

Artificial Intelligence in Hiring Process

Tepšić, Ivana

Undergraduate thesis / Završni rad

2020

Degree Grantor / Ustanova koja je dodijelila akademski / stručni stupanj: **RIT Croatia / RIT Croatia**

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:229:785780>

Rights / Prava: [In copyright](#)

Download date / Datum preuzimanja: **2021-10-21**

RIT

Repository / Repozitorij:

[RIT Croatia Digital repository - Rochester Institute of Technology](#)

Croatia



ROCHESTER INSTITUTE OF TECHNOLOGY

RIT Croatia, Dubrovnik

The Attitude of Job Candidates towards Artificial Intelligence in Hiring Process

Senior Capstone Project

Ivana Tepšić

Mentor: Dr. sc Besim Agušaj

May, 2020



Abstract

Artificial intelligence and machine learning have recently made its way into human resources management. In this context, humans can train machines to identify a job candidate that would be a good match for the company among thousands of candidates, at least this the intention of this approach. While we can anticipate benefits of implementing such solutions there are many controversies surrounding this technology. In this research we are probing some key questions and principles that will shape the HR practice in the near future and how the workforce interacts with companies. Future workforce can expect being screened, interviewed and evaluated by a machine. Can such an approach be an honest sign that companies are trying to gain a better insight, reduce risk and even deliver valuable propositions of individuals themselves? Our research is showing that this process ought to be used with care and ethically so that the trust, and perception of fairness between job candidates and companies using this technology is not compromised. As this hiring practice is gaining ground, we found that there is a high level of caution and distrust toward such technology.

Keywords: Artificial intelligence, selection process, human resources, innovation in HR

Introduction

Saturated with ever-increasing information quantities, robust and affordable computational technology, artificial intelligence is expanding out into more and more dynamic fields and different areas of life. Business-wise, artificial intelligence is capable of improving virtually all business functions and operations in almost every industry. In line with those changes, the author would like to explore the opportunities and limitations of AI in the HR management and in particular regarding the hiring process.

AI is the development of machines and computer programs that complete tasks that would otherwise require the capabilities of humans (Mard, 2018). Recent advancements of AI enabled Big Data analytics and Machine Learning to be implemented. In essence, humans “feed” machines with large amount of data and then algorithms allow machines to make predictions, conclusions and decisions. According to classified set of examples, the machine is able to build its capacity to further recognize patterns and with more examples eventually get better (Dowd, 2017). Fundamentally, what that means is that humans are teaching the machines to learn and act in the same way as humans would – but faster and better, or at least this is the intention of AI application.

The author believes these are all important subtopics of the research, because they will provide the author and the reader a better understanding of the implication of AI in general. Later on, the author would like to discuss and define the student perception and include factors that affect student’s degree of trust, perception of fairness and to address ethical issues regarding the interview process.

The author of this research would like to answer three main questions regarding implementation of AI in the hiring process:

1. Do job candidates perceive this kind of hiring as fair?

2. What is the trust level of job candidates towards AI/machines when it comes to selection decisions?
3. What are the key ethical issues with AI in hiring?

Literature Overview

The technology is advancing faster and taking less time to be widely adopted than ever before. It took roughly 10,000 years to go from writing to printing press, but only about 500 more to get to the e-mail. It seems we are at the dawn of a new age – the age of artificial intelligence (Smith & Anderson, 2017). AI is making rapid strides. There is an endless discussion on a new evolution that could fundamentally change life on our planet. It is already revolutionizing every aspect of our daily life – work, mobility, medicine, the economy and the communication (Vella, 2017).

To be more precise, the author of this paper would like to narrow a topic and to discuss possible opportunities and limitations regarding the implication of artificial intelligence in Human Resources, most recently in the hiring process. Along the way, we will examine and hopefully gain more general knowledge about the AI and what is happening in the world at this moment regarding the job interviews that evaluate a potential hire like never before.

AI is disrupting HR processes that were up until recently considered as strictly human activities (Chandler, 2018). The author believes we can anticipate the benefits of implementing some of the solutions that will be discussed further on, but there are many controversies surrounding this specific topic that could pose a potential threat for this department.

Artificial Intelligence, Machine Learning & Deep Learning

Artificial intelligence is a broad branch of computer science and its goals are to create systems that can function intelligently and independently (Press, 2017). He suggests the easiest way to think about AI is in the context of a human. After all, humans are the most intelligent creatures we know of.

Humans can speak and listen to communicate through language. This is a field of speech recognition which has proven to be statistically based (Press, 2017). Hence, it is called Statistical Learning. We can write and read text in a language and this is a field of NLP (Natural Language Processing) (Narula, 2018).

Humans can see with our eyes and process what is happening around us. We call this activity of absorbent the field of Computer Vision (Narula, 2018). Previously mentioned field falls under the symbolic way for computers to process information (Narula, 2018). Furthermore, we recognize scenery through our eyes which create images of that world. This field of image processing, which even tough is not directly related to AI is required for Computer Vision (Press, 2017).

In addition, humans can understand our environment and move around fluidly. This field is known to be Robotics (Parloff, 2018). Our intelligence allows us to see patterns (similarities and differences) such as grouping of similar values (Parloff, 2018). For example, humans recognize cats by their distinctive characteristics and can recognize a cat from a dog, however subtle the differences are. We learn by examples, just as machines do. Self-evidently, addressed field is called Pattern Recognition. Machines are even better at pattern recognition than the humans are because they use much more data (Parloff, 2018).

Finally, the common name for all of the above fields is called Machine Learning.

The human brain is a network of neurons which are fed by our learning experience or self-imagination (Narula, 2018). Today, we are able to replicate the structure and the function of the human brain, and provide the machines with cognitive capabilities (Parloff, 2018). All of the mentioned fields are made out of neural networks. The deeper the network is, the more accurate it will become. This field is called Deep Learning and it is prone to learning more complex things (Parloff, 2018).

Currently experts in this field are working on giving the AI the ability to self-simulate (Christian, 2019). For a better understanding of this concept, we will again take humans as an example. Christian observed that before we do a task, we can imagine ourselves doing the task in different ways. Eventually, we decide in our heads which of the scenarios will play out (Christian, 2019). Closely to our experience, machines should eventually be able to “day-dream” and learn by simulating, not by being fed by examples. Controversially, the machines are step by step becoming self-aware (Christian, 2019).

Data Mining

Data – we see this word everywhere these days. At the very center of the data mania is data mining – “the practice of sifting through all those piles of information for insights” (Barocas & Selbst, 2016). Data mining recently made big news with the Cambridge Analytica scandal. The political consultancy reportedly sucked up data about millions of Facebook users without their knowledge, then used it to profile and sway voters in the US, UK, and elsewhere (Lapowsky, 2019).

Similar techniques let companies like Amazon, Facebook, and Google work out what we want to see or buy - sometimes with shocking accuracy (Lapowsky, 2019). But it is not just ads and politics. Data Mining allows airlines to predict who is going to miss a flight, to help doctors spot fatal infections and many more. In other words, data mining is applied statistics – searching

lots of data points for patterns that humans might not spot (Munoz, 2016). The patterns are based on a human intuition, but on whatever the data suggests, so sometimes they can seem incredibly subtle (Stephens, 2018).

The key of data mining is that it achieves description and prediction not through careful study by experts, but by analyzing large amounts of data (Stephens, 2018) . It is discovering hidden patterns from already available data. Later on, the knowledge is being extracted from the data, which can eventually be used for effective decision making (Munoz, 2016).

AI in Hiring Process

These days AI is most certainly a buzzword in Human Resources and it is completely changing the customs of HR as we know it. Almost 500 companies over the world now use some sort of an automation, but some of them are trying to look under the hood of job applicants and assist them in completely new ways (Turing, 2017).

In this moment, hiring process is undergoing a revolution (Jatoba, 2019). In the war for talent, companies are using predictive algorithms, machine learning and data mining as tools to identify the best candidates (Avella & Feloni, 2019). Artificial intelligence is being used to assess human qualities, in the meantime analyzing everything (Jatoba, 2019). These kinds of interviews are full of data: the content of the verbal communication, intonation and non-verbal communication are just a few out of 25 000 data points that companies analyze (Chandler, 2018). What a computer really does is decoding visually what the candidates are saying (Chandler, 2018). It provides possible understanding of a creative thought. For example, if a question is being asked and the applicant tends to look up and think for a minute – that could be a strong non-verbal sign (Ghosh, 2018).

