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Abstract. Information has been an essential element in the development of collaborative and cooperative models, from decision making to the attainment of varying goals, people are adept at making judgment on the trustworthiness of information, based on knowledge and understanding of a normative model of information. Contemporary narrative especially in high-impact contexts like politics, health, business, government and technology, is eroding trust in information, its source, its value and the ability to objectively determine the trustworthiness of a piece of information, a situation made more complex by social networks, social media have made the spread of information easier and faster irrespective of their trustworthiness, hence the need for judgment on the trustworthiness of a piece of information based on social cognitive construct, a trust model for information.

Keywords: Computational trust · Information trustworthiness · Decision support · Trust properties · Information value

1 Introduction

Various information behavior models, suggest a normative model of information as true, complete, valid, can be relied on as being correct and from a trusted source [1]; census data from statistics Canada can be regarded as valid and from a trusted source which can be reliably used for planning purposes, and as an economic tool, such data should carry more trusted weight than information sourced from a third party sources or social media platforms. Other normative information behavior prescribes trusted information as timely in the sense that it should be from a precise time period [1, 2], for example when analyzing census data for planning and developmental purposes it is paramount to look at current or the most recent figures. Information is of no value or worth the investment of time and money, especially in making business decisions if it is not relevant, does not have the right amount of details, cannot be easily stored in a way that it can be accessed effortlessly, or easily understood by the end user [1, 2, 4]. Other factors that add value and trustworthiness to information include but not limited to its accuracy, consistency, and completeness. Despite the best effort of information scientist on the nature of information, and work on information literacy behavior misinformation and disinformation still permeates social networks [1, 4], social media platforms like twitter and Facebook has helped in the spread of inaccurate information, a culture emboldened by need to share information even when the validity of the information

cannot be vouched for or when the person sharing such information does not believe it but regardless still goes ahead to share because it serves a narrative, a means to manipulate rather than to inform, as a source of social influence [3], as demonstrated by the recent political and business climate in the west that have added relatively new lexicons like fake news and alternate facts.

The consequences of deceptive and misleading information can be far-reaching for governments, citizens, business institutions, data professionals, and designers, it can create an atmosphere of mistrust, distrust, confusion, panic, and it can influence decisions and damage reputations. Information agents, brokers may find it difficult to use information, or seek alternate and less reliable sources of information because of the air of uncertainty, hence the need for an information model based on computational trust [5, 7], a paradigm drawn from a social, cultural, historical and psychological context and much more aspects of relationships [6], trying to model the best in these related milieus computationally.

Trust as a computational concept is important in understanding the thought process with regard to choice, options and decision-making process in human and computer interactions, especially in situations where there is a measure of risk [7, 8]. The goal is to formulate a theoretical framework; a socio-cognitive construct for the trustworthiness of information based on cues of credibility and deception, a model to assist judgment calls and an expectation of when, trust and its fulfillment can be expected.

Information does not exist in a vacuum, how it is perceived and used is influenced by a number of social, cultural, and historical factors, hence the need for an inclusive and context-aware information literacy behavior [1], our goal is to incorporate the characteristics of information; reliability, validity, and importance into a trust model, depending on the context, the model will also factor in the reputation of a source, the value of the information and cues to credibility and deception, with the aim of enabling agents to make judgments and situational decisions about the trustworthiness of information.

References

1. Karlova, N.A., Fisher, K.E.: A social diffusion model of misinformation and disinformation for understanding human information behavior. Inf. Res. **18**(1), 1–17 (2013)
2. Craig, S.: Lies, damn lies, and viral content. How news websites spread (and debunk) online rumors, unverified claims, and misinformation. Tow Center for Digital Journalism (2015)
3. Barber, K.S., Kim, J.: Belief revision process based on trust: agents evaluating reputation of information sources. In: Falcone, R., Singh, M., Tan, Y.H. (eds.) Trust in Cyber-Societies. LNCS, vol. 2246, pp. 73–82. Springer, Heidelberg (2001)
4. Marsh, S.: infoDNA (Version 2) Agent Enhanced Trustworthy Distributed Information. PST (2004)
5. Witkowski, M., Artikis, A., Pitt, J.: Experiments in building experiential trust in a society of objective-trust based agents. In: Falcone, R., Singh, M., Tan, Y.H. (eds.) Trust in Cyber-Societies. LNCS. vol, 2246, pp. 111–132. Springer, Heidelberg (2001)
6. Piotr, S.: Trust: A Sociological Theory. Cambridge University Press (1999)
7. Marsh, S., Briggs, P.: Examining trust, forgiveness and regret as computational concepts. Computing with Social Trust, pp. 9–43. Springer London (2009)
8. Golbeck, J. (ed.): Computing with Social Trust. Springer Science Business Media (2008)