The Challenge of Understanding What Users Want: Inconsistent Preferences and Engagement Optimization

JON KLEINBERG, Cornell University
SENDHIL MULLAINATHAN, University of Chicago Booth School of Business
MANISH RAGHAVAN, Harvard Center for Research on Computation and Society

Online platforms have a wealth of data, run countless experiments and use industrial-scale algorithms to optimize user experience. Despite this, many users seem to regret the time they spend on these platforms. One possible explanation is that incentives are misaligned: platforms are not optimizing for user happiness. We suggest the problem runs deeper, transcending the specific incentives of any particular platform, and instead stems from a mistaken foundational assumption. To understand what users want, platforms look at what users do. This is a kind of revealed-preference assumption that is ubiquitous in the way user models are built. Yet research has demonstrated, and personal experience affirms, that we often make choices in the moment that are inconsistent with what we actually want. The behavioral economics and psychology literatures suggest, for example, that we can choose mindlessly or that we can be too myopic in our choices, behaviors that feel entirely familiar on online platforms.

In this work, we develop a model of media consumption where users have inconsistent preferences. We consider an altruistic platform which simply wants to maximize user utility, but only observes behavioral data in the form of the user’s engagement. We show how our model of users’ preference inconsistencies produces phenomena that are familiar from everyday experience, but difficult to capture in traditional user interaction models. These phenomena include users who have long sessions on a platform but derive very little utility from it, and platform changes that steadily raise user engagement before abruptly causing users to go “cold turkey” and quit. A key ingredient in our model is a formulation for how platforms determine what to show users: they optimize over a large set of potential content (the content manifold) parametrized by underlying features of the content. Whether improving engagement improves user welfare depends on the direction of movement in the content manifold: for certain directions of change, increasing engagement makes users less happy, while in other directions on the same manifold, increasing engagement makes users happier. We provide a characterization of the structure of content manifolds for which increasing engagement fails to increase user utility. By linking these effects to abstractions of platform design choices, our model thus creates a theoretical framework and vocabulary in which to explore interactions between design, behavioral science, and social media.

A full version of this paper can be found at https://arxiv.org/pdf/2202.11776.pdf.

CCS Concepts: • Applied computing → Economics; • Information systems → Content ranking.

Additional Key Words and Phrases: inconsistent preferences, engagement optimization, online platforms

ACM Reference Format:
Jon Kleinberg, Sendhil Mullainathan, and Manish Raghavan. 2022. The Challenge of Understanding What Users Want: Inconsistent Preferences and Engagement Optimization. In Proceedings of the 23rd ACM Conference on Economics and Computation (EC ’22), July 11–15, 2022, Boulder, CO, USA. ACM, New York, NY, USA, 1 page. https://doi.org/10.1145/3490486.3538365