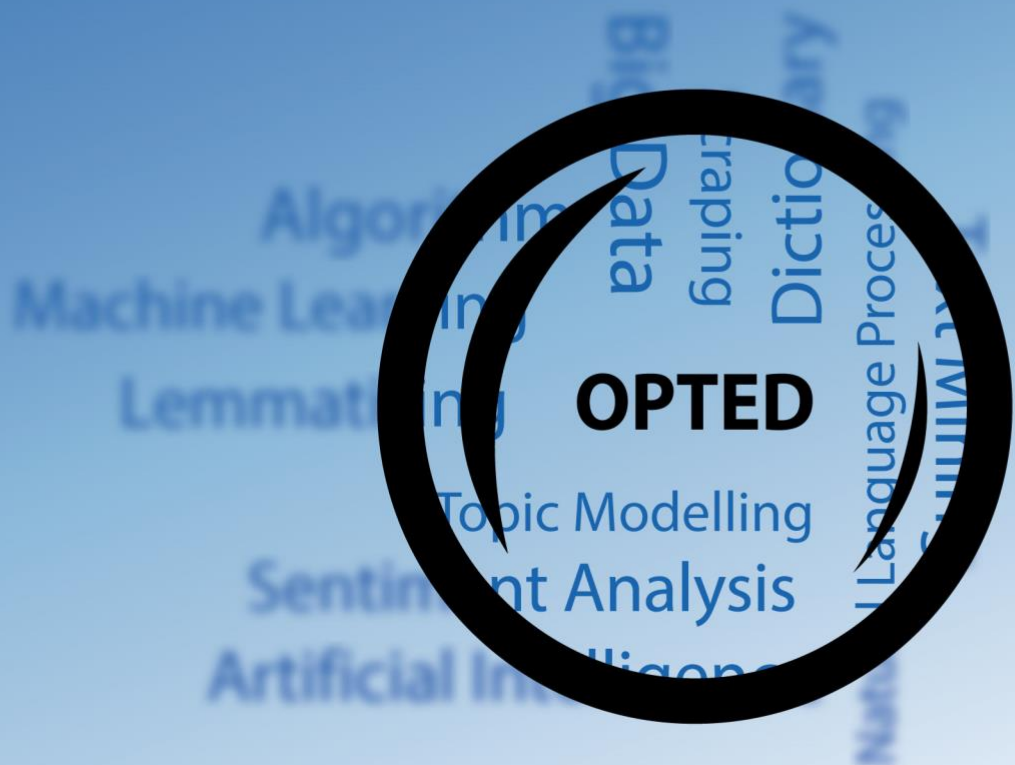


OPTED

Summary Report

Big Data Processing for Political Text Analysis: Ethical, Social and Legal Challenges

Hripsime Asatryan, Bianca Ioana Marcu, Ana Fernández Inguanzo, Rosamunde Elise Van Brakel, & Paul De Hert



Disclaimer

This project has received funding from the European Union's Horizon 2020 research & innovation programme under grant agreement No 951832. The document reflects only the authors' views. The European Union is not liable for any use that may be made of the information contained herein.

Dissemination level

Public

Type

Report



OPTED

Observatory for Political Texts in European Democracies:
A European research infrastructure

Summary Report

Big Data Processing for Political Text Analysis: Ethical, Social and Legal Challenges

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Date: October 2021



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Big Data Processing for Political Text Analysis: Ethical, Social and Legal Challenges

Hripsime Asatryan, Bianca-Ioana Marcu, Ana Fernández Inguanzo, Rosamunde Van Brakel

“...will data analytics help us understand online communities and political movements?
Or will it be used to track protesters and suppress speech?”
(Boyd & Crawford 2012)

Big Data Analytics is being used in numerous aspects of our lives, and specially in science, it can help to achieve an objective approach and it offers many benefits, such as to study climate change, or in medical studies to fight illnesses. However, we should also adopt a critical approach towards Big Data Analytics, as we argue in this document, where the technologies involved (algorithms, machine learning, AI...) can also have a negative impact in society. There are novel projects that are trying to analyse political texts, not only academic, but also through social networks or blogs, to understand people’s needs and concerns, and these analysis influence regulations and actions for future political agendas that will, in its extent, affect communities. We focus on political texts analysis and social justice and explore the possibilities Big Data Analytics has for tracking and suppressing actors. There is an important concern at stake:

Can Big Data collection in the political field will help us to empirically observe the political processes and solve the issues raised around political movements and social justice? Or is Big Data going to serve as a tool for tracking and suppressing actors, and will contain biases that affect negatively to the communities?