According to (Ghosh, 2018) this kind of a hiring technique is quantifying human behavior, expressions and voices and turning those characteristics into data. Critics, and even some hiring

managers themselves are concerned that these tools might be a potential for bias (Yao, 2017). Some will argue this tool raises issues such as fairness, complete transparency of a character, trust and accuracy (Kim, 2017). Some are even arguing that the governments should check whether these practices are within the law because they feel those machines are starting to know a bit too much (Kim, 2017).

Oppositely, in analyzing these data points, Kevin Parker, the CEO of HireVue, claims that it does a better job eliminating hiring biases than face to face interviews (Avella & Feloni, 2019). Their company strongly believes that their systems will only get better with time.

Do people tend to make biases towards technology, as well? Is it embedded in our nature to believe in human decisions, rather than artificial ones? Are humans prone to automatically develop biases while meeting someone, or in this case, something new? Hopefully, by the end of this research paper we should have a clearer image and answers to some key questions we are concerned about, so it could eventually be useful to potential job candidates being analyzed by AI.

AI Systems used in Hiring – Behavioral Pattern Recognition

One of the companies that is pushing the envelope regarding this topic is HireVue. This team of people provide businesses worldwide a completely new experience of evaluating a potential employee – pre-hire assessments, video interviewing and game-based assessments (Avella & Feloni, 2019). Mark Newman, the founder of mentioned company, claims that this kind of technology will eventually completely eliminate prejudices that human kind tends to have while establishing first contact and by contrast become more focused on what is really important for the company to thrive (Garfield, 2018).

There are about 50 different companies using HireVue assessments, including Unilever and Hilton, which both declined to comment anywhere online. According to (Nicastro, 2019) during

the video interview, a job candidate will be played common, but stressful situations in the business environment while the algorithms are closely monitoring the reactions and capabilities to prove being a problem-solver (Nicastro, 2019).

The notion of micro-expressions seems to prevail in determining whether the candidates will have an opportunity to be recognized as the right fit (Mann & O'neil, 2018). Micro-expression is an analysis software that captures facial movements (smiling, frowning, eyebrow movement) and turn that information into databases which roll together and in no time, become recognized as candidates' emotions, traits, personalities and thinking styles (Nowak, 2019). The system will compare the response style to those who are actually employed by the company. Essentially, the overall performance is being compared with the highest performers (Mann & O'neil, 2018).

When the analysis is over, the employer will first look at the AI score that it is attached to it (Nowak, 2019). Scanned behavior will be shown in a percentage which indicates exactly how much of a fit a certain candidate is (the greater the percentage is, the more likely the candidate will be of interest to the employer) (Nowak, 2019). Candidates are afterwards ranked in order from lowest percentage to highest and potentially watched by someone who might not take the lower percentages into consideration (Nicastro, 2019) Notably, candidates that are not chosen might feel the lack of opportunity to show who they really are, only because in the process there existed no human contact whatsoever (Nowak, 2019). The video interview format and certain set of questions might easily cause a missed opportunity to advance.

One of the participants of HireVue's video interview , Jason Bellini, who did not manage to pass the first assessment nor receive another chance, claims that after this kind of an interview he went to get a job where all of the interviews are being done by a person (Avella & Feloni, 2019). The difference is, he believes, humans actually want to get to know him and look him in the eyes. In further research, the author believes it would be of importance to address the

profiles of people that might have an inclination towards this type of technology and profiles of people that would rather benefit from a human interaction.

As mentioned earlier, Kevin Parker, the CEO of HireVue firmly states that his platform is attempting to remove human biases from the hiring process. In his opinion, the company is currently providing a very fair and leveled playing field for people to really shine (Avella & Feloni, 2019). He stated that “the alternative of not believing this system is being accurate, in a world we live in, might be an illusion of validity”. The assumption is that people get screened and analyzed on the interview process one way or another (Avella & Feloni, 2019).

Ifeoma Anjuwa, sociology and law professor at Cornell University, is currently researching societal implication of platforms like HireVue. According to her research, the impact of an automated interview is far higher than any one potentially bias human (Anjuwa, Automated Employment Discrimination, 2019). She believes experts should take a closer look inside what is really going on with automated hiring. Micro-expression is a still developing science and there is no clear established pattern of what facial expressions is needed for any job (Anjuwa, Automated Employment Discrimination, 2019). Applicants could be eliminated for facial expressions that have nothing to do with skills and experience to perform a job (Anjuwa, Age Discrimination by Platforms, 2019).

Hiring while using AI pose many challenges that can be seen from various angles. Some will argue that only the data points that are relevant and predicting what matters are being taken into consideration. It seems to capture key expressions that have been seen in top performers. In the contrary, since this is a brand-new technology used for this purpose, we can only continue keeping track of what is happening, because there are many pros and cons regarding.

Another example of an implication of such technology is a new program called Mya. Mya scans through resumes, but it also allows conversations with job applicants (Mitroff, 2016). The

program can ask the candidates questions like ‘‘How interested is a potential employee to work on a certain position?’’ or about the experience the applicants have in the field. For example, if Mya asks about the pay range and someone is hesitant about the answer, the program will draw co-relations between how a participant responded to the question and whether or not the participant will retain or perform within the role (Crawford, 2017). According to (Nowak, 2019), as Artificial Intelligence gets better, companies could actually use it to handle the entire hiring process.

What about an AI review of the way we express ourselves on Social Media? Could that be a window into our compatibility for a job? Amarpreet Kalkat, Co-founder and CEO of DeepSense – a team of business problem solvers, is working on a ‘‘meta profile’’ (Nicastro, 2019). Meta Profile, like the system mentioned before, is a behavioral profile of every individual, but this one is based on its involvement and presence online (Mann & O'neil, 2018). This company might be on a good attempt to spread another trend in hiring to completely move away from judging candidates based on their resumes and skills towards decisions based on people’s personalities.

DeepSense uses applicants Twitter, LinkedIn and other social media accounts to do more than just check for questionable behavior. Amarpreet Kalkat claims that they run scientifically based tests to surface people’s underlying personality traits (Nicastro, 2019). Again, even in this case, there is a dose of skepticism coming from experts in the field. The question is, how can a Twitter feed determine anyone’s personality? The answer to this question is, again, given by the CEO of DeepSense. He explained that the system might not be perfect and that today everything is relative. They consider this kind of information as public data and it is believed to be perfectly legal. The information is published willingly out there waiting for someone to use it for creating ever-increasing data bases (Nicastro, 2019).

The company gave an example of Buliegh Nate, a random sample from the social media data base, and described the candidate as “a little anxious person who likes to face challenges upfront” (Avella & Feloni, 2019). To test DeepSenses tools, the author of the source participated in a test and it is the one that DeepSense used in its own benchmark testing. Authors results on the test were similar in two of the four categories (steadiness, dominance, compliance and influence). In two others discrepancy is notably wide (Avella & Feloni, 2019).

How can the companies be confident that the given test is a real reflection of someone’s personality? Is it good enough if it is telling the right things most of the time, but not always? Upon this moment, the number of companies using systems such as these is rising. There is a constant drive to try out new techniques and experiment, even though they might not even be proven to work yet. The author did not manage to find out which companies exactly are using DeepSense’s tests for evaluating their potential hires. The only information that is given and known is the possibility of one company being a large consulting business and it seems they do not want to be discovered using their service.

Is it ethical? That is a much more concerning question Truth is, when someone is posting on Twitter, a person might not even assume that that piece of information can be collected and used in whichever purposes. Many are wondering what the DeepSense is about, what do they really know about people, and most importantly, how accurate is this kind of a futuristic hiring method? Not a lot of transparency at the dawn of AI assessing job candidates. We, the audience, cannot really determine what is in “the black box” nor in the most cases do we know when it is analyzing us. Sometimes, we should ask the tough questions - whether these techniques are doing any favor for the society?

