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Artificial Intelligence and Gender Biases in Recruitment and Selection Processes

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Comments paper - Italy



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Towards a Fair AI-based Recruitment

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1. The Italian situation

1.1 Gender bias in recruitment and selection processes

One of the trickier aspects of processes that produce gender inequality is the difficulty of making them recognisable. For this reason, assessing gender bias in recruitment and selections processes is not easy, but a look at few statistics regarding the Italian job market can provide some highlights. Data published by the Italian Censis (Centre for Social Studies and Policies) observatory revealed that in 2019 Italy was among the European countries with lower female occupation and female activity rate. The Global Gender Gap Report 2020 ranked Italy at the 117th position for the sub-index related to Economic Participation and Opportunity. Recent studies based on the glass ceiling index, specifically designed to measure gendering processes taking place in the recruitment stages in Italian academia, discloses new forms of gender segregation in Italian universities after the last academic reform (Law 240/2010), despite the emphasis placed on the neutral and meritocratic criteria of the new recruitment and career progression rules.

1.2 Public sector

The selection process in the Italian public sector is based on a competition (concorso) that usually includes a first written exam and a final oral exam, usually carried out through very traditional procedures not relying on any digitization. However, epidemiological emergency from COVID-19 and the related needs for the protection of public health have led to the adoption of new measures. Article N. 247 of the legislative decree 19 May 2020 N. 34 defines (initially on an experimental basis and then making them ordinary) simplified measures, including the digitization of all the steps of the selection process. The written exam consists in a set of tests, including situational questions to evaluate soft skills of the candidate. The candidate interacts only with the digital platform and his/her answers are automatically evaluated by the systems. This approach for the written examination reduces the risk of bias related to gender and other dimensions because it eliminates the human factor from the first phase of the selection.

Regarding the application of AI, the Italian public sector currently does not rely on any machine learning technique for recruitment and selection processes.

1.3 Private sector

The Italian private sector is characterised by many small and medium sized business enterprises that usually rely on traditional methods for selection and recruitment.

However, there are some interesting examples of use of automation and AI that have been recently applied by larger companies and that are mentioned in the rest of this section.

1.3.1 ATS and AI applications

Some large Italian companies recently started to rely on ATS (Applicant Tracking Systems) for selection and recruitment processes. The solutions adopted by each company may vary, commonly ranging from automatic pre-screening of candidates CVs, use of chatbots and video-interviews.

Among the example of companies using these systems, we can mention Unicredit, Esselunga, Rinascente, ING Italia (ING Bank Group), Leroy Merlin (Italian section), Brico Center, CRIF.

Most of these companies rely on the simplest kind of automation tool, while only few of them use machine-learning techniques. For example, Esselunga (using EasyCrue platform) introduced in 2019 artificial intelligence algorithms in the video-interviews to evaluate candidate emotions and soft skills, such as language capabilities and social skills. However, the system is still in a training phase: videos are evaluated by both the AI system and the HR evaluators, and it is currently used not to make a ranking but only to obtain additional information supporting the decision.

It is important to note that the common understanding is that the use of an artificial intelligence to evaluate CVs has the potential benefit to avoid any human prejudice because name, gender, age, race are not considered by the algorithm without human intervention (and potential prejudice). However, the human factor (with the potentially intrinsic prejudices) is still involved because the system of weights associated to the desired competences, and consequently used for the CV evaluation, is usually determined by human experts and not based on machine learning algorithms.

Another observation is that automatic tools for Cvs pre-screening are more commonly used for recruitment of junior profiles rather than senior or high level profiles.

1.3.2 Gamification for HR

An example that deserves to be mentioned is the experience of Generali Italia, that started in 2015 a project of innovation regarding HR processes. Through the platform "Job talent" and the app Knack, gamification and artificial intelligence were introduced in the recruitment process to test and evaluate the candidates' skills (e.g., decision capabilities, team working, time and priorities management, goals achievement, creativity, social and emotional intelligence). Specifically, in Knack game each decision is recorded and transformed into data that enable AI algorithms to process the player behavior and evaluate his/her soft skills. The system analyzes only the performance of the players with the final aim to understand their intrinsic strengths and capabilities, without knowing anything about their gender, age, race, education or aspect, making the selection process more meritocratic from candidate point of view. This approach is mostly used by Generali for campus recruiting or for selection of recently graduated candidates.

2. Policy debate in Italy

In August 2019, the Italian Ministry of Economic Development released a draft version of its “[National Strategy on Artificial Intelligence](#)” for public consultation (Italy, 2019a). At the same time, the Ministry also published a background paper, entitled “Proposals for an Italian strategy for AI”, providing initial guiding principles and policy recommendations as a basis for Italy’s AI strategy. In July 2020, the group of thirty Italian experts that was commissioned to develop the AI strategy for Italy delivered the [final document](#). The strategy defines Artificial Intelligence as a resource that has a huge potential, but needs to be carefully directed because the positive aspects of AI come not without risks. The experts point out how the results and the efficacy of AI algorithms greatly depend on the quality level of the considered data, especially in the AI area related to machine learning. For this reason, the risks related to the application of AI algorithms (first of all, potential bias) derive from the same source, the data, that have been identified as one of the main challenges in AI applications for society also in Libro Bianco AgID¹ written by the AI task force of the Agency for Digital Italy. Furthermore, the document underlines that AI is not intelligence *stricto sensu*: if applied in a smart way, it amplifies intelligence, but if used in a stupid way it amplifies stupidity. Hence, a high level of knowledge and expertise is fundamental for both AI algorithms developers and users.