This study provides an overview of the ethical, societal, and legal challenges researchers relate to Big Data processing, algorithmic decision-making, privacy, and data protection. Political text analysis is relatively ‘new’ within Big Data context, however important, and there is no extensive research on how to overcome the ethical, societal, and legal challenges. In this study we argue that the principles and requirements of the General Data Protection Regulation (GDPR) – a legal tool that EU citizens have to protect their personal data– can provide useful and effective guidance to researchers working with Big Data analytics, algorithms and publicly-available datasets for political text analysis, while being attentive and limit its issues.

According to Wilkerson and Casas (2017), words are an integral part of politics. The main form of political expression and opinion is expressed through words (in person) or via texts (digital platforms). Internet has expanded the ways and speed to generate, gather and use political data. This broadened the opportunities for political scientists to conduct research and analyse the dynamics of political stage through open-source text analysis. One of the main challenges in political text-data analysis is the –unsupervised– machine learning methods that are very popular in political science. The problem with unsupervised machine learning is that it is dependent on the quality and the variety of the data. While supervised machine learning requires large scope of labelling efforts when classifying texts. And when the political text data is being classified through unsupervised machine learning, takes out of the equation researcher’s subjectivity when it comes to choosing the model of topic cluster to reflect the objectives of a project.

This study provides an overview of research on political text analysis, its ethical and social implications for researchers, and how GDPR principles can be applied as a tool to protect individuals and researchers within European research platform.



What is Big Data Analytics and what problems does it have?

Big Data analytics (and new uses of this technology such as Machine Learning and Artificial Intelligence) pledge a radical change for the contemporary world. The development of the digital space revolutionised the way we live, work and think (Mayer-Schonberger and Cukier, 2013). These technological developments created a substantial changes in today's global political and economic fields. The discourse around the definition of Big Data is accompanied by the use and the goal-cause to the field where it serves, that is, Big Data is contextual, and it changes depending on the different uses and therefore it should be interpreted based on the context in which it is deployed. Particularly, the discourse questions whether it is in the public's benefit or Big Data is going to benefit only private sector (Boyd and Crawford, 2012) and subsequently, which stakeholders will it benefit to.

Big Data analytics promises to make people's lives better based on the predictions it can draw, but it still brings ethical and legal issues that we explore in this study. For example, the situation with the COVID-19 pandemic shows how Big Data analytics will benefit the state or private interests (Barriga, Martins and Faustino, 2020). One important aspect regarding Big Data analytics is the challenges it spurred in the research landscape of humanities and social sciences. For example, researchers nowadays have the possibility to use a personal computer for their research analysis, allowing them to generate, produce and store increasingly large volumes of data. Researchers can use this data to satisfy and strengthen their study, however they lack the ethical and legal expertise, and that they are operating under a vague legal framework on data protection in the space open for potential ignorance of ethical norms (Burrows and Savage, 2014). Another issue related is that Big Data is open to subjective interpretation (Moretti, 2005), which means that data can be represented by a single or a group of research opinion/s through subjective narratives. As mentioned above, Big Data has contextual character, but researchers can use data from different contexts, based on different reasons (e.g., lack of data). This brings questions regarding possible biases, for example political text analysis can misinterpret movements like #metoo because they were, in the beginning, very limited with the number of actors and audience.

Big Data also presents challenges to fundamental rights through the concepts of data categorization, data interpretation, predicting through data, data-based decision-making to social justice norms. While Big Data implications on fundamental rights (e.g., right to privacy) stand behind digital technologies, we must include other elements such as ethical norms to be followed when collecting and using data. Though it will take time until there are clear indicators of ethical literacy among AI field workers, we now have the possibility and the need to inform and teach researchers, especially in humanities but also to technical experts, about the social ethical responsibility for data analysis.

