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Artificial Intelligence and Gender Biases in Recruitment and Selection Processes – a topic not much discussed yet in Austria

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1. The situation in Austria in relation to gender bias in recruitment and selection processes

Austria's labour market is highly segregated along the classification gender (Schneeweiß, 2016, S. 21). Therefor a potential increased usage of AI in recruitment and selection processes brings the danger of reproducing this segregation by deciding on who should be informed of a new job as a nurse or which applicants are invited to an interview for an IT job on the basis of data collected among current employees in those fields.

When it comes to recruitment and selection processes, treating people differently regarding their gender (among other classifications) is forbidden in Austria on the basis of the federal law of equal treatment (Bundesgesetz über die Gleichbehandlung). Nevertheless, recruitment and selection processes are often biased by stereotypical perceptions of “men” and “women”, which can lead to discrimination of women when it comes to the question of who is hired e.g. for a job as IT developer. Since technology “embeds and is embedded in social practices, identities, norms, conventions, discourses, instruments, and institutions” (Jasanoff, 2004, S. 3), algorithms developed to recruit and select employees potentially bring the danger of being biased in the same way as their human equivalents.

Automatized recruiting and selection processes often work via comparison of applicants or potential targets of recruitment with successful employees, the higher the similarities between potential employees and those, who are categorised as successful, leads to a match. In case those classified as successful employees tend to belong to a specific category like being male/female, a bias regarding who is classified as a match and who is not, might occur (Gärtner, 2020, S. 84). Cases of biased recruitment and selection processes have already been observed. One often quoted example is the discrimination of female applicants at Amazon (Hammermann & Thiele, 2019, S. 19).

The legal framework in Austria already offers some possibilities to prevent discrimination through algorithms in recruitment processes. Through the law of equal

treatment, it is forbidden to discriminate people directly indirectly or via association[1] regarding gender, ethnicity, worldview, sexual orientation, religion or age when it comes to who gets a job. Regarding automatised decision making, people have the right to demand the intervention of a person, give a statement on their point of view and to appeal against the decision. Those rights are protected by the law on data protection, which also forbids to process information about ethnicity, political opinion, worldview, union membership, health and sexual practices as well as biometric- and genetic data (with some exceptions).[2]

For Austrian companies there are at least no publicly available studies about specific evidence of discriminating effects of AI regarding recruitment and selection processes so far. Literature refers to the general situation – most having the above-mentioned Amazon-example as starting point and rather general considerations.

However, a related topic was discussed very intensively in Austria and the literature and statements on it are also instructive for our general topic: the so called “AMS algorithm”.

The algorithm was developed and tested in 2019. The idea was that from mid-2020, the Public Employment Service Austria (AMS) will use a computer programme throughout Austria to assess the labour market chances of unemployed people. A test operation had already been running for almost one year. A research institute was commissioned to develop the algorithm and parts of criteria to be used for the assessments were published (Holl et al., 2018).

Based on a statistical model of job seekers' prospects on the labour market, the AMS algorithm has been designed to classify clients of the AMS into three categories: (i) those with high chances to find a job within half a year; (ii) those with mediocre prospects on the job market; and (iii) those clients with a bad outlook of employment in the next 2 years. Depending on the category a particular job seeker is classified under, they will be offered differing support in (re)entering the labour market (Allhutter, Cech, et al., 2020)

In order to decide who is assigned to which category, a comprehensive algorithm has been developed which is among other data points based on employment history, gender and caring responsibilities.

Many experts and NGOs evaluated the way the algorithm classified persons based on the data and discovered various examples of discrimination. E.g. Ben Wagner, researcher at the Privacy Lab of WU Vienna, stated that it is "highly problematic" that

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1 Also other modes of discrimination are forbidden, these three are the most relevant regarding automatized selection and recruitment processes.

2 Elisabth Greif and Christoph Winkler supported us by sending us information on the legal framework in Austria and some literature tips. We contacted them because of their ongoing project “DatDA – Datenbasierte Diskriminierung in der Arbeitswelt” (“Discrimination based on data in the world of work) together with Miriam Kullmann: https://www.jku.at/institut-fuer-legal-gender-studies/forschung/forschungsprojekte/datda-datenbasierte-diskriminierung-in-der-arbeitswelt

only women are negatively credited with care responsibilities; a fact which was also classified as “a prime example of discrimination", from Florian Cech from the Vienna University of Technology[3]. Also, the computer programme has a relatively high error rate of around 15 percent. Every year, about 50,000 people are classified incorrectly.