Ethics, Fairness & Trust

In this this part we attempt on exploring issues, policies and problems related to ethics and a fair treatment. What really causes the lack of trust towards AI among potential job candidates? We believe these issues have become more critical in today's environment and are important for answering our questions. The authors objectives are to tackle ethical behavior in human resources, discuss important factors that influence such behavior and examine whether a machine in hiring process can make ethical decisions. After that, we will try to define the perception of fairness and trust in the hiring process.

Ethics in HR

Unfortunately, it is not always clear which decisions are ethical and which are not. In many cases we use the law as a benchmark to determine our behavior (Weaver, 2001). The law is not always the best guide, but it is a key requirement in the hiring process itself (Weaver, 2001). Nevertheless, something may be legal but not right, and something may be right but not legal. Ethical behavior means making decisions that an individual represents, not just what is determined by law (Bonciu, 2008). HR professionals have a great thought of moral, ethical and legal responsibilities. There are many approaches that justify organizational actions, but commonly, ethics is defined as "a moral philosophy that is concerned with a wellbeing of a society" (Woods, 1997).

In today's environment which is changing fast, many companies recognized Human Resources to be a key factor in obtaining competitiveness. (Pfeffer, 1998). Path to sound organizational ethics in human resources begins with the professionals who lead the functions of a particular organization, meaning that HR professionals bear the responsibility of both building and hiring for ethics in order to ensure a morally right working environment and a healthy organization (Campbell, 2007). According to the SHRM association, HR professionals need to be advocates

of human rights, promoters of truth and the builders of trust. Furthermore, they should be aware that every individual, whether applying for a job position or already contributing to the organization, deserves a fair and equal treatment (Weaver, 2001).

The scary thing about unethical behavior at work is that it is not necessarily driven by personal interests (Oglnyemi, 2013). Studies show ethical lapses occur because employees feel pressure to do what they think is best to help their companies (Oglnyemi, 2013). The manager sets the tone and by his/her actions sends signals about what is appropriate behavior (Motual, 2010). Throughout history, ethics showed to be a key issue and there have been many scandals that ultimately affected candidates' trust (Weaver, 2001). Studies have shown suspensions of senior managers in organizations because of corruption, nepotism in hiring creeping in and intolerance towards particular groups of people regarding their gender, race or age (Oglnyemi, 2013).

According to (Gillbert, 2006), the HR professionals should be ‘‘the gatekeepers’’, because they are the people who employ according to candidates first impression and their qualifications, ensuring that the selection policies are appropriately executed (Villegas, 2019). All the key issues that professionals come across should be recognized and accordingly eliminated to be sure that the right people are employed for the right set of skills that could eventually help building a competitive culture that promotes ethical behavior (Gillbert, 2006). In order to position HR in a positive way and to drive ethical awareness in organizations, right systems and controls need to be in place to root out any kind of unethical behavior (Ross, 2014). With that being said, the culture of a particular organization makes or breaks the common goal everyone included is aiming for (Ross, 2014). According to (Gillbert, 2006), continuous awareness is a key to ensure that the right ethical policies are in place to drive the right top of behavior of an organization. Not everybody is up to this task and there are many dilemmas that professionals need to dig in and be aware of, which is ultimately the essence and the core of this department (Motual, 2010).

Artificial Intelligence Ethics & Dilemmas

As mentioned, there is a huge amount of data that reflects actual people's activities and behavior patterns (Williams, 2020). Can that be an honest indication to gain better insight, reduce risk and even deliver valuable propositions of individuals themselves? Many would argue that the available data should be used in those manners (Shirl, 2019), but is it ethical, legal and responsible? These are only some of the things that emerging and moving forward in perpetuity. LinkedIn is currently owning the world's biggest store of information and the data is being used for various experiments, while Google is doing a project called "For Jobs that Will" that collects data related to job candidates, which are eventually being delivered to head hunters (Briant, 2019). Professionals today are facing dilemmas whether to see these kind of tools as an opportunity to become familiar with preferences to then tailor offerings and benefit significantly because of that specific need (Jatoba, 2019). (Shirl, 2019) suggests that today's leaders in each department should be cautious more than ever in the history regarding ethical behavior.

According to Al Adamsen's research, 81% of organizations worldwide are in a way jeopardizing privacy concerns and in that way behaving unethically. The percentage means that four out of five projects are being held up due to ethical concerns (Rolland, 2019). It is a big deal and there are many risks that are running without enough discipline of who is doing what with which data set (Briant, 2019). Data privacy invasion is one of the main concerns today and people are starting to realize that there is a lack of relationship building because of the ability to get all the information there is to know without any interaction (Miller A. , 2019).

There is a huge increase in analytical AI inventions and tools that are being used to figure out and measure something we have no clue of its possible consequences on a society as a whole (Edwards, 2019). According to (Jobersin, 2018), organizations today have a massive

opportunity, but also a massive responsibility. Considering artificial intelligence in hiring, potential employees and existing ones, should be informed whether the data is being used responsibly and consciously in order to gain their trust (Dattner, 2019). According to Adamsen's survey that included 100 HR professionals showed that 93% think AI produced analytics will improve business decisions, while 75% of them think artificial intelligence tools for people analytics will become one of a top HR priority over the next 12 months (Jobersin, 2018). The survey was done in 2018 and today we are witnessing an emergence of tools that are predicted to be helpful. The same tools are being invented in a laboratory and are immediately put in use in decision-making, some possibly not even considering the ethical principles that need to be incorporated (Kotiygan, 2019).

So far, machines are being used to learn from experience and examples and if there is a flaw or an unconscious bias in a given data set, a machine will most likely act in the same way and come up with decisions that could be overlooked by a human because of lack of self-awareness and existing unconscious biases (Lalwani, 2019). Even if there is no flaw in a given set of data, there is a possibility of a biased algorithm that is by far human made (Lalwani, 2019). The systems could easily be manipulated on purpose or unconsciously to make wrong decisions (Polli, 2019). For people who don't understand the makings of such systems, it is very complex to spot where a mistake is and how to fix it (Polli, 2019). A machine cannot yet determine whether something is right or wrong, moral or immoral (Bostrom, 2019). Meaning, artificial intelligence can be as biased as a human and make decisions that are not necessarily ethical (Bostrom, 2019). Today, there is a big rush to innovate and to 'launch fast and often', while many ethical dilemmas still float in the air. According to Princeton University research, the hardest part is recognizing a biased machine, because HR professionals cannot know how and how well the machines are developed (Hasmi, 2019). People will most likely consider these decisions as the best ones (Hasmi, 2019). Companies today are keeping all of their algorithms

private and researchers are lacking the material and tools to examine whether these systems are making ethical decisions (Hasmi, 2019). There is an inclination towards warning the government that should take a deeper look, while HR professionals should be aware of its possible limitations (Hasmi, 2019).

Amazon needed about three years to figure out that the algorithms are biased against women and that women are shown to be less desirable hires, only because the data gave an example that they should hire more men, because the majority of the company consists of men and the majority are recognized as top performers (Kotiygan, 2019). According to a research from Harvard University, Google had a few incidents recently, such as incorporating advertisement algorithms that eventually seemed to show better paid job positions to men than to women (Kotiygan, 2019). Also, a study shows that the ads for arrest records were implying black names because of a historical discrimination. Federal Commission Trade openly stated that it is very much possible to track people with lower income and target them as a potential user of loans with high interests (Williams, 2020). Furthermore, University of Washington researchers found out that Google Image search for business leaders in U.S.A provided only 11% out of 27% of women pictures, first being on a third page that showed a C.E.O. of Barbie Doll (Williams, 2020). This can only be a proof of a personal opinion regarding men or women working in a specific field. Artificial intelligence may be legal, but the discrimination is not. These companies, intentionally or not, already have an existing bias and the machine only reflected what is actually happening underneath the surface (Williams, 2020). Datta (2020) pointed that ‘‘the amoral status of algorithms will not negate the effects on society.’’