Even if we have a perfect situation and data is filtered through non-biased algorithms, the final interpretation also depends to the subjectivity of the researcher. This concern brought a new concept called "imagination of data" (Gitelman, 2013). To sum this up, when collecting and using Big Data for research purposes, the researchers shall bear in mind the framework of ethical and legal norms, and the limitations of its own research. Data depends on the context, and those who analyse data are the ones to choose the narrative through which they represent the information.

Ethical and social issues of Big Data Analytics in political text analysis

In 2020, former Google ethicists were co-authoring a paper (Hao, 2020), in computational linguistics on the risks of language models¹, their goal was to inform about the current research in natural-language processing as well as its challenges. They argued that there was little investigation being done on the risks of these language models nor strategies to minimize these risks. For example, different types of data gathered online can contain texts that are racist or sexist, and those will be perpetuated in new language models. This was also found with Google Translate in Finish, that contains gender biases in the translation, as the Finish language has gender-neutral pronouns but still translates into “he is the prime minister” and “she takes care of children”. It is, therefore, important to analyse potential issues in text and data analysis for political texts to prevent risks, such as building a socially discriminating system, especially in a technology that aims to be as objective as possible, and will be used by scientists and researchers, and could be used to support political agendas. Thus, we present a review of the ethical and social issues for the use of Big Data in political text analytics.

Privacy, although it has different interpretations, it has become an important concept to balance the abusive power of technologies in the gathering and analysis of data, and is being understood as a concept for the protection of “personal data” (De Hert and Gutwirth, 2006) . One of the limitations to privacy is that current regulations (e.g., GDPR) protect personal data, however Big Data is often anonymised, thus falling outside the scope of these regulations. Still, it can be re-identified (de-anonymised) using different tools which is especially dangerous for political “whistle-blowers” or activists that will be compromised if their comments were exposed to regimes like dictatorships. A well-known example for re-identification can be found in the company Netflix which had public anonymised databases that were used by Professor Narayan and his team to re-identify users, which led to a public lawsuit in 2010 (Singel, 2010). The Cambridge Analytica scandal (Chang, A. 2018) also warned about the intrusions of privacy by analysing people’s behaviours on social networks.

Biases, Discriminations, and Inequality also becomes extremely important while considering political text analysis. Big Data analysis is recognized as force for good in society with intelligent capabilities, even called ‘Artificial Intelligence’, but it is far from perfect, nor exempt from biases (UN News, 2019). Big Data analytics develops profiles and classifies information, but also repeats discriminations that are already immerse in society. Recently, the Amazon recruiting algorithm (Goodman, 2018) reproduced gender hiring patterns that led to discrimination against people of specific genders (mainly women and transgender), in which the algorithm downgrade resumes based on words such as ‘women’s’ based on previous input in which only a few to none women have been conducted these jobs; as well as the already mentioned Google Translate in Finish.

Political text analysis can also risk to pay less attention to cultures that have less access to the Internet, and thus fewer amounts of texts feed into it, therefore a language model (Johnson, 2021) will represent only the view of the richest countries. For example, if an analysis of a public discourse focuses on Facebook or Twitter, it neglects all those not using these platforms. In addition, if the media and politicians act based on what is “trending” on these platforms, they might miss the concerns of many citizens or overestimate the importance for the concerns of only few people that often are the more disadvantaged, such as woman or people with disabilities.

¹ This paper is not available yet, but MIT review received a copy of the draft. The paper leads to Gebru being fired (Hao 2020). There has been a discussion about the motives that got her fired. See the email that was sent by Jeff Dean, Google AI head, to Google Research about this decision: <https://docs.google.com/document/d/1f2kYWDXwhzYnq8ebVtuk9CqQz7ScqxsIXeYGrWjK0/edit#heading=h.aplcvu32myqt>



It is important to control the features needed to analyze texts that makes it more accurate but also less biased. The features that will be used by the system can produce different outcomes. This study (Waseem and Hovy, 2016) investigated the most beneficial features to find hate speech in Twitter, and they demonstrate that the best are those related to gender and location, while those features were forgotten in other studies.