The system was defended by the research institute, which developed the algorithm: the negative points for caring responsibilities are “a bitter truth for women, which is reflected in the opportunity model”. The AMS pointed out that even without an algorithm the counsellors classify jobseekers among other classifications regarding their gender, which often leads to even more discriminatory practices than those based on classifications made by the algorithm[4].

A legal expertise on the subject has taken a very critical view of the algorithm or such systems in general as well: Computer programmes that create statistical personality images shorten the freedom of informational self-representation: if an algorithm puts somebody in a statistical drawer, they can hardly get out of it. Additionally, the expertise argues that before regulating algorithms in a way that leads to more equality, those who design those regulations must realise that algorithms are not neutral. They already make judgements by focusing on certain characteristics and correlating them to certain other characteristics.

Algorithm regulation must therefore not start at potential discriminatory decisions but must intervene one level earlier. An effective mean of breaking through algorithmic personality construction is data protection law, which protects individuals from informational power asymmetries in their right to informational self- determination. (Fröhlich, 2018)

Also, the Austrian Ombud for Equal Treatment contacted the AMS to raise awareness of the discriminating factors behind the categories. This led to the establishment of a “Sounding Board” to discuss and evaluate the discriminatory potential of the algorithm. The Ombud for Equal Treatment is a member of the Board (Equinet, 2020).

In 2020 the AMS algorithm was analysed in a study with focus on the consequences of its use on the practice of consultation, the biases inscribed in it based on social inequality and the area of conflict between the ideas of efficiency increasement and orientation towards the client. According to this study, there algorithm contained biases, based on social inequalities, blurry variables and the fact, that the data it is based on is always a picture of the past and therefore not suitable to adopt on recent transformations or crises of the labour market (e.g. Covid 19). Also, even though the score calculated by the algorithm is meant to be a “second opinion” next to the impression of the counsellor, the available resources lead to only a small amount of time being possible to spend on each client. Therefore, counsellors might tend to just

[3] https://futurezone.at/netzpolitik/der-ams-algorithmus-ist-ein-paradebeispiel-fuer-diskriminierung/400147421

[4] https://futurezone.at/netzpolitik/ams-chef-mitarbeiter-schaetzen-jobchancen-pessimistischer-ein-als-der-algorithmus/400143839

accept the score calculated by the algorithm and act based on it (Allhutter, Mager, et al., 2020).After massive protest – inter alia an own campaign against the algorithms was set up https://amsalgorithmus.at/ – the project has been suspended.

What could be learned:

- In general, the AMS was very transparent with regard to the plans – in sharp contrast to most examples of recruitment policies of private companies, where the underlying algorithms are not made transparent. However, possible negative effects can only be discussed if they are made public.
- Only the interaction of computer scientists, gender experts and legal experts has made it possible to identify possible weaknesses in their entirety and to issue well-founded statements.
- Moreover, the great interest of the public in the topic is evident when apparently "technical" issues are made public and well explained.
- Even if the example concerns the public sector, numerous analogies can be made for recruitment policy of private companies.

2. Policy debate: future developments?

Nevertheless, it can be stated that the topic has not received much attention in the context of the digitisation discourse so far (Pimminger & Bergmann, 2020) – a circumstance which seems to be changing very slowly.

The social partner institutions are the most active speakers regarding this topic so far, but there are also statements from legal experts, researchers and specific NGOs. In the following, current statements are presented briefly:

On the one hand the **Chamber of Commerce** refers on its website to the fact that beyond “the Austrian horizon, one encounters more and more companies that rely on robot recruiting in their personnel selection process” – indicating that this is not a big topic in Austria’s companies yet. It is communicated, that recruiting processes contain a lot of discrimination now and that a selection process executed by robots might reduce discrimination to zero.

A short film is shown in which a woman wearing a headscarf is rejected everywhere despite her high level of competence, only in the last scene she is recruited: by a "human robot"[5].

The chamber of commerce points out that AI in recruitment is not yet that common in Austria (or Europe) as abroad, but studies indicate that such systems will be used

[5] https://www.wko.at/site/innovate-austria/unternehmerfrage/Roboter-als-recruiter-der-zukunft.htm

more often in the future. All in all, the statements of the chamber of commerce seems to be more in favour or at least curious about such trends.

On the other hand there are also some statements of the **Chamber of Labour**. These statements rather indicate a scepticism around the topic, which can be summarised under the keyword "automatically sorted and sorted out"[6].