In our case, algorithms are considered to be as ‘‘opinions embedded in code’’ determining which candidates should be hired (Jobin, 2019). Mintz (2020) recommended that humans should examine every decision made by a machine and not to only rely on the machine alone. In many cases, algorithms may indicate race and gender while the right set of qualifications

could be easily overlooked (Jobin, 2019). There should exist some set of rules and guidelines by which these systems are being created while the ones that decide to take jobs in a role of an HR professional will need to be ready to recognize and solve deeply rooted ethical issues. (Dattner, 2019)

A recent study considered ethical principles that should be embedded in artificial intelligence for a global consensus (Mintz, 2019). According to (Mintz, 2019), artificial intelligence ethical systems should be transparent and should not jeopardize anyone's privacy, meaning that everyone who is affected by the decision-making should be familiar with what goes into that process and that it should promote a classic human right to be protected. A machine should never do a physical or psychological harm – including discrimination of any kind (Mintz, 2019). An HR professional should constantly monitor each decision being made to eliminate the first signs of moving in the wrong direction (Mintz, 2019). Finally, for artificial intelligence to be ethical, at the end of the day, there needs to be someone responsible for each action regarding other people's lives (Mintz, 2019). He suggests that the goals of these principles are "to ensure that AI systems benefit individuals, society and the environment, respect human rights and uphold privacy rights and data protection."

Interestingly, one of a study shows that more than half of employees surveyed stated that there exist no written policies on ethical use of artificial intelligence bots and 21% 'expressed concern that companies use artificial intelligence in an ethical manner. (Shirl, 2019)' It will eventually become even more complex to gain any insight of which data affected which decision without sufficient knowledge that may even go beyond human capabilities (Shirl, 2019). According to (Mintz, 2019), ethics is still not considered in artificial intelligence because it is moving so fast the people have no time to correct issues from the past. Harvard University is a pioneer in including ethics as a mandatory class to teach future artificial intelligence developers to question all the possible outcomes because in many cases there is no single right

answer (Dattner, 2019). Ultimately, people should create a world they want to live in. (Hasmi, 2019)

Fairness

A thriving workplace is built upon fairness and trust and perceptual processes play a major role in how people feel trusting someone and if they were treated fairly (Rawls, 2001). When people experience these terms, they are more confident, more productive and feel like they work matters (Rawls, 2001). The term organizational fairness refers to employees' perceptions of organizational events, policies and practices as being fair (Elsevier, 2008). According to Elsevier, each organization should care about perception of fairness, because it affects a wide variety of employee attitudes and behaviors including satisfaction, commitment, trust and turnover. Unethical behavior could easily result from perceptions of unfairness (Civai, 2013). In that light, perceived unfairness increases that job candidates may simply decide not to apply for the job offered.

We can think of fairness in three main ways. Distributive fairness refers to the perceived fairness of the outcome received, including the resource of distributions, promotions, hiring, raises and layoff decisions (Krawczyk, 2009). A fair process is as important as a fair outcome (Krawczyk, 2009). Procedural fairness addresses the fairness of the procedures or processes used to generate the outcome (for example which rules were followed and whether people had the opportunity to express opinions and influence the outcome) (Krawczyk, 2009). Furthermore, interactional fairness is considering whether or not the amount of information about the decision and the processes were as adequate, and whether the perceived fairness of the interpersonal treatment and explanations were received during the decision-making process (Namkung, 2009). If artificial intelligence in the hiring process is done ethically and

thoughtfully then the organization could encourage better candidate fits and promote fairness (Etzioni, 2015).

Trust

One of the most important outcomes of consistently treating others fairly is trust, which comes from a sense of common values and beliefs (Smith L. , 2013). Trust is the expectation that another person will not take advantage of him/her regardless of someone's ability to monitor or control them (Smith L. , 2013). It is a key component in social life, but it can be difficult, especially when meeting new people and deciding whom to trust (Smith L. , 2013). Nonetheless, humans make these decisions often within a few hundred milliseconds (Arnott, 2012), but what do people base their trust on? According to (Arnott, 2012), one key factor that affects trust is people's facial features - areas around mouth and eyes. Findings from psychology say that people largely tend to agree on who does or who does not look "trustworthy", but so far there is no concluding evidence that people with "trustworthy" faces also behave in a more trustworthy manner (Arnott, 2012).

When people meet new people for the first time, they often look for signs of authority and competence (Arnott, 2012). Trust happens by listening to what others have to say and determining their reputation (Blobaum, 2016). In fact, prior information about something can have a strong influence on expectations that will result in ignoring trustworthy behavior if already expecting to behave untrustworthy (Blobaum, 2016). Researchers suggest that first impressions go a long way. People are making decisions regarding trusting people, organizations and brands relatively immediately (Blobaum, 2016).

Furthermore, trust is very difficult to restore once it is breached (Schockley, 2016). According to (Schockley, 2016), warmth predominates judgments of trustworthiness, more so than competence. The first and the most important factor that people are basing their judgements of trust on are feeling of benevolence. (Schockley, 2016) claims that the problem in the business

world is that people tend to focus on conveying competence above all else when they want to restore or gain the trust. According to his opinion it is most important first to connect and then to ask for competence second (Schockley, 2016). Competence is much easier to measure meaning the companies can see the performance ratings, sales numbers and return on investment (Schockley, 2016). Warmth is less quantifiable, yet it is what people really think of when they are judging if an organization can be trusted (Schockley, 2016). Some companies and organizations have gotten much better at quantifying warmth or quantifying things like social responsibility, fair practices toward their employees, positive interactions with the community and benevolent actions towards the environment (Schoorman, 2007). It is a step forward in organizations trying to capture warmth in a more quantifiable manner that could be conveyed to potential hires and consumers that care about these dimensions (Schoorman, 2007).

Trust is dynamic, and most of all, trust is an ongoing process (Schoorman, 2007). It is vital for the success of any relationship and organization, as well as the political and economic prosperity of society (Schoorman, 2007). Psychologists and behavioral economists have studied trust for many decades and they have used various simple paradigms in which trust is measured as an investment of time, effort and money (Kramer, 2010). One of the latest paradigms show reciprocity of trust of two people (person A and person B) (Kramer, 2010). Both of them had to decide how much money to invest in each other without previously meeting and just looking at each other photographs on the internet (Kramer, 2010). Initially they had a hundred euros. The paradigm explains that if the trust reciprocates, both of them end up having more money than before and both of them benefit (Kramer, 2010). As this interaction continued, it allowed researchers to look at the development and the dynamics of trust and trust-based relationships (Kramer, 2010). This research yielded many interesting findings. For instance, in some groups trust declined quickly - cooperation broke, nobody won and nobody was happy

(Kramer, 2010). By contrast, in other groups people managed to establish stable, functioning, mutually beneficial relationships (Kramer, 2010). The difference is, those who managed to establish trust were able to forgive each other. In most relationships there is a point where the other person does not behave the way the other side expected to (Kramer, 2010). For instance, person A might be a bit disappointed because person B did not reciprocate as much as person A did. It could be a misunderstanding, teasing and an active breach of trust (Kramer, 2010). In order for the cooperation not to break down, person A needs to overcome uncertainty and anger and provide a second chance - trust and invest more (Kramer, 2010).

New scientific findings argue that trust involves taking other perspectives which should be important during any trust-based interaction (Lassoued, 2015). Established trust is not the end of a story and it is only the beginning (Lassoued, 2015). Trust is necessary and without it any relationship simply could not be established (Lassoued, 2015). The author of the research suggested that another benefit of trust is to recognize the science of distrust. It explained that people who expect the worst are less capable of recognizing trust and are less willing to repair any kind of relationship (Lassoued, 2015).

Methodology

This study used qualitative methodology to explore possible differences of students' perceptions of trust, fairness and ethics in artificial intelligence hiring process. More specifically, focus groups were organized as the method for acquiring qualitative data. This approach allowed us to directly interact with the participants which can support or disagree with one another (Stewart, 2007). Focus groups are primarily used to gather more specific data and it aims to simulate real life and to provide insight into the social construction of meanings, knowledge and opinions in social settings (Stewart, 2007). Data collected from focus group discussions will provide the author a broader range of information and respondents' own words

(Stewart, 2007). Furthermore, this approach will provide us comprehensive data which will later on be compared and analyzed in depth.

One of the downsides of this approach may be the difficulty to manage a group discussion rather than individual interview (Stewart, 2007). Unexpected conflicts may arise in groups which may inhibit discussion. Also, moderators need to be aware of shy participants that may be dominated by more assertive ones which could dominate members' opinion and may influence the group views (Stewart, 2007). This approach requires a carefully trained moderator that understands the dynamics of each group (Stewart, 2007).

