Digital Humanism and Norms in Recommender Systems

Erich Prem[1], Julia Neidhardt[2], Peter Knees[3], Stefan Woltran[3] and Hannes Werthner[3]

[1]*University of Vienna, Vienna, Austria*

[2]*CD Lab for Recommender Systems, TU Wien, Vienna, Austria*

[3]*TU Wien, Faculty of Informatics, Vienna, Austria*

Abstract

Recommender systems can have a substantial impact on individual choices and on society as a whole. However, there is no clear set of norms for the design and use of recommender systems. This paper argues that Digital Humanism can provide a framework to foster more ethical and value-driven technology design. It emphasizes values such as human rights, democracy, and inclusion, and offers a critical perspective on implicit norms that typically guide system design. From this perspective, norms for recommender systems should strive to counteract information and power asymmetries, strengthen democratic societies, and protect users' dignity, freedom, and self-determination. Users should be given more control over their data and over the recommendations that they receive. Future research directions are outlined, encompassing transparent optimization objectives, user empowerment in modeling, democratic control mechanisms, and strategies for ethical personalization.

Keywords

Digital Humanism, Norms in recommender systems, Power relations, User empowerment

1. Motivation

This paper approaches the question of norms in recommender systems from the perspective of Digital Humanism. The potential impact of recommender systems on individual choice and on society is now well understood, cf. [1] for a systematic overview. Such analyses have often resulted in normative considerations taking the form of utilitarian or consequentialist considerations that focus on the (foreseen) utility of a recommendation for a user. A second line of thinking - often related to utilitarian considerations - focuses on sets of principles that should be considered in the design of recommendation systems, e.g. privacy, fairness, autonomy. However, such principles usually provide little guidance regarding how to precisely implement them nor is there a straightforward interpretation regarding what they actually mean.

This problem is exacerbated given that various fields of applications of recommender systems may call for different norms. For example, although fairness may be an uncontested principle,

it has various interpretations and may need to be interpreted very differently in a product recommendation case from a news or music recommendation. This follows already from the fact that recommendations in these different situations affect different stakeholders, e.g. users, producers, musicians, media organisations etc. Furthermore, the meaning or connotations of proposed items can vary depending on the context in which they are used. For example, music can be entertainment, but it can also be a political statement. Note that the impact on individuals and on society asks for different levels at which norms are to be discussed. Individual aspects are mostly discussed within the field of ethics which concerns moral norms while societal aspects include questions of politics and, hence, public regulation.

Any consideration of norms requires a clarification of the underlying values and beliefs against which to measure the corresponding norms. This is important because recommender system design often follows implicit norms arising from the purpose for which they are built. For example, many business-driven recommender systems are designed for profit maximisation and not just for optimising consumer benefits. Technology is never neutral [2], but as owners and developers of recommender systems drive their designs, such implicit norms were often taken for granted in the past, but will increasingly face scrutiny in the future.

2. Digital Humanism as a Value System for Recommendations

A candidate system of critical analysis of current practices and values for improving them is the Digital Humanism movement; an initiative that has been receiving increasing interest since it was conceived in 2019. Digital Humanism addresses the design of digital technology and digital policies emphasising their role for human rights, democracy, inclusion, and diversity [3]. It is critical of many current design choices in the design of IT systems from the perspective of the individual user and from societal implications. Although proponents of Digital Humanism debate many issues around ethics, questions of power are equally important.

2.1. Normative Principles of Digital Humanism

Digital Humanism roots in an acknowledgment of the benefits of digital technologies. As such it supports a constructive perspective with the aim to improve current digital technology. Although there is significant variation within the community, there is also broad agreement regarding its principles [4].

From the perspective of Digital Humanism, the main disadvantages of digital technologies today include privacy intrusions, unwanted power shifts, private and government surveillance and threatening fundamental rights. Digital Humanism argues that humans, their dignity, freedom, and self-determination should be the measure of the development and use of digital technologies. It claims that digital technologies should promote human autonomy and empower people to make their own decisions and recognize and promote people in their differences, no matter where and how they live.

A further central claim of Digital Humanism is that digital technology should strengthen democracy and society. It should be put at the service of democracy and help promote justice and freedom and meet the needs of the weaker in society. It should also contribute to social solidarity, e.g. preserve and expand social and cultural achievements. Contrary to claims often

associated as the silicon valley narrative [5], proponents of Digital Humanism emphasize that technology is not a destiny. Its developed can be shaped and must comply with the rules of democratic societies that they can determine. Where applications of digital technologies have a significant impact on people's lives, we must lead a democratic discourse that results in rules and limits for this technology. Neither companies nor the market nor technologies make the law, but rather the state and society.

