Big Data and discrimination: perils, promises and solutions. A systematic review

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4498981
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Year 2019
Title Big Data and discrimination: perils, promises and solutions. A systematic review
Journal Journal of Big Data
Volume 6
Number 1
Pages / Article-Number 1-27

Background Big Data analytics such as credit scoring and predictive analytics offer numerous opportunities but also raise considerable concerns, among which the most pressing is the risk of discrimination. Although this issue has been examined before, a comprehensive study on this topic is still lacking. This literature review aims to identify studies on Big Data in relation to discrimination in order to (1) understand the causes and consequences of discrimination in data mining, (2) identify barriers to fair data-mining and (3) explore potential solutions to this problem. Methods Six databases were systematically searched (between 2010 and 2017): PsychINDEX, SocIndex, PhilPapers, Cinhal, Pubmed and Web of Science. Results Most of the articles addressed the potential risk of discrimination of data mining technologies in numerous aspects of daily life (e.g. employment, marketing, credit scoring). The majority of the papers focused on instances of discrimination related to historically vulnerable categories, while others expressed the concern that scoring systems and predictive analytics might introduce new forms of discrimination in sectors like insurance and healthcare. Discriminatory consequences of data mining were mainly attributed to human bias and shortcomings of the law; therefore suggested solutions included comprehensive auditing strategies, implementation of data protection legislation and transparency enhancing strategies. Some publications also highlighted positive applications of Big Data technologies. Conclusion This systematic review primarily highlights the need for additional empirical research to assess how discriminatory practices are both voluntarily and accidentally emerging from the increasing use of data analytics in our daily life. Moreover, since the majority of papers focused on the negative discriminative consequences of Big Data, more research is needed on the potential positive uses of Big Data with regards to social disparity.

Publisher Springer
ISSN/ISBN 2196-1115
edoc-URL https://edoc.unibas.ch/69462/
Full Text on edoc No;
Digital Object Identifier DOI 10.1186/s40537-019-0177-4
ISI-Number WOS:000599129000001
Document type (ISI) Review