

Visualising the evolution of inter-group prejudice

Contributors: Roger M Whitaker, Liam D Turner, Gualtiero Colombo, Rhodri Morris (Cardiff University, UK). David Rand (Yale University, USA).

Scope: Current understanding of human behaviour and prejudice highlights the role of categorisation through stereotyping. In this demonstration we show a computer simulation that shows the evolution of prejudice between groups under a range of conditions focusing on parameters such as the extent of mixing and learning. This research supports task 4.1 in project 4.

Description: Inter-group prejudice leaves individuals susceptible to erroneous influences and over-generalisation. Despite progress on understanding aspects related to mitigation, prejudice through stereotyping and categorisation is a persistent issue, from sexism, ageism and sexuality that can lead to ethnic, racial and religious intergroup conflicts. Coalition forces may face this context in many scenarios. In this demonstration we present a computer simulation of an agent based model developed by the contributors for the evolution of prejudice between groups under different environmental conditions.

The model is governed by two fundamental parameters: the extent to which individuals interact within their in-group, and the extent to which group members learn behaviour from their in-group, as opposed to being influenced by a wider population. These parameters have remarkable influence over the evolution of prejudice. The demonstration gives insight into how they affect intergroup attitude, based on a number of case studies. The model is potentially useful in considering the effects of policy and interventions concerning group interactions and their impact.

A computer simulation will present a description of the model and its application under a diverse and significant range of these parameters

governing the mixing of interactions and learning applied to a population of a hundred individuals forming a number of groups, each with a different 'level of prejudice'. Through a pair of, possibly parallel, computer animations we will describe the foundations of the evolutionary model and visualize the impact that different settings have on the evolution of the prejudice in the population.

The latter and most important part of the demonstration, will present the results of the computer simulation when the evolutionary model is run with a specific setting of the environmental variables. In particular the animated simulation will show how groups with different 'level of prejudice' can form and evolve under different rates of inter- group mixing for both interactions and learning. This will provide a visual representation of what are the configurations and the prejudice levels that present characteristics of evolutionary stability under different combinations of the two main parameters.

The demonstration will be displayed in two parts across two screens, and represents an extension of the work presented at the 2017 Applied Human Factors and Ergonomics Conference, Los Angeles.

Acknowledgement

This research was sponsored by the U.S. Army Research Laboratory and the U.K. Ministry of Defence under Agreement Number W911NF-16-3-0001. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressed or implied, of the U.S. Army Research Laboratory, the U.S. Government, the U.K. Ministry of Defence or the U.K. Government. The U.S. and U.K. Governments are authorized to reproduce and distribute reprints for Government purposes notwithstanding any copyright notation hereon.