At its core, Digital Humanism claims that digital technology should be beneficial for people, not the other way around. Digital technology should not blur the differences between human and machine. Experts in the field, especially engineers involved in development, should help promote desirable effects of digital technologies. A dialogue between technical sciences and other disciplines should support social progress through digital innovation.

2.2. Power Relations

Recommender systems can be powerful shapers of discourse [6, 7] and of economic activity [8]. Power relations in recommender systems emerge from knowledge about the user. Following [9], knowledge not only empowers recommendations, but recommendation power also produces knowledge for the recommender and is based on intentions that often remain opaque to the user. This leads to strong asymmetries in information, e.g. regarding products or news items and can further tilt the power relation in favour of the recommender.

Digital Humanism norms for recommender systems should strive to counteract such information and power asymmetries in principle. Rather than strengthening powerful gatekeepers of information, norms for recommender systems should empower consumers and – especially in multi-actor markets – suppliers. One way of achieving this is to put users in control of how they are modelled by a recommender system. This has been called for in Digital Humanism [10] and sees increasing research activities, for instance on the side of user choice over algorithms (e.g. [11]), control in interfaces (e.g. [12]) and changes in the recommender system architecture, e.g. by separating data and recommendation engine (e.g. [13]) as also advocated by Burke in the Digital Humanism Roadmap [10]. The latter is further motivated by privacy considerations, and the avoidance of concentrating data and sensitive information, cf. [14].

2.3. Strengthening Democracy, the Individual, and the Environment

Another fundamental consideration in Digital Humanism is how to use computing systems for strengthening democratic societies. This will be of particular relevance for news recommendations but includes various sorts of information and products and service recommendations. Issues of filter bubbles and political disinformation have been discussed in the field [15] as unwanted side-effects of recommendation practices. However, there has been little work to date on systematic techniques for furthering democracy through recommendation except for generally ensuring diversity [16]. Furthermore, while the issue of bias in data is widely discussed, there is still no clear ideas about its long-term implications for these systems [17].

Also, there has been massive criticism of abusive practices of optimising recommendations towards addictive social media usage and its undesirable impacts on both the individual and society, cf. [18]. Digital Humanism has often emphasised the role that technology should play

in better protecting users, their dignity, freedom, and self-determination. Recommendation runs an in-principle risk of limiting users' freedom through reducing choice – either in principle or in practice. Recommender systems designers should take precautions so that users are, again, empowered to make better decisions based on improved not on impoverished information.

Increasingly, recommenders may also need to consider environmental and sustainability impacts. Take the cases of navigation or flight recommendations systems. It is well conceivable for such systems to consider environmental impacts. It would then only be natural that such systems morph into mobility recommenders – or even communication recommenders that include virtual participation options for a conference, for example. This is clearly beyond the current state of the technology and the current markets for recommender technology.

Finally, Digital Humanism also discusses limits that a society may choose to set for digital technology. For example, it is both possible and perhaps likely that societies choose not to allow certain types of recommender systems, including ones that may suggest discontinuing care to caregivers based on predictions regarding life expectancy of elderly persons. Such systems are feasible and have been discussed. Similar decisions may already be taken in practice by caregivers. However, proponents of Digital Humanism have suggested that such recommendations are in principle not for algorithms to make [19]. In general, recommendations affecting other people's livelihood are incompatible with the concept of human dignity.

3. Research Directions

Although the normative principles of Digital Humanism are not in principle difficult to grasp, it will require in-depth considerations and significant effort to turn them into operational recommendations or directions for future research, cf. [10].

At the most general level, Digital Humanism can provide a framework for positioning recommender systems research within a broader societal context, e.g., by taking a post-userist perspective ([20], cf. [21]). A clear agenda and goal setting shall also mitigate some of the conceptual challenges often faced in recommender systems research practices, cf. [22, 23].

Digital Humanism's focus on human empowerment suggests that personalization should be under the control of the user. Context-specific user preferences and values should ideally be managed and applied outside of the providing service. To achieve this, the unbundling of the interaction and personalization from system optimization/service provision, and management of content and data will be essential. This includes ways of reporting recommendation optimization objectives to users; empowering users to understand and change implicit preferences; user-driven modelling; user ownership and transferability (unbundling) of preference models.

The emphasis of Digital Humanism on furthering democracy and on societally beneficial digital approaches may require research into tools and norms for improved democratic control of recommendations. The European Commission has put in place specific rules in its Digital Service Act [24] for large and very large platforms that can be seen as first steps in this direction. Such platforms are required to provide an option in their recommender systems that is not based on user profiling, for example.

