Digital (In)Equality, Digital Inclusion, Digital Humanism

Summary of the Web Science Workshop DigDivDigHum-20

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ABSTRACT

From its inception, the World Wide Web has been intended to be a force for social good. But there are many barriers and obstacles, a situation commonly characterized as the Digital Divide. Several billion people especially in the Global South do not have access to Internet/Web for reasons of lacking (affordable) infrastructure, poverty, low literacy, lack of digital skills, language, etc., and are thus digitally excluded. Also in the Global North, despite being technologically "advanced", we see severe digital inequalities and power disparities, in part for the same reasons and in part due to the Web being exploited as a centralized surveillance and money-making machine, controlled by big parties such as states and big (tech) corporations, thus creating further inequalities and exclusion. This paper summarizes the main themes and insights from ongoing research presented and discussed at the WebSci'20 Workshop on Digital (In)Equality, Digital Inclusion, Digital Humanism.

CCS CONCEPTS

• **Information Systems**; • **World Wide Web**; • **Web Applications**; • **Social Networks**; • **Social and Professional Topics**; • **User Characteristics; Computing / Technology Policy**; • **Applied Computing**; • **Human-Centered Computing**;

KEYWORDS

Digital Divide, Digital inclusion on the Web, Overcoming barriers for the underprivileged, AI for sustainable development, Collaborative ICT4D technosocial innovation, Digital Humanism

1 THE WEB: TO SERVE HUMANITY

From its inception, the World Wide Web has been intended to be a force for social good, as an open and free space for all for information and knowledge sharing and for informed public democratic debate: see for example the ACM Turing Award lecture by Tim

Figure 1: The Turing Lecture by Tim Berners-Lee at Web-Sci'18, VU Amsterdam, 29 May 2018 [1]

Berners-Lee at WebSci'18 [1] (organized by the present authors, cf. Figure 1). In other words, the Web is "to serve humanity" [2, 3].

Nevertheless, there are many barriers and obstacles to this ideal [4], a situation commonly characterized as the Digital Divide. Several billion people especially in the Global South do not have access to Internet/Web for reasons of lacking (affordable) infrastructure, poverty, low literacy, lack of digital skills, language, etc., and are thus digitally excluded.

The "fringes of the Web" are not just a matter of the Global South. Also in the Global North, despite being technologically "advanced", we also see severe digital inequalities and power disparities, in part for the same reasons and in part due to the Web being exploited as a centralized surveillance and money-making machine, controlled by big parties such as states and big (tech) corporations, thus creating further inequalities [5–7]. For many underprivileged and disadvantaged communities, the digitalizing world exacerbates already existing social, economic or democratic-political inequities and exclusion mechanisms.

2 TACKLING THE "FRINGES OF THE WEB"

The WebSci'20 Workshop on Digital (In)Equality, Digital Inclusion, Digital Humanism aimed to bring together ongoing research on the Web and the Digital Divide from different perspectives. First, in line with the above, it seeks to be an encouraging place for work rooted in the Global South, as both topics of interest for and authors from the Global South are underrepresented in Web Science, but it also welcomes work addressing matters of the Digital Divide and underprivileged communities in the Global North.

Second, there is a research need, not just for scientific analytical work concerning problems and issues, but also for constructive

research regarding solution directions on *what to do about* the problems associated with the Digital Divide. Apart from empirically grounded (case) studies and theoretical analyses of mechanisms behind digital inequalities, the DigDivDigHum Workshop also is seeking, in view of recent initiatives such as DigitalHumanism [2] or Tim Berners-Lee's SOLID initiative (https://solid.mit.edu/), programmatic or solution design-oriented work from multiple disciplines, and concrete experiences on what scientists and professionals can *do* to help redress matters of digital inequality and exclusion.

3 INSIGHTS FROM RESEARCH ON DIGITAL DIVIDE AND DIGITAL HUMANISM

The DigDivDigHum-20 Workshop at WebSci'20 contained three keynotes and 10 peer-reviewed research paper presentations, all included in the present Proceedings.

Mirjam de Bruijn, professor of Anthropology and Contemporary History of Africa at Leiden University, discusses her extensive field research into the ways social media are intertwined with recent processes of radicalization in Sub-Saharan Africa, thereby nuancing and debunking widespread oversimplified clichés surrounding the notion of radicalization.

Leen Zevenbergen, social entrepreneur and impact investor (a.o. in AI, already in the 1980's) addresses the critical question how AI for social good and for Sustainable Development can be provided with a solid business case.

Richard Heeks, professor at the University of Manchester, present his views on the future of ICT for Development (ICT4D). His claim is that a paradigm shift regarding ICT4D is currently taking place that brings to the fore matters of social justice with renewed strength.

