

Volunteer Science was engineered to be flexible, privacy-protecting, scalable, and high-performance. On the back-end, researchers are able to write games in JavaScript and jQuery, Java, HTML5, or Flash with access to data, server resources, and functionality via an internal API. The use of open languages and a mobile-first front-end from Bootstrap enables the website to be accessible for any internet-connected device running a major browser. Users are able to provide a broad, universal consent or one-off consent, monitor their participation and rewards via their profile page, and read about the lab through public-facing FAQ, about us, and research summary pages. The promise of Volunteer Science relies on its ability to handle large numbers of user simultaneously. Under the hood, Volunteer Science runs on Amazon’s Elastic Compute Cloud (EC2) with scalability to handle 200-250 simultaneous users without lag when needed.

Results

Since launching our first experiment in August 2013, roughly five hundred volunteers have participated in over 750 games and 160 surveys, providing over 6,600 observations. Just over half of these have come since July, 1 2014. Initially, we experimented with A/B ad placement via Google and Facebook with limited results. We also placed print advertisements on the public railway system in Boston; however, we have not been able to track the results with confidence. Currently, we are developing a user base using social media and receive just over 64% of our traffic from ?direct? sources. Given that we developed experiments quicker than we developed a user base, we connected Volunteer Science to Amazon Mechanical Turk to perform multi-user experiments requiring simultaneous interaction. This tunnel to

AMT enables us to rapidly deploy, validate, and even run these multi-user experiments and is accessible to collaborators through the Volunteer Science API. To further increase participation, we have integrated a participation validation system and campaign to encourage professors to utilize volunteer science in classes that use experimental participation as a requirement or for extra credit. The results of this strategy will be seen this Fall.

Currently, we are validating the platform for a broad range of social scientific research, working with new collaborators, and developing new experiments. We are currently replicating studies in perception, social psychology, economics, and networks to demonstrate the validity of the platform across multiple types of interventions and mechanisms. In addition, we are deliberately expanding our network of collaborators, focusing on those performing experiments in problem solving, social networks, and collective cognition. Finally, we are developing our own experiments, both unique and adaptations of other experiments.

Future work

Moving forward, our most important priorities will be completing and publishing the validation study, further developing our user base, and building policies and systems for collaboration. Over the next six months, we will be experimenting with other user recruitment strategies, developing protocol for new collaborators, designing systems for maintaining a high quality user-experience across experiments from multiple teams. In six months to two years, we hope to have a sustainable user-population capable of participating in live, large multiplayer experiments; diversified funding sources; and several high-profile papers in pre-eminent social science journals. Finally, in 2-5 years, we hope to be the edX or Coursera of social science experimentation.