For our research we used four groups of senior students and professors from RIT Dubrovnik campus. Three groups consisted out of five and one out of four members. Participants were chosen according to their participation in the classroom, while professors voluntarily applied to participate in one of the discussions. First group was formed based on participants' experience in the face-to-face hiring process with a combination of two professors' perspectives. Second group was formed based on participants who already experienced artificial intelligence interviews recently which may give us another perspective and help us to answer some of our key questions. Third group consisted of 5 senior students that had experience in face-to-face interviews to be able to connect participants' opinions more accurately. The participants of the first three groups were senior HTM students and professors, while the last group was formed out of 5 IT senior students where we expected a different perception and attitude towards the technology. A total of 19 participants were included in our research. Our anchors are our research questions, so the discussion will revolve around fairness, ethics and trust in the hiring process.

Questions, as well as discussions, were divided into three parts based on our three main research questions. We wanted to discover if the participants see artificial intelligence in the hiring

process as a fair approach, what are the critical ethical issues regarding such an approach and finally to find out what is their trust level and what do they perceive as trustworthy behavior in the hiring process. Our goal was to identify themes that emerge from discussions and then report group discussion - outcomes, process and major findings. Author used questions that get participants involved and seek for their reflections, examples and choices. The author created a bulleted outline and the procedure with a list of 6 questions with additional probing questions that were asked during sessions. The transition between question blocks was carefully crafted so that participants stay engaged. To avoid memory lapses a quick turnaround time was crucial. The author watched out for participants' reactions, emotions, tone, trends and comments that seem to appear repeatedly.

Because of the current situation with COVID-19, the participants were asked to discuss our topic in a live video conference. Each discussion was recorded, transcribed and summarized immediately. Participants' attendance was voluntary and the data was interpreted not to reveal participants' names. All of the participants signed an online consent to participate in a senior research project.

Questions asked during every focus group:

- 1. What words come to mind when thinking of artificial intelligence?*
- 2. Ask participants to remember their last interview... How did the participant feel? What did she/he experience?*
- 3. What is participants' opinion on artificial intelligence in the hiring process? (pros and cons of such an approach)*
- 4. Do participants prefer the traditional type of an interview or the artificial intelligence approach?*
- 5. What is participants' perception of fairness of such an approach? What do they perceive as a fair treatment?*
- 6. What are the ethical critical points of the traditional type of hiring process vs artificial intelligence approach?*

7. What determines trust in the hiring process? What are some examples of a trustworthy behavior?

Additional probing questions were asked during the discussions to get more comprehensive data from the participants.

Data Analysis

The overall raw data from the audio/video recordings was examined and transcribed in a text of participants answers. Participants' responses and names were coded not to reveal their name, only the information requested. The groups were coded alphabetically from A to D and participants' names were coded numerically from 1 to 5. After the transcription, answers were formed into Initial Framework Coding and Final Framework Coding which enabled us to note main ideas and themes for each question, group and the participant. Afterwards we reviewed the main ideas according to our questions and identified "keyword frequency" or the percentage of themes in every question. Every keyword was counted in each group so we could analyze the similarities or differences of each group and compare them. The statistical analysis has been used for the purpose of this research with the goal to compare the groups. Further examinations and results are represented in the next part of the paper.

Results

Table 1: Socio-demographic characteristics of participants

<i>Gender</i>	n	%
Male	7	37%
Female	12	63%
TOTAL	19	
<i>Program of study</i>		
Hospitality	14	74%
IT	5	26%

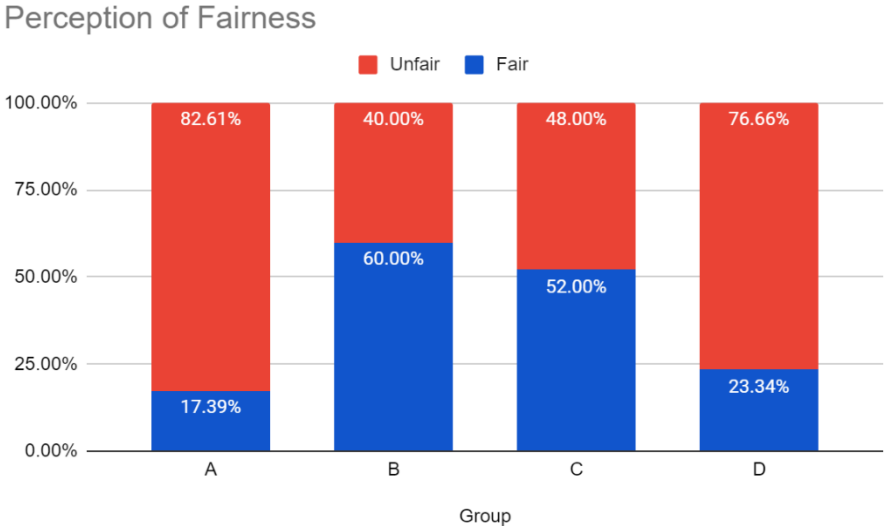
The results are divided into three parts according to our research questions and main topics we wanted to explore (Perception of Fairness, Critical Ethical Issues and Trust & Trustworthy Behavior).

Perception of Fairness Results

The analysis of results regarding participants' perception of fairness revealed the most common answers reported from the participants in every group. In the context of fairness, "human flawed" (18%) was frequently mentioned in all four groups, meaning that the participants tend to perceive machines being flawed depending on a person who designed and programmed the machine. Elimination of biases (18%) has equal frequency as previously mentioned term. Participants would perceive Artificial Intelligence in the hiring process as "fairer" (9%) if this kind of an approach could eliminate biases people tend to have. Lack of education (16.50%) affected participants' perception of fairness and all of them would agree on not having enough explanation on such an approach. Some participants perceive this kind of an approach as "unfair" (10%). Asking non-private questions (41%) was the most frequent topic all of the groups discussed regarding a fair treatment. Feedback (32%) is important and expected as a part of a fair treatment during the hiring process. Frequently mentioned keyword is "non-

discriminative’’ (27%), meaning the participants do not like being discriminated against for their physical looks, religion, race or personal preferences. In chart 1 we see a breakdown of each group and their percentage of perception of fairness.

Chart 1 Perception of Fairness

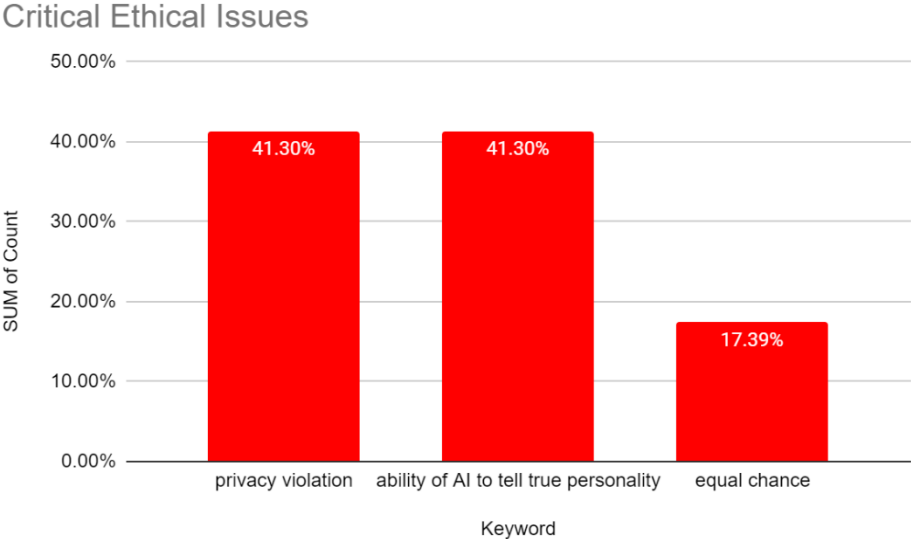


Critical Ethical Issues Results

Participants were asked to reflect on critical ethical points and issues regarding artificial intelligence in the hiring process. All of the participants agreed on such an approach violating their privacy (41.30%) which made it clear that all of the participants tend to think of such an approach as unethical. In their opinion, artificial intelligence is measuring something unknown and unexplained, meaning such process would make the most of them feel uncomfortable. Even though they think of humans as equally unethical and unconscious of their own biases, in their opinion, this kind of an approach would not enhance the hiring process. Furthermore, all of the participants were concerned if the artificial intelligence has the ability to tell their true personality (41.30%), and in that sense, they believe not everyone would get an equal chance (17.39%) to present themselves in their true light. Participants were equally concerned about an ethical artificial intelligence, and they all agreed on that it could be possible only if it is

coming from the right place. If it is not, participants perceive it as equally flawed and unethical as humans who feed the machine with flawed data. Participants agreed on that such an approach was not presented properly and that they do not know what to expect. In chart 2 we see the most frequent critical ethical issues mentioned in each of the groups.