Given the enormous breadth and number of recommender systems, further research is required to systematically assess and control potential monopolistic behaviour in the field. A

possible direction are tools for the separation of personalization from service offerings, such as offering non-personalised versions of services and emphasising recommendation strategies not built upon sensitive information, such as curatorial information, recency, or popularity.

Acknowledgments

References

[1] S. Milano, M. Taddeo, L. Floridi, Recommender systems and their ethical challenges, Ai & Society 35 (2020) 957–967.

[2] S. Hare, Technology is not neutral: A short guide to technology ethics, London Publishing Partnership, 2022.

[3] H. Werthner, et al., Vienna Manifesto on Digital Humanism, , 2019.

[4] H. Werthner, E. Prem, E. A. Lee, C. Ghezzi (Eds.), Perspectives on Digital Humanism, Springer, 2022. doi:10.1007/978-3-030-86144-5.

[5] A. Daub, What tech calls thinking: An inquiry into the intellectual bedrock of Silicon Valley, FSG Originals, 2020.

[6] R. Gorwa, R. Binns, C. Katzenbach, Algorithmic content moderation: Technical and political challenges in the automation of platform governance, Big Data & Society 7 (2020) 2053951719897945.

[7] L. A. Møller, Recommended for you: how newspapers normalise algorithmic news recommendation to fit their gatekeeping role, Journalism Studies 23 (2022) 800–817.

[8] B. Pathak, R. Garfinkel, R. D. Gopal, R. Venkatesan, F. Yin, Empirical analysis of the impact of recommender systems on sales, Journal of Management Information Systems 27 (2010) 159–188.

[9] M. Foucault, The history of sexuality: An introduction, Vintage, 1990.

[10] E. Prem, L. Hardman, H. Werthner, P. Timmers, et al., Research, innovation, and education roadmap for digital humanism, Vienna, Austria: The Digital Humanism Initiative (2022).

[11] M. D. Ekstrand, D. Kluver, F. M. Harper, J. A. Konstan, Letting users choose recommender algorithms: An experimental study, in: Proceedings of the 9th ACM Conference on Recommender Systems, 2015, pp. 11–18.

[12] C. He, D. Parra, K. Verbert, Interactive recommender systems: A survey of the state of the art and future research challenges and opportunities, Expert Systems with Applications 56 (2016) 9–27.

[13] P. Knees, A proposal for a neutral music recommender system, in: Proceedings of the 1st Workshop on Designing Human-Centric Music Information Research Systems, 2019, pp. 4–7.

[14] A. Friedman, B. P. Knijnenburg, K. Vanhecke, L. Martens, S. Berkovsky, Privacy aspects of recommender systems, in: F. Ricci, L. Rokach, B. Shapira (Eds.), Recommender Systems

Handbook, Springer US, Boston, MA, 2015, pp. 649–688. URL: https://doi.org/10.1007/978-1-4899-7637-6_19. doi:10.1007/978-1-4899-7637-6_19.

[15] E. Bozdag, J. Van Den Hoven, Breaking the filter bubble: democracy and design, Ethics and information technology 17 (2015) 249–265.

[16] N. Helberger, K. Karppinen, L. D'acunto, Exposure diversity as a design principle for recommender systems, Information, Communication & Society 21 (2018) 191–207.

[17] J. Chen, H. Dong, X. Wang, F. Feng, M. Wang, X. He, Bias and debias in recommender system: A survey and future directions, ACM Transactions on Information Systems 41 (2023) 1–39.

[18] F. Haugen, Statement of Frances Haugen, United States Senate Committee on Commerce, Science and Transportation; Sub-Committee on Consumer Protection, Product Safety, and Data Security, 2021. URL: ttps://www.commerce.senate.gov/services/files/FC8A558E-824E-4914-BEDB-3A7B1190BD49.

[19] J. Nida-Rümelin, Philosophical foundations of digital humanism, in: C. Ghezzi, J. Kramer, J. Nida-Rümelin, B. Nuseibeh, E. Prem, A. Stanger, H. Werthner (Eds.), Introduction to Digital Humanism, Springer, 2024, to appear.

[20] E. P. Baumer, J. R. Brubaker, Post-userism, in: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 2017, pp. 6291–6303.

[21] R. Burke, Personalization, fairness, and post-userism, Perspectives on Digital Humanism (2022) 145.

[22] D. Jannach, G. Adomavicius, Recommendations with a purpose, in: Proceedings of the 10th ACM conference on recommender systems, 2016, pp. 7–10.

[23] D. Jannach, C. Bauer, Escaping the mcnamara fallacy: towards more impactful recommender systems research, Ai Magazine 41 (2020) 79–95.

[24] European Parliament and Council, Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act), Official Journal of the European Union, 2022. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022R2065, oJ L 363, 20.10.2022, p. 1–96.