Towards a Sociological Conception of Artificial Intelligence

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AGI-18: The 11th Conference on Artificial General Intelligence
Prague, Czech Republic – August 24, 2018

What am I presenting?

A research project/idea that intends to provide a sociological conception of AI, i.e. understanding AI as a **social phenomenon** and a **non-human social actor**.

In the recent **public and political discourses**, the role of AI has been already the subject of challenging debates.

We argue that sociology (and other social sciences) need to acquire an **adequate understanding of AI** as a social actor, reflecting its relevance and consequentiality in different layers of social organization and social reality.

Our approach

At the most fundamental level, we aim to conceptualize AI sociologically, providing basis for answering questions such as:

What is AI as a social phenomenon, which may "act on its own", and even be "blamed responsible" for controversial behavior?

Are there inherent differences between human and non-human (AI) social actors?

Should we revisit and reconsider our presumptions of human uniqueness?

Can we truly speak about anything like "AI in general", or do we rather encounter loosely related instances of phenomena?

AI and non-human actors in sociology

One of the tacit presumptions of sociology has been the disregard for non-human actors and material components of the social world (non-human and extra-human as "environment")

Since the late 1970s, this neglect was explicitly formulated and criticised in sociological orientation to subjects such as nature [1], animals [2], or technology [3]

Some sociologists have started writing on the subject in the 1980s and 1990s, however, AI has been almost exclusively conceived only as a methodological tool in statistical or textual analysis [4], and development of sociological theories [5]

AI and non-human actors in sociology

Woolgar [6] proposed a "sociology of machines", arguing that we should see the "AI phenomenon as an occasion for reassessing the central axiom of sociology that there is something distinctively 'social' about human behaviour" (p. 557)

Schwartz [7] suggested that AI has to be studied with regard to the social context (setting) in which it is "implemented", and characterized AI systems as "social actors playing social roles" (p. 199)

Empirical studies exist (e.g., [8]), but they rather focus on the "human side" of the interaction, and without the intention of providing a sociological framework/conception of AI

Human-AI interaction in computer science

The role of AI in our socio-cultural aspects has become increasingly pervasive: from domain experts (e.g. medical experts [9]) to children (learning experience [10]) to building and urban dwellers (home automation [11], and autonomous cars [12]) to disabled users (blind persons in cities [13, 14]).

However, the conception, design, and study of Human-AI Interaction is predominantly focused on *ad hoc* instances (such as robots, driverless cars, chatbots, etc.) with little or no overlap between instances of different kinds.

This lack of generalizability in the study of Human-AI Interaction can be attributed to the HCI's emphasis on design instances and a disconnect between these instances and theoretical frameworks.

What could be done?

There is a **research gap** in contemporary sociology as well as computer science which relates to

(1) the conceptual understanding of AI as a specific and distinct social (non-human) actor; both theoretically and empirically

(2) the role sociology could play not only in interpreting but also in contributing to the future technological development of AI-based tools, systems and devices, considering the societal impacts

What could be done?

A plan of research:

(1) **literature/discourse analysis** – to identify aspects that are relevant for a specifically sociological formulation of empirically investigatable research questions related to AI: its societal roles, functions, and imaginaries
(2) **(on-line) survey** – to collect the widespread common-sense conceptions and imaginaries of AI
(3) **observational studies** – to describe situated common-sense conceptions of AI
(4) **interviews with experts** – to compare the common-sense conceptions/imaginaries of AI with the expert perspectives

Conclusion

Presently, AI is being applied in a large number of fields, such as games, households, education, transportation, logistics, industrial production, marketing and sales, communication, scientific research, data analysis, and many others.

Each of these fields **requires sociological knowledge in order to understand AI application**, its impact on "users", "customers", "clients", and their possible concerns regarding interaction with AI.

Conclusion

Sociology and the social sciences, equipped with an adequate conception of AI, could **contribute to steer the development of AI-based technologies**.

This is important especially since the current development of AI is predominantly grounded in the field of technological possibilities (such as machine learning methods, neural network models), rather than preliminary consideration of societal effects of the proliferation and expansion of AI.

References

1. Dunlap, R.E., Catton, Jr., W.R.: Environmental Sociology. Annu. Rev. Sociol. 5 , 243–273 (1979).

2. Bryant, C.: The Zoological Connection: Animal Related Human Behavior. Soc. Forces 58 , 399–421 (1979).

3. MacKenzie, D., Wajcman, J. (eds.): The Social Shaping of Technology. Open University Press, Milton Keynes / Philadelphia (1985)

4. Carley, K.M.: Artificial Intelligence within Sociology. Sociol. Method. Res. 25 , 3–30 (1996).

5. Brent, E.E.: Is there a role for Artificial Intelligence in sociological theorizing? Am. Sociol. 19 , 158–166 (1988).

6. Woolgar, S.: Why not a sociology of machines? The case of sociology and artificial intelligence. Sociology 19, 557–572 (1985).

7. Schwartz, R.D.: Artificial Intelligence as a Sociological Phenomenon. Can. J. Sociol. 14, 179–202 (1989).

8. Muhle, F.: Embodied Conversational Agents as Social Actors? Sociological Considerations on the Change of Human-Machine Relations in Online Environments. In: Gehl, R.W., Bakardjieva, M. (eds.), Socialbots and their Friends: Digital Media and the Automation of Society, pp. 86–109. Routledge, New York / London (2017)

9. Esteva, A., Kuprel, B., Novoa, R.A., Ko, J., Swetter, S.M., Blau, H.M., Thrun, S.: Dermatologist-level classification of skin cancer with deep neural networks. Nature 542, 115 (2017).

10. Siemens, G., Long, P.: Penetrating the fog: Analytics in learning and education. EDUCAUSE Rev. 46 , 30 (2011).

11. Brambilla, A., Alavi, H., Verma, H., Lalanne, D., Jusselme, T., Andersen, M.: "Our inherent desire for control": A case study of automation's impact on the perception of comfort. Enrgy Proced. 122 , 925–930 (2017).

12. Alavi, H.S., Verma, H., Bahrami, F., Lalanne, D.: Is Driverless Car Another Weiserian Mistake? In: Proceedings of the 2016 ACM Conference Companion Publication on Designing Interactive Systems, pp. 249–253. ACM, New York (2017).

13. Ross, D.A., Blasch, B.B.: Wearable interfaces for orientation and wayfinding. In: Proceedings of the fourth international ACM conference on Assistive technologies, pp. 193–200. ACM, New York (2000).

14. Shen, H., Chan, K.Y., Coughlan, J., Brabyn, J.: A mobile phone system to find crosswalks for visually impaired pedestrians. Technol. Disabil. 20 , 217–224 (2008)

Thank you for your attention!

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