Chart 2 Critical Ethical Issues



Trustworthy Behavior and Trust Level Results

Participants were asked to give an example of trustworthy behavior in the hiring process, more precisely what exactly needs to happen in order for them to trust the process. Most frequent responses in all groups revealed that in order for trust to happen, participants need to be able to establish a relationship (18.4%) with the interviewer, to interact with the other side (17.5%) and to receive some kind of a confirmation (14.6%) when they answer a specific question. In their opinion, trust is an ongoing process (18.4%) and it is earned (18.4%) over time. At this point of time, participants perceive trust as a very complex process which requires human (12.6%)

attributes and a lot of effort from both sides in order for trust to happen and continued to being built. Chart 3 shows the most frequent word mentioned by each of the groups related to trustworthy behavior, while in chart 4 we can see trust level of each group regarding artificial intelligence in the hiring process.

Chart 3 Trustworthy Behavior

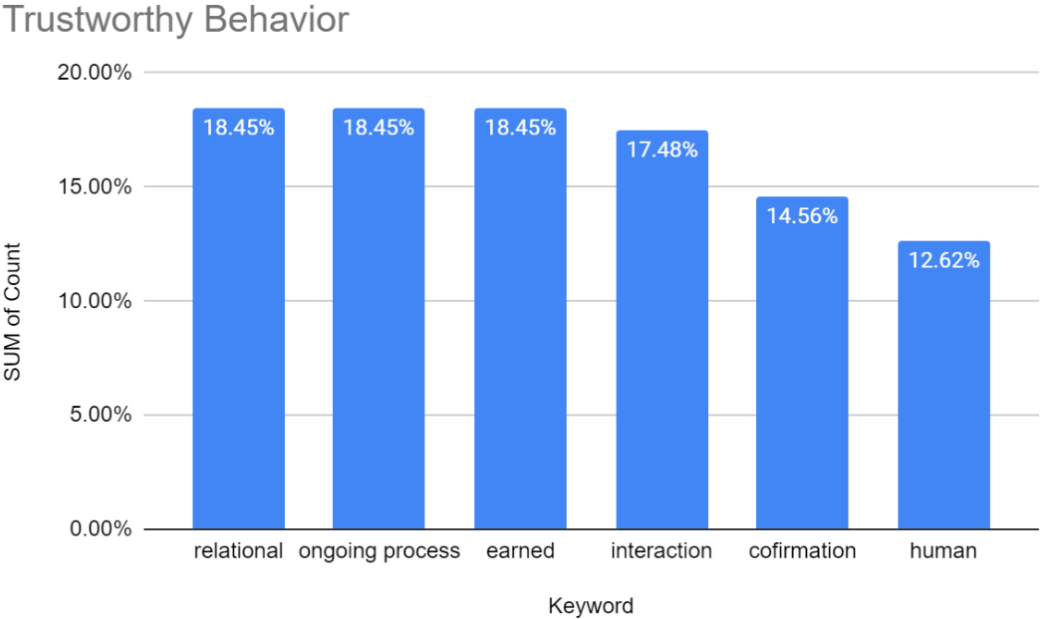
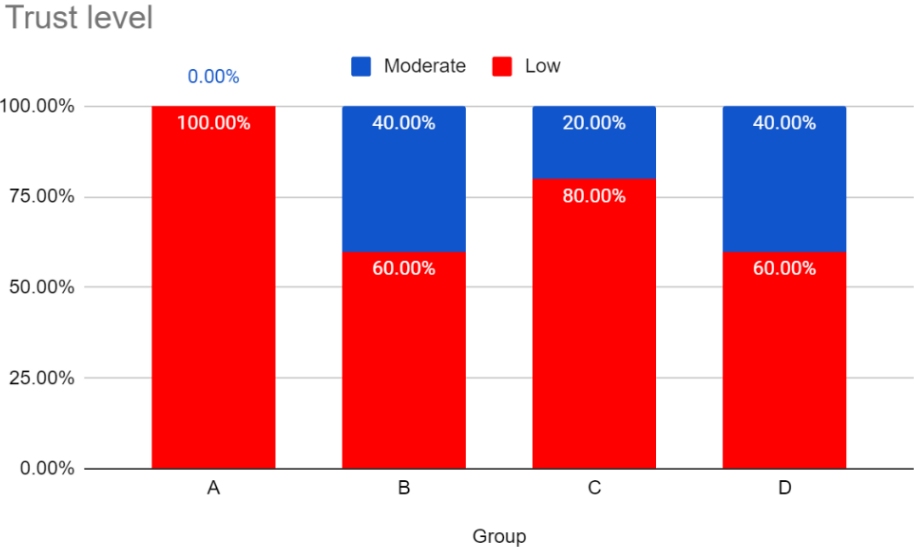


Chart 4 Trust Level



Trust in artificial intelligence in all groups is low, while some of the participants will trust the machine only if it is coming from a right place and has the purpose to eliminate discrimination in the hiring process. This is further apparent in some of the quotes of the participants from each group:

A3: *‘I fear that there is no trust in analytics and that people tend not to trust a machine, because ultimately, trust is relational and it is human. I do not trust a machine because it is still like ‘a black box’ and not explained enough.’*

B2: *‘If artificial intelligence could really eliminate prejudices, over some time – trust could be built. At this point of time, trust is still relational and very human.’*

C3: *‘I feel I cannot trust artificial intelligence. Face-to-face interviews are important because on that spot you find out if the companies’ values are in line with yours and therefore trust can be established.’*

D4: *‘Trust depends on a relationship you have with an interviewer and if you are not able to establish a relationship, there is no trust. There are so many steps in the process of trust. In the interview process it is much easier to trust a human or not to trust a human because there is an emotional component to it. There is someone to hold accountable for. Micro expressions are still not recognized as science, so how can I trust something that is not scientifically proven?’*

Breakdown of groups – Perception of Fairness

Because of variations of keywords and the perception of fairness in each of the groups, we believe it is important to address all groups individually in order to fully understand their perception and their point of view regarding artificial intelligence being perceived as fair or unfair and their opinion of a fair treatment in general. Other variables will not be addressed individually, because of similar keyword frequency which have been mentioned and explained on a cumulative scale.

Group 1 – Students and professors

First group perceived the approach using artificial intelligence as unfair (17%) and human flawed (17%). All participants think students are not being educated (17%) enough on artificial intelligence on our campus. If it could eliminate biases (17%) and prejudices completely, participants in the first group would perceive this approach as fairer. Frequently mentioned term was “inhuman” (9%), “clear purpose” (9%) and the possibility they might feel “uncomfortable” (9%) in such a position. Non-Accountability (5%) seem to bother the participants of the first group. In their opinion a fair treatment would be receiving proper feedback (40%) on time and when needed. Participants of this group do not like being asked private questions (30%) and discrimination (30%) of any type is not perceived as fair.

Group 2 – Face-to-face interviews

Interestingly, the second group tends to perceive artificial intelligence in the hiring process “fairer” (20%) than the traditional one. This group likes the possibility of a machine being objective and eliminating biases (20%). Still, the participants are a bit skeptical and believe the machine can be equally flawed as humans are (20%), depending on a person who programmed the machine and the data set given, which could also, in their opinion, be flawed. Lack of education (20%) seems to be an important factor in each group which could ultimately affect

participants' perception of fairness. In their opinion, artificial intelligence would be less discriminative (20%) than a real person on the other side. Similarly, a fair treatment would be a feedback (39%) from the company interviewing them, not being discriminated against (22) and not being asked any private questions (39%).