Power Asymmetries. Language models can be used to trick people (Hao, 2020) or create misinformation; for example, an AI that generates text was used to create a fake blog on self-help, and Facebook’s AI translation service led to a Palestinian man being questioned by the police after a wrong translation (Hern, 2017) of the system from “good morning” into “hurt them” . It becomes important to balance these power imbalances and create a tool that supports citizens and does not abuse them.

Big Data, even if anonymised, can also influence human decisions and the **identity** of a person. The scandal of Cambridge Analytica is an example not only of power, but of the possibility of these systems to change people, by targeting them with political advertisements and (fake) news to influence people’s voting behaviour. The Filter Bubble (Pariser, 2011) also shows how much influence algorithms can have in our lives and opinions through an algorithmic system that benefit your past online behaviour and creates a ‘bubble’ that reinforces previous behaviour. It can also hurt innocent people when misrepresented and misguide narratives of those in marginalized communities. A real-life example is found in a Twitter study (Frey, Patton, Gaskell, McGregor, 2018) that analysed unstructured data from youth belonging to gangs in Chicago and showed that they were not represented in the local community, thus also forgotten in policymaking.

Accountability and Responsibility - Big Data analytics is a complex process that combines non-human decision-making with human agency of engineers, designers, owners, or head of corporations etc. This has consequences for who is responsible and accountable in case of an accident. One of the problems is the difficulty of transparency, it is unclear how the software developed a conclusion, but also who provided the information or decides about the categories or variables from which the algorithm was written. There is not enough attention to the distribution of responsibility between humans and algorithms.

If the analysis of algorithms is not available, it is difficult for regulators to carry out risk assessments. The lack of transparency can have negative consequences for business that want to protect their products against competitors. Similarly, the openness of the design can also help to “cheat” the system by hackers or terrorist that want to manipulate the technologies (Ryan et al.).

Environmental and financial costs are also worth considering. Big Data analytics takes up enormous amounts of energy (Cuquet, Vega-Gorgojo, Lammerant, Finn, ul Hassan, 2017). Specifically, training a new platform consumes a lot of electricity and this only increases every year, similar to the increase in carbon emissions. To train one AI in a particular language processing can be equivalent to the life-time of five American cars (Hao, 2020), while AI is trained many times over. In addition to the electricity needed to gather, store and analyse data, financial costs are at the same time important to consider. While data projects are difficult and expensive to maintain, the power necessary to maintain them and the economic costs must be considered.



Political text analysis & data protection law as a tool

The technological tools employed for political text analysis raise some concerns with regards to privacy and data protection, as identified above, especially insofar as any personal data is involved. Both the right to private life and the right to personal data protection are recognised as fundamental rights in the Charter of Fundamental Rights of the European Union ('Charter'), and more recently, key data protection principles and data subject rights have been enshrined in Regulation (EU) 2016/679 ('GDPR'). This section argues that EU data protection law, and the principles and tools elaborated by the GDPR, can support researchers to address and mitigate the challenges raised by political text analysis. It then briefly considers some of the implications with regards to EU Copyright legislation in relation to text and data mining for scientific research.

Crucially, the GDPR enshrines key data protection principles including transparency, fairness, purpose and storage limitation, data minimisation and integrity, and confidentiality. The principle of accountability is widely recognised as a core value of the GDPR (Buttarelli, 2016) which ensures that sustainable data processing is promoted in the context of complex processing and the development of new technologies. Continued attention on implementing these core principles can facilitate an environment of fair data processing in political text analysis using novel tools. The requirement of data integrity acts as an important tool for scientific researchers, particularly for ensuring data security and accuracy when analysing publicly available political opinions and journalistic texts.

Researchers may also employ Big Data tools for political text analysis. In this respect, the qualified duties of data protection by design and by default help to ensure that the appropriate technical and organisational measures are implemented to protect the rights of data subjects. For example, pseudonymisation and anonymisation techniques may be employed by researchers, especially in the process of data analysis within a Consortium with members based in different countries. In this way, the GDPR provides both the foundational principles and the devices necessary for compliance with data protection law in a scientific research environment.

