Predicting Election Outcomes from Internet Behavior

Dino P. Christenson

Predicting election outcomes is of considerable interest to candidates, political scientists, and the public at large. We propose the use of Web browsing history as a new indicator of candidate preference among the electorate, one that has potential to overcome a number of the drawbacks of election polls. However, there are a number of challenges that must be overcome to effectively use Web browsing for assessing candidate preference—including the lack of suitable ground truth data and the heterogeneity of user populations in time and space. We address these challenges, and show that the resulting methods can shed considerable light on the dynamics of voters' candidate preferences in ways that are difficult to achieve using polls.

Contagion, Confounding, and Causality in Political Networks Research: Applications in the study of civil unrest

Bruce Desmarais

Many types of civil unrest, including protest, violent conflict, and rebellion have been found to be subject to both inter- and intra-state contagion. These spillover effects are conventionally tested through the application of parametric structural models that are estimated using observational data. Drawing on research in methods for network analysis, we note important challenges in conducting causal inference on contagion effects in observational data. We review a recently-developed nonparametric test, the ``split-halves test'', that is robust to confounding, and apply the test to replication data from several recent studies in which researchers tested for contagion in civil unrest. We find that about half the time findings in the published literature fail to replicate with the split-halves test. Across ten total replications, we do not see strong patterns in terms of which results do and do not replicate. We do, however, find evidence for general contagion in six of the replications, indicating that contagion is a prevalent phenomenon in civil unrest. As such, we recommend that researchers (1) use the split-halves test as a general-purpose robustness check for parametric models of contagion in the study of civil unrest, and (2) consider modeling contagion in research on civil unrest.

Using Facial Recognition to Document Gender Bias in Congresswomen's Cable News Appearances

Bryce Dietrich

Although congresswomen are increasingly afforded the opportunity to appear on cable news broadcasts, it is unclear whether these appearances are of equal worth. Using a custom facial recognition algorithm, we determine both the quantity and quality of Congresswomen's appearances on cable news broadcasts. Ultimately, we find that congresswomen tend to appear as part of a panel, whereas congressmen are more likely to appear by themselves. We show these panel appearances not only change the way women as a group are discussed, but

women who view these panels are more likely to question the ability of the congresswoman to handle the issue that is being discussed. These findings underline how facial recognition could be used to substantially increase our understanding of gender dynamics on cable news.

The Statistical Physics of Ranking

Gourab Ghoshal

The world is addicted to ranking: everything, from the reputation of scientists, journals, and universities to purchasing decisions is driven by measured or perceived differences between them. Here, we analyze empirical data capturing real time ranking in a number of systems, helping to identify the universal characteristics of ranking dynamics. We develop a continuum theory that not only predicts the stability of the ranking process, but shows that a noise-induced phase transition is at the heart of the observed differences in ranking regimes. The key parameters of the continuum theory can be explicitly measured from data, allowing us to predict and experimentally document the existence of three phases that govern ranking stability.

Fairness Within and Without Algorithmic Systems: What makes algorithms fair?

Jon Herington

Computer scientists have made great strides in characterizing different measures of algorithmic fairness, and showing that certain measures of fairness cannot be jointly satisfied. In this presentation, I argue that the common measures of algorithmic bias rely on idealizations that do not hold under background injustice – and hence satisfying these measures of fairness will reliably generate substantively unfair outcomes. I begin by introducing the ways in which classification algorithms are constructed, and a machinery for identifying the sources of bias. In Section II, I introduce three different ways of measuring bias discussed in the computer science literature - independence, error inequality and counterfactual fairness – and the normative motivation for each of these measures. In Section III, I identify the idealizations these measures make about the underlying causal structure of the contexts in which they are deployed. I show various ways each idealization can fail to hold in our current historical moment, and the consequences of satisfying measures in the context of that failure. I ultimately conclude that the search for “measures” of algorithmic bias that are divorced from the context in which those algorithms are deployed is mistaken.

How science is (mis)communicated in online media

Agnes Horvat

Most academics are promoting their work online. At the same time, the public, journalists, and interested governments increasingly turn to online platforms for scientific information. It thus becomes ever more critical that we better understand how science is disseminated in online news, social media, blogs and knowledge repositories. My talk will summarize our work about

(1) how subsequently retracted articles receive outsized attention online, (2) how scientific publications spread on various types of online platforms, losing essential information, and (3) how gender impacts the coverage of scholarship. Our findings highlight detrimental heterogeneities in online science sharing. They inform efforts to curb the online spread of science-related misinformation and close gaps in scholars' visibility.