Group 3 – AI interview participants

In terms of elimination of biases (20%) in the hiring process, the third group would perceive this kind of an approach as fairer (16%). This group perceives artificial intelligence approach in the hiring process equally flawed as humans (20%) who designed the software. Some of the participants consider this kind of an approach as unfair (4%) and inhuman (8%) in which process they felt uncomfortable. Lack of education (16%) affects their perception of fairness negatively, but the possibility of the other side being non-discriminative (16%) affects their perception positively. Asking questions that are not private (36%) determines a fair treatment in this group, while feedback (36%) in the hiring process is equally important in order for them to feel as treated fairly.

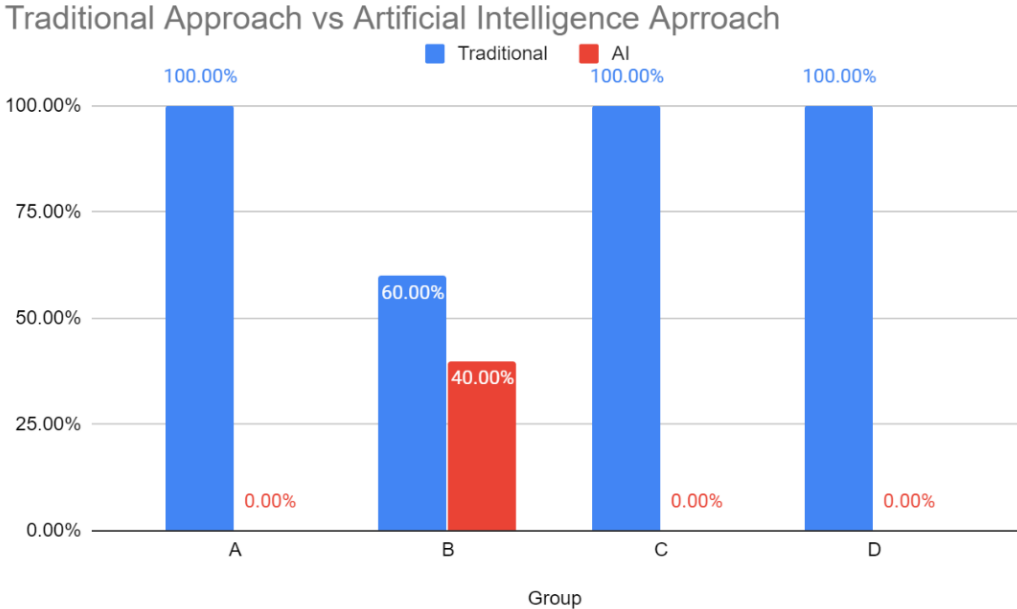
Group 4 – IT students

IT students perceived artificial intelligence in the hiring process as unfair (17%) and all of the participants agreed that such an approach would violate their privacy. Participants were not sure if the purpose of the companies is right and clear (17%) and stated that such machines could be easily flawed (17%) because nobody can be sure if the right set of data is being fed to a machine. If the purpose is right and clear, it could be useful and it should eventually eliminate biases (17%), but in their opinion artificial intelligence is still not capable of that. Participants are concerned if this is coming from a right place, therefore uncertainty affects their perception of fairness. Non-Accountability (13%) of such systems is an important factor of not being treated fairly, meaning if something goes wrong in that process, no one could be held accountable.

Additional Findings

Only two participants said that they would like to try out the artificial intelligence approach out of curiosity or perception of such an approach being fairer, while at this point of time the rest of them would always choose the traditional type of hiring with human on the other side. 79% of the participants agreed on emotional intelligence being of importance during the hiring process, and the rest partially agreed. Even though this question was not the focus of our research, it revealed what they would perceive as a fair treatment. All IT students agreed on that human supervision is necessary and that this kind of a machine cannot be left alone to make decisions only by its judgement. Furthermore, the participants also agreed on a possibility of artificial intelligence to eliminate biases in time, but according to IT students, we are still not there. A collective agreement happened in each group on the machine being unethical if the human that designed such system is unethical and if the data fed to a machine is being flawed. Chart 5 shows how many of the participants would rather choose traditional type of hiring rather than artificial intelligence one.

Chart 5. Traditional approach vs artificial intelligence



Discussion

The primary focus of this research was to answer our three key questions regarding the perception of fairness, ethics and trust in the hiring process using artificial intelligence as a tool to assist companies. Furthermore, the aim was to expand current body of knowledge on artificial intelligence and to explore how and where it is being used in the hiring process using AI by job candidates. We were interested in understanding the upsides, downsides and limitations of such an approach. Additionally, we wanted to determine the factors that affect job candidates' perception of fairness and trustworthiness and to discuss key ethical issues regarding the interview process using artificial intelligence.

According to our participants, all of them believe that, at this point in time, we do not have enough information and transparency about these systems, which ultimately creates uncertainty among them and clearly affects their perception of fairness. Most of them would be glad if such systems have the purpose to eliminate biases in the hiring process, meaning that this would be the right purpose of which nobody is sure about. According to literature (Elsevier, 2008), each organization should care about the perception of fairness, because it affects a wide variety of employee attitudes and employers' image with job candidates. This is important since doubts about unethical behavior could easily arise from the perception of unfairness. A fair selection process should be as important as a fair employee selection outcome. In our case, a candidate may feel as treated unfairly by not receiving any reply nor feedback. Inner workings of artificial intelligence-based selection process are not fully understood and may create distrust. One would expect artificial intelligence to be more thorough and detailed about job candidate's performance during the interview, yet the three participants from our focus group that received identical feedback with same results, which obviously raised question of its validity.

Privacy violation seems to be the biggest concern among our participants, while according to literature (Rolland, 2019), 81% of the companies worldwide are in a way invading privacy and in that way behaving unethically. We assume that the privacy concerns by candidates stem from the type of questions that AI is asking. Namely, AI base interview may mimic the "lie detector" protocol where job candidate's private life or private info may be revealed not by verbal answers provided but by candidate's facial expressions that they can't control. Such AI selection creates uncomfortable setting for job candidates. An ethical artificial intelligence should promote a classic human right to be protected. A machine should never do a physical or psychological harm - including discrimination of any kind. Furthermore, we have learned that it is very hard to recognize if the machine is biased or not and that algorithms are nothing more than opinions embedded in code. Our methodology confirmed that most job candidates that were a part of our research do not see this kind of an approach as fair because these systems could be equally flawed as humans. According to literature (Bostrom, 2019) our participants are not wrong. Everything depends on the database that is being fed to a machine, which could easily have biased historical patterns. There are many examples in which companies were not aware of their own unconscious biases, and we cannot expect a machine to behave any differently. Our participants were also concerned about not receiving an equal chance to get a certain job and that right set of qualifications could easily be overlooked.

Ethical principles in hiring process should be embedded in artificial intelligence and an overall consensus suggests that in order to be perceived as ethical, such systems should not jeopardize anyone's privacy. Furthermore, everybody should be familiar with what goes into that process. Participants are not sure whether this kind of an approach could really determine their true personality, meaning that the company should inform every participant what exactly is being measured and to which extent it will affect their decision. Everything regarding this process should be transparent and visible to a candidate that is undergoing through such an interview.

Finally, for artificial intelligence to be ethical, at the end of the day, there needs to be someone responsible for each action regarding other people's lives

On the other hand, a fair treatment in the hiring process, according to our participants, would include non-private questions, a non-discriminative person on the other side and a feedback regarding the whole process. It seems that artificial intelligence has the potential to treat candidates fairly, but because of the ethical concerns - trust cannot be established yet. Trust level is low among all groups, but mainly because of such systems not being able to respond, to establish a relationship and to help get through the process. According to our participants trust is a complex process earned and established over time. If we want to integrate machines into our society, we need to design them to interact with humans in a way that would make humans feel comfortable and make them trust machines more to be able to work with them and to rely on them. Trust drives collaboration and is fundamental to almost every action, relationship, and transaction in society, but we live in an era when technology is rapidly changing who and how we trust.

In order for trust to be an attribute in the hiring process it has to work as a continual process and it has to be given from both sides. The increasing complexity of the world we live in has the profound impact on the relationships of businesses, customers and future job candidates, as well. Many people have the impression that our lives are being taken over by something we do not understand. Even more important for people from the heart of the organization is to demonstrate accountability for the data and privacy for their employees and job candidates. There is a need to redefine trust in such an approach and by time it will become an even bigger challenge.