Furthermore, the Data Protection Impact Assessment (DPIA) required by the GDPR in high-risk processing situations acts as a valuable accountability tool in the context of algorithmic decision-making. When researchers employ algorithms to create inventories and datasets for the purposes of political text analysis, researchers can adopt the model of the DPIA to conduct an Algorithmic Impact Assessment (AIA). Researchers have developed practical frameworks for the use of AIAs for public sector accountability (Reisman, Schultz, Crawford, Whittaker, 2018), and academics have championed the AIA as a tool to fulfil transparency obligations under the GDPR to produce multi-layered explanations (Kaminski and Malgieri 2020) to data subjects. The AIA is therefore not only an important accountability tool, but can support researchers using Big Data and algorithmic tools to better foresee and mitigate the potential risks raised by conducting political text analysis in novel ways. The wider academic community and other researchers working with political texts may also benefit from the increased transparency on the technological complexities of such projects.

Despite the principles and tools provided for by the GDPR, the law has also gained significant attention within the research community for lack of clarity on its implications, prompting the European Data Protection Supervisor (EDPS) to clarify rules with regards to data protection in scientific research (European Data Protection Supervisor, 2020) The EDPS acknowledged the valuable function of scientific research in democratic societies, and highlighted the flexibility provided by the GDPR for scientific research which respects ethical principles and serves the public interest.

In the context of political text analysis, analysing publicly available data from social media platforms and online newspapers allows scientific researchers in order to better understand and make available the latest political developments for further research. The [GDPR's Article 89](#) provides for certain exceptions for scientific research purposes, in line with the flexibility mentioned by the EDPS. This so-called 'research exemption' allows Member States to provide for derogations from some controller obligations. This includes, for example, the presumption of compatibility of further processing for scientific purposes and facilitating the use of secondary data. Despite possible derogations, researchers are still required to comply with the core data protection principles outlined above, the rules on data sharing, and to ensure appropriate technical and organisational measures. As such, whilst some flexibility is indeed made possible, sweeping derogations would potentially sway too far from one of the core purposes of the GDPR: to protect the fundamental right to personal data protection.

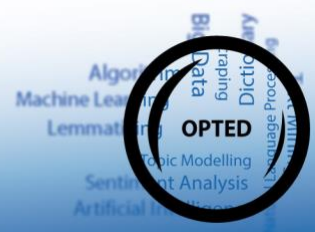
Concluding Remarks

Political text analysis is a useful method for political scientists and the wider academic community that allows the researchers to analyse political trends, parliamentary debates, legislative developments, and the many aspects which form a central component of democratic societies. At the same time, this study has identified that Big Data processing and the use of complex tools for political text analysis poses some challenges to the fundamental rights framework as it relates to privacy and personal data protection, and to socio-ethical principles which should underpin the development and use of new technologies. Indeed, substantial research has been conducted to study how Big Data analytics and subsequent technologies such as AI have the potential to alter ethical and legal norms that may affect individuals in democratic societies.

More specifically, this study has identified some of the specific implications of Big Data processing and analysis in the political arena. For example, we highlight that there are potential risks of bias and discrimination associated with Big Data, which may have wide societal repercussions. The use of Big Data also poses challenges to privacy, may accentuate, or deepen existing power asymmetries, and poses practical difficulties with regards to transparency. Due to the inherent complexity of Big Data processing and analysis, transparency may be challenging to achieve, leading to further issues of accountability and responsibility. In addition, potential environmental and financial costs are implicated in the use of Big Data.

In light of the potential implications of leveraging Big Data for political text analysis, we argue that data protection law can help address and mitigate some of the risks, but researchers should not forget other ethical and social implications, such as human rights and social justice.. In particular, the GDPR can be used as a tool and an important resource for minimising the risks identified above. The core data protection principles of the GDPR including transparency, fairness, purpose limitation, data minimisation, data integrity and confidentiality, play an important role in practice. They are not only guiding principles but are accompanied by specific steps and guidance for how they may be implemented in the development and use of complex technologies. With inspiration from the Data Protection Impact Assessment championed by the GDPR, scientific researchers may adapt it to be able to identify the potential risks with algorithmic decision-making through the Algorithmic Impact Assessment. In this way, researchers may be able to provide multi-layered explanations with regards to how a particular tool works, thereby supporting efforts towards transparency.

Disclaimer: This Report is based on a Project funded by Horizon 2020



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