

Population Wide Attitude Diffusion in Community Structured Graphs Extended Abstract

Kiran Lakkaraju & Ann Speed

Sandia National Labs
Albuquerque, NM

Attitudes are “general and relatively enduring evaluative responses to objects” where objects can be “a person, a group, an issue or a concept” (Visser and Clark 2003, Page 1). Attitudes are shown to have an impact on, and can sometimes predict, the behaviors of individuals (e.g., voting behavior (Krosnick 1988), and consumer purchases (Jones and Fazio 2008; Fazio and Olson 2003)). In addition, attitudes can change based on the influence of others (Visser and Clark 2003).

Understanding population wide attitude change is an important step to understanding the behavior of societies. For instance, consider the change in attitudes towards global warming and the environment that has resulted in a significant change in public policy and national priorities (Change 2009).

We are interested in understanding the following four aspects of population wide attitude change:

- Attitude strength is *continuous* – individuals can vary from strongly negative, to strongly positive attitudes.
- Attitudes are *non-progressive* – individuals can have a positive attitude, then a negative attitude, then a positive attitude again.
- Attitudes are *linked* – different attitudes influence each other – i.e., if you believe in environmentalism it is also likely you believe in recycling.
- Individuals have a level of *cognitive effort* – there is some level of effort that individuals will exert in changing their attitudes.
- Community structured social networks – oftentimes social networks contain communities; strongly connected subgraphs that are only weakly connected to the rest of the graph.

In this talk, we will look population wide attitude change as a function of community structure and cognitive effort. We will first describe a model of attitude and attitude change based on *Parallel Constraint Satisfaction* that captures bidirectional reasoning and the drive for consistency (Lakkaraju and Speed 2010; Kunda and Thagard 1996). Using this model we will study population wide attitude change in the context of *Coupled Random Networks* (Girvan and Newman

2002). We will identify how varying parameters such as cognitive effort and the interconnectedness of communities can effect the convergence of the population on a single attitude.

Acknowledgements

Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energys national Nuclear Security Administration under contract DE-AC04-94AL85000.

References

- Change, Y. P. O. C. 2009. Climate change in the american mind: Americans’ climate change beliefs, attitudes, policy preferences, and actions. Technical report, George Mason University.
- Fazio, R. H., and Olson, M. A. 2003. Attitudes: Foundations, functions, and consequences. In Hogg, M. A., and Cooper, J., eds., *The Sage Handbook of Social Psychology*. Sage.
- Girvan, M., and Newman, M. E. J. 2002. Community structure in social and biological networks. *Proceedings of the National Academy of Sciences of the United States of America* 99:7821–7826.
- Jones, C. R. M., and Fazio, R. H. 2008. Associative strength and consumer choice behavior. In Haugtvedt, C. P.; Herr, P. M.; and Kardes, F. R., eds., *Handbook of Consumer Psychology*. Psychology Press. 437–459.
- Krosnick, J. A. 1988. The role of attitude importance in social evaluation: A study of policy preferences, presidential candidate evaluation, and voting behavior. *Journal of Personality and Social Psychology* 55(2):196–210.
- Kunda, Z., and Thagard, P. 1996. Forming impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review* 103(2):284–308.
- Lakkaraju, K., and Speed, A. 2010. A cognitive-consistency based model of population wide attitude change. In *Proceedings of the 2010 AAAI Fall Symposium on Complex Adaptive Systems*.
- Visser, P. S., and Clark, L. M. 2003. Attitudes. In Kuper, A., and Kuper, J., eds., *Social Science Encyclopedia*. Routledge.