Artificial intelligence in the hiring process is based on data and data is not the truth and reality. Author believes artificial intelligence in this context is far from being objective. The problem really lies along every step in the way. From the moment they collect data to the way the

algorithms are being designed to how it is being analyzed, employed and being used. Each of these steps requires human decisions and are determined by human motivation and rarely do they stop themselves and ask who is taking these decisions, who is benefiting from them and who is being excluded or harmed. Artificial intelligence in the hiring process is built on the same standards as human decision making, meaning it can make the same mistakes as humans do. Mistakes affect real people and sometimes technological advancements are not enough. We need to be able to hold artificial intelligence accountable to the same high standards that we hold each other. This includes asking the right questions where needed and talking about controversies that surround us. When it comes to companies, we shouldn't underestimate the power of collective action. Due to public pressure, large companies have rolled back, stop and pause their problematic artificial intelligence that was used in the hiring process.

We should be aware of the complexity and careful how it is being used and to which extent. Ideally, we can have artificial intelligence to show us not just the world we are in, but the world that we want to be a part of. The potential is incredible, but only if the purpose is right and clear. Eventually, if all of the above becomes clear and right, trust will be built. Furthermore, we need to have an ethical and fundamental rights impact assessment. How will artificial intelligence influence many important daily issues? Should individuals have to undergo facial recognition? We need to do more work to understand what is going on before we can create policies and regulations. Artificial intelligence does not give companies a get out of ethics free card. We cannot escape difficult questions and people should cultivate algorithm suspicion, scrutiny and investigation. Also, there should exist algorithmic accountability and meaningful transparency. Yes, we can and we should use computation to help us make better decisions, but we have to own up to our own moral responsibility to judgment and use algorithms within that framework. At this point, AI may sound as a way to assist us in HR hiring processes but as Campbell noted, HR professionals bear the responsibility of both building and hiring for ethics

in order to ensure a morally right working environment and a healthy organization (Campbell, 2007). If the AI in hiring means that the responsibility is being moved away from humans (and shifted to machines) then clearly this will not work and things may be open to even more controversy.

The advances that we see in computer vision that are able to detect people's expressions or body posture and, in a way, interpret human behavior in their own way should be used to improve interaction between humans and machines. Trust is a central human relationship, and is critical for both human-human and human-machine interactions. At the same time, technological advances can threaten trust by, for example, making it harder for people to understand these new technologies. All technological advancements should be used to make a positive impact in the human resources and everyone should hold ever tighter to human values and human ethics. Finally, our participants agreed on emotional intelligence being of importance in the hiring process. We would agree that machines in the hiring process should be created to be empathetic and non-judgmental. To, conclude, we hope that this research opened the door for additional future studies and debates around the use of AI in the HR context.

Limitations

In terms of the limitation of this research, it was done in less than 15 weeks. In addition, everything had to be done online due to Coronavirus. The sample that was used was rather small, participants were from RIT Dubrovnik Campus. Therefore, if there is an opportunity, further research on the topic should include bigger samples.

One of the benefits of this research is that it contributes to further understanding of artificial intelligence in the hiring process, its opportunities and limitations in HR activities. Companies and recruiters can learn a lot from this research while recruiting and selecting candidates.

Additionally, we believe ethics and trust should be even further researched. There is a possibility that personality types are connected with such an approach, and for deeper insight into candidates' attitudes, we suggest finding a connection between these two.

Bibliography

- Anjuwa, I. (2019). *Age Discrimination by Platforms*. Harvard University.
- Anjuwa, I. (2019). *Automated Employment Discrimination*. Cornell University.
- Arnott, D. C. (2012). *Trust - Current Thinking and Future Research*. Emerald Publishing Limited .
- Avella, J., & Feloni, R. (2019). We tried the AI Software companies like Unilever use to analyze job applicants. *Business Insider*.
- Barocas, S., & Selbst, A. D. (2016). *Big Data's Disparate Impact*. Cornell University Research Center.
- Blobaum, B. (2016). *Trust and Communication in a Digitalized World*. Springer.
- Bonciu, C. (2008). Overview on Business Ethics and Human Resource Management Ethics. University of Bucharest.
- Bostrom, N. (2019). *The Ethics of AI*. Machine Intelligence Research Institute.
- Briant, J. (2019). The Good, the Bad and the Ugly Sides of Rapid AI Development. *Snap Out*.
- Campbell, T. (2007). *Human Resource Management : Ethics and Employment*. Oxford University Press.
- Chandler, S. (2018). The AI Chatbot Will Hire You Now. *WIRED*.
- Christian, J. (2019). New Robot Is "On The Path to Machine Self-Awareness". *Futurism*.
- Civai, C. (2013). Rejecting unfairness: emotion-driven reaction or cognitive heuristic? *Department of Economics, College of Liberal Arts, University of Minnesota*.
- Crawford, E. (2017). How I Turned My Resume into a Bot. *MEDIUM*.
- Dattner, B. (2019). The Legal and Ethical Implications of Using AI in Hiring. *Harvard Business Review*.
- Edwards, N. (2019). Ethics & Bias : AI in the Spotlight. *ItPro*.
- Elsevier. (2008). Testing theories of fairness - Intentions matter. *Games and Economic Behavior*.
- Etzioni, A. (2015). The Ethics Bot: AI Needs Legal and Ethical Guidance.
- Garfield, L. (2018). A Startup Claims to have Finally Figured Out How to get rid of Bias in Hiring with AI. *Business Insider*.
- Ghosh, D. (2018). AI is the Future of Hiring, But It's Far from Immune to Bias. *QUARTZ*.
- Gillbert, J. (2006). *Going Beyond the Law, Achieving Ethics and Fairness in Hiring*. Springer.

- Hasmi, A. (2019). AI Ethics: The Next Big Thing in Governments . *World Government Summit*.
- Jatoba, M. (2019). *Artificial Intelligence in Recruitment and Selection : Innovations and Impacts for the HR Managers*. International Scientific Conference on Economic and Social Development.
- Jobersin. (2018). The Ethics of AI : It is Trickier than You Think. *HR Technologist*.
- Jobin, A. (2019). *Artificial Intelligence: the global landscape of ethics guidelines*. Health Ethics & Policy Lab.
- Kim, P. (2017). *Data Driven Discrimination at Work*. Washington University in St. Louis Legal Studies Research Paper.
- Kotiygan, A. (2019). *An Overview of Ethical Issues in Using AI Systems with a Case Study of Amazon's AI based Hiring Tool*. Dublin City University.
- Krawczyk, M. W. (2009). A model of procedural and distributive fairness. *Theory and Decision*.
- Lalwani, P. (2019). The Ethics of AI in HR. *HR Technologist*.
- Lapowsky, I. (2019). How Cambridge Analytica Sparked the Great Privacy Awakening. *WIRED*.
- Mann, G., & O'neil, C. (2018). *Hiring Algorithms Are not Neutral*. Harvard Business School.
- Miller, A. (2019). Humans and AI Interaction. *Univerity of Derby*.
- Miller, C. C. (2018). When Algorithms Discriminate. *New York Times*.
- Mintz, S. (2019). *Ethics and AI: Are We Ready for the Rise of AI?* Harvard University .
- Mitroff, S. (2016). What is a Bot? *CNET*.
- Motual, S. (2010). *Applied Ethics and Human Rights*. Anthem Press.
- Munoz, C. (2016). *BIG DATA: A Report on Alghorithmic Systems, Opportunity and Civil Rights*. Washington D.C., Executive Office of the President.
- Namkung, Y. (2009). The effects of interactional fairness on satisfaction and behavioral intentions: Mature versus non-mature customers. *International Journal of Hospitality Management*.
- Narula, G. (2018). Everyday Examples of Artificial Intelligence and Machine Learning. *Tech Emergance*.
- Nicastro, D. (2019). 7 Ways of Reinventing Human Resources. *CMS Wire*.
- Nowak, M. (2019). How is AI Transforming Human Resources . *Monterail*.
- Oglnyemi, K. (2013). *Responsible Management: Understanding Human Nature, Ethics and Sustainability*. Business Expert Press.
- Parloff, R. (2018). The Deep Learning Revolution. *TIME (Special Edition)*.

- Perić, P. (2018). AI in Hiring Process. *