Munyaradzi Mawere and Gertjan van Stam (Greater Zimbabwe University), in *Data Sovereignty, a Perspective from Zimbabwe*, develop the concept of data sovereignty from a decolonial, African perspective, as a counterweight to current exploitative surveillance practices of data science and technology.

Francis Dittoh, Victor de Boer, Anna Bon, Wendelien Tuyp and André Baart (University for Development Studies UDS, Ghana & VU Amsterdam, Netherlands) in *Mr. Meteo: Providing Climate Information for the Unconnected*, shows how innovative technology (recently awarded an Internet Society prize) is needed and can be developed for data and knowledge sharing in rural areas of Africa where web access is absent and will continue to be so for the foreseeable future.

Amelia Morris, Lizzie Coles-Kemp and Will Jones (Royal Holloway University of London, UK) in *Digitalised Welfare: Systems For Both Seeing and Working With Mess,* discuss the effects and issues stemming from the digitalization of welfare systems. They do so for the United Kingdom, but it is interesting to compare that with other recent studies [6, 7], showing that the Digital Divide is also a significant problem in the West. The authors also clearly point out that taking appropriate responsibility by societies and states is an urgent matter, and how matters of human dignity are at stake.

Chu Hiang Goh and Narayanan Kulathuramaiyer (Universiti Sains Malaysia & Universiti Malaysia Sarawak) in *Developing an*

Indigenous Cultural Values Based Emoji Messaging System: A Socio-Technical Systems Innovation Approach, show how existing, considered "universal", standards for emoji systems are in fact culturally biased, and discuss ways how to redress this.

Mónica Eva Pini (Universidad Nacional de San Martín UNSAM, Argentina), in *Digital Inequality in Education in Argentina – How the Pandemic of 2020 Increased Existing Tensions*, reflects on very recent experiences regarding the COVID-19 pandemic, outlining how the digital divide is widened and how digital inequalities increase disproportionally for the poor.

Ms Shalini and Ankit Tewari (Ministry of Human Resource Development, India & Universitat Politecnica de Cataluña, Spain), in *Sustainable Education in India through Artificial Intelligence: Challenges and Opportunities*, argue that AI can fill existing gaps in the Indian educational system, in particular in the ongoing massification and needed scaling up of higher education in India.

Robert Bwana, André Baart, Victor de Boer, Francois Lenfant, Néne Morisho, Michelle Westermann-Behaylo and Marcel Worring (University of Amsterdam, NL & Pole Institute, DR Congo), in *Developing a Crowdsourcing Application for Responsible Production in Africa*, discuss ways, including forms of crowdsourcing, to make global supply and production chains more transparent, accountable and sustainable.

In *Power Inequities: Observations on the Development of Information and Communication Technologies, from an African Place*, Gertjan van Stam (Masvingo, Zimbabwe) analyses the (often non-direct [8, 9], symbolic) power mechanisms at play in ICT4D, criticizing the appropriateness of the still common idea (in the West, that is) that ICT4D is about bringing ICT to the underdeveloped world or similarly, that solving the Web digital divide is mainly an issue of providing (affordable) Internet access.

Ea Draffan, Chaohai Ding, Mike Wald and Russell Newman (University of Southampton, UK) discuss *Multilingual Symbolic Support for Low Levels of Literacy on the Web*, and propose that recent AI techniques can help improve readability of web content. It is interesting to note here that several papers in this workshop touch upon the importance of language and speech, in other words, multilinguality and multi-modality, as key issues in satisfactory Web access and resolving the digital divide.

Finally, Anna Bon, Jaap Gordijn and Cheah Wai Shiang (VU Amsterdam, Netherlands & Universiti Malaysia Sarawak UNIMAS) explain why *Digital Inclusion Requires a Business Model Too*, and do so on the basis of detailed business value network analyses of community service projects carried out in Sarawak, Malaysia.

4 INCREASING THE DIVERSITY, INCLUSIVITY AND EQUITY OF THE RESEARCH AGENDA

Taken together, the papers from this DigDivDigHum-20 workshop in Web Science bring up some important general points. Science and technology research, including academic and scholarly work, has a hang for addressing "advanced" issues. This bias leads to an underexposure and underrepresentation of issues, views and voices from the Global South and from underprivileged communities. In other words, this bias itself has an excluding effect. It also underlines

that the digital sciences of Internet and Web are not yet so truly global in outlook and agenda as their self-image purports to be.

The papers in this workshop however show that issues from the Global South and from the underprivileged side of the digital divide are no less "advanced", in that they are at least equally challenging and complex, not only in a societal but also scientific and technological sense. Thus, big strides are still to be made to make the science and technology research agenda better cater for increased diversity, inclusivity, and equity. We hope this workshop and its proceedings offer a small contribution to this.

ACKNOWLEDGMENTS

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