On the part of employee representatives, the topic of AI in personnel selection is discussed rather critically - albeit rather generally and not on the basis of concrete empirical evidence in Austria. For example, Berger & Schöggl (2019) point out critically, that intelligent algorithms are now also being used for making decisions regarding personnel like employee needs training, but also regarding sanctions, job assignments or promotions - all based on data collected on employees and workers but not made transparent to them. To get more evidence, the Chamber of Labour will call for tenders for a Digitisation Fund, which will deal among others with the following topics: Big data, algorithms, artificial intelligence, robotics in 2021[7].

Even if coming from different directions, the statements of the two chambers point out that the topic has not yet arrived in the mainstream and is only being sought after experience.

Additionally, to these statements the **Austrian Ombud for Equal Treatment** has put the topic high on its agenda: discrimination based on “Artificial Intelligence” is a thematic priority in the current Strategy Plan of the institution. This allowed to dedicate sufficient time to the systematic monitoring of potential AI-related discrimination cases with the goal of initiating future strategic litigation (Equinet 2020).

Also, this strategy linked to future developments indicate that the topic is just an emerging topic instead of an already very established.

3. Recommendations

3.1 How to address the potential risk of (gender) discrimination of algorithms in recruitment processes

First, to develop an understanding of the connection of the use of artificial intelligence in recruitment process and equality, expertise from different fields is needed. In the case of the AMS algorithm, the interaction between data scientists, gender experts and data protectors revealed the weaknesses discussed. The cooperation between people of these groups might be a key to address the potential risk of (gender) discrimination threw algorithms and AI. When it comes to implementation of technologies like this in recruitment and selection processes, an involvement of all of these groups might be helpful.

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6 https://wien.arbeiterkammer.at/beratung/arbeitundrecht/bewerbung/Digitale_Bewerbung.html

7 https://wien.arbeiterkammer.at/digifonds

Second, it is important to make algorithms transparent, so organisations like (in the Austrian case) the Chamber of Labour or the Ombud for Equal Treatment can check, if an algorithm is potentially discriminatory or not. This does not necessarily mean, that companies have to publish their complete algorithm, which is often refused because algorithms like these are seen as company secrets. In a first step it could be made mandatory to implement measurements to decrease discrimination into automatized recruitment processes and to publish those measurements.

Third, beside all legal, such as technical and organisational solutions to prevent a gender bias in recruitment and selection processes supported by AI (for a list of technical and organizational meassurements see Hagendorff, 2019, S. 60ff), another way of preventing discrimination is creating a reality, that supplies algorithms with unbiased (or less biased) data. As mentioned in the first chapter of thispaper, algorithms discriminate on the basis of data collected in an unequal society, therefore the most sustainable way of addressing the potential risk of (gender) discrimination via algorithms in recruitment and selection processes is to address existing social inequalities. This means establishing a culture in the world of work, in which periods of childcare or nursing do not determine the chances of employment or promotion, shattering the glass ceiling and ending vertical and horizontal segregation of labour markets.

3.2 How to raise awareness of the issue of gender bias in algorithms

As pointed out the topic is not yet high on the agenda in Austria. The case of the AMS algorithm shows that public awareness can be raised around the topic if organisations, that define (gender) equality as their goal, consequently point their finger on potential discrimination via algorithms. Of course, transparency played an important role in this case, which made possible the awareness-raising tool described in the next paragraph:

During the public discussions around the AMS algorithm, the “Standard”, an Austrian newspaper, published an online tool, which made it possible for everybody to find out how he or she would be classified by the AMS algorithm regarding possibility of labour market short-term integration[8]. People could feed in information like gender, age an education and see how this changed their “score”[9]. Tools like this have the potential to make the way the algorithm works quite tangible for everybody and might be a

[8] The possibility of labour market short term integration is an indicator which was only consulted by the algorithm to classify persons as “category A”, whoever has a 66% chance or higher to get integrated into the labour market again soon, is classified as A. A full reconstruction of the AMS Algorithm, which would also have made possible the online tool to rate everybody as B or C was not possible based on the published information.

[9] https://www.derstandard.at/story/2000089925698/berechnen-sie-ihre-jobchancen-so-wie-es-das-ams-tun

useful tool to raise awareness regarding the potential dangers of AI in recruitment and selection processes.

As a last point, it seems important to the authors to mention, that awareness raising about the topic discussed must not only be on the agenda for policymakers and those, who represent those who might be affected by discriminatory algorithms. Also persons who work in human resource or recruiting need to be aware of those dangers. Not being aware of a potentially discriminating bias regarding the persons that are proposed to them might decrease their success in finding the perfect match and reduce diversity in their company significantly.

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