Towards a Framework for Computational Persuasion

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Introduction

Persuasion is an activity that involves one party trying to induce another party to believe something or to do something. It is an important and multifaceted human facility. Obviously, sales and marketing is heavily dependent on persuasion. But many other activities involve persuasion such as a doctor persuading a patient to drink less alcohol, a road safety expert persuading drivers to not text while driving, or an online safety expert persuading users of social media sites to not reveal too much personal information online.

The aim of persuasion is for the persuader to change the mind of the persuader. Some kinds of interaction surrounding persuasion include: Persuader collecting information, preferences, etc from the persuadee; Persuader providing information, offers, etc to the persuadee; Persuader winning favour (e.g. by flattering the persuadee, by making small talk, by being humorous, etc); But arguments (and counterarguments) are the essential structures for presenting the claims (and counter claims) in persuasion. An argument-centric focus on persuasion leads to a number of aspects that can be important in bringing about successful persuasion such as the rationality of the argumentation, appropriateness of the persuader, the appropriateness of the language used in the arguments, the psychological strategies used by the persuader, and the personality of the persuadee.

As computing becomes involved in every sphere of life, so too is persuasion a target for applying computer-based solutions. An automated persuasion system (APS) is a system that can engage in a dialogue with a user (the persuadee) in order to persuade the persuadee to do (or not do) some action or to believe (or not believe) something. To do this, an APS aims to use convincing arguments in order to persuade the persuadee. The dialogue may involve moves including queries, claims, and importantly, arguments and counterarguments, that are presented according to some protocol. The dialogue may be asymmetric since the kinds of moves that the APS can present may be different to the moves that the persuadee may make. For instance, the persuadee might be restricted to only making arguments by selecting them from a menu (in order to obviate the need for natural language processing of arguments being entered). In the extreme, it may be that only the APS can make moves. Whether an argument is convincing depends on the context, and on the characteristics of the persuadee. An APS maintains a model of the persuadee to predict what arguments and counterarguments the persuadee knows about and/or believes, and this can be harnessed by the strategy of the APS in order to choose good moves to make in the dialogue.

Computational persuasion is the study of formal models of dialogues involving arguments and counterarguments, of user models, and strategies, for APSs. As such, computational persuasion builds on developments in computational models of argument including abstract argumentation, structured argumentation, dialogical argumentation, and argument dynamics.

A promising application area for computational persuasion is in behaviour change. Within healthcare organizations, government agencies, and non-governmental agencies, there is much interest in changing behaviour of particular groups of people away from actions that are harmful to themselves and/or to others around them. Through further development of computational persuasion, it will be possible to prototype APSs for specific behaviour change situations and evaluate the efficacy of them with participants. In a new project[1], we are developing a framework for computational persuasion with applications in behaviour change for healthcare issues.

See (Hunter 2016) for more details on the nature of computational persuasion, and how it can build on computational models of argument, for applications in behaviour change, and see (Hunter 2015) for some preliminary results on a simple APS.

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References

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Hunter, A. 2016. Computational persuasion with applications in behaviour change. In *Computational Models of Argument (COMMA'16)*. (in press).

[1] See www.computationalpersuasion.com for more details.