The document specifically stresses the importance of:

- defining a national strategy about the obligation of transparency, replicability and auditability of AI systems, in accordance with the European debate;
- promoting and monitoring the use of certifications, fully aligned with the principles of trustworthy AI;
- establishing a regulatory and ethical framework to ensure a sustainable and trustworthy AI;
- promoting an information and dissemination campaign directed to companies management to increase awareness about the potential and the risks related to the use of AI applied to labor market.

3. Recommendations

3.1 Proper Training

Proper training of data scientists and AI experts will be one of the most critical aspects for the future unbiased use of AI in HRM. According to the report from the World Economic Forum (WEF), “[The Future of Jobs 2018](#)”, the growth of artificial intelligence could create 58 million of new jobs in the next few years. To avoid the risks (ranging from biases and discrimination to wrong decision-making support) due to a not correct

¹ https://libro-bianco-ia.readthedocs.io/it/latest/doc/capitolo_3_sfida_4.html

use of AI, a proper training for the future developers of AI algorithms is a crucial aspect. To this aim, it could be useful that (part of) the AI training courses are co-designed at national level through a strict interaction with different stakeholders including those belonging to the job market (companies, third sector, public sector) to collaboratively define the skills and competence required. Even more important, the adoption of a multi-disciplinary approach in designing training for AI developers to include ethical and legal competences. At the same time, some basic knowledge about AI and machine learning techniques should be included in the HR training. Basically, we need to start the process towards the creation of a 'common language' between computer scientists and HR experts to avoid the effect of hermetically sealed compartments not able to communicate. A multi-disciplinary approach will also facilitate the creation of an evaluative culture about AI algorithms that takes into account several aspects including potential risks of (gender) biases and discrimination.

Another important aspect is related to the up-skilling and re-skilling of part of the existing HR workforce that needs at least some competence to understand the main concepts (and risks) related to the use of AI techniques.

Last but not least, we should attract and train more women in AI fields (only 22% of specialists in AI now are women in the world) to reduce stereotypes and gender gap within the workforce itself and to increase the awareness towards gender biases.

3.2 Certifications and risk assessment

The promotion of the development of private certifications and risks assessment methodologies regarding AI algorithms and datasets used for recruitment and selection processes could reduce the risk of potential (gender) bias. Such private certifications and assessment tools should be constantly monitored to ensure the accordance with ethical principles, transparency and reliability.

The presence of officially recognised certifications also helps to avoid the risk of "homemade" solutions: such low cost solutions could appear more and more attractive to reduce the time spent in screening candidate CVs, which is a very time consuming task, as AI and machine learning algorithms become available as open source or free libraries. It is important to have in mind and clarify that the application of AI algorithms is a very complex task that should be carried out by experts. The involvement of AI experts to implement the algorithms used for selection and recruitment is also likely to limit the possibility that the employer justifies the indirect (gender) discrimination claiming that he does not know exactly how the recruitment software behaves to come to a certain decision.

3.3 Networks for change

A further recommendation regards the creation of networks of stakeholders that can cooperate towards the common objective of creating the conditions to address the potential risks of (gender) bias in the HR processes relying on Artificial Intelligence algorithms. For example, in Italy the CINI (National Interuniversity Consortium for Informatics) laboratory on Artificial Intelligence, including Italian professors of both

Computer Science and Computer Engineering, is likely to represent an important player. The involvement in this network of academic members can support more than one-step towards our objective. First of all, improve the offer of academic courses on the topic of AI, ensuring that proper attention is given to the aspect of potential (gender) bias in the use of AI algorithms and techniques. Furthermore, academic members are in an optimal position to facilitate the collaboration between experts of different fields (law, ethics, HR, etc.) to add value to the academic educational programs and trigger the creation of a common understanding and knowledge about these issues. Finally, professors can help in the process of raising awareness through their public engagement institutional activities in collaboration with other stakeholders.

3.4 Raising Awareness

Raising awareness about the opportunities and potential risks of using AI in HR decision-making systems represents a crucial point. First of all, we need to carry out an information campaign involving the companies' medium and high management levels to make them prepared to guide the digital transformation of the HR field being at the same time aware of the risks of (gender) biases related to AI use. In Italy, for example, the members of the industrial management class tend to be quite old and culturally not too open to innovation. To reach the goal of communicating to entrepreneurs and managers about AI opportunities and risks, the involvement of trade and category associations and local competence centers, as well as synergies with academic experts in the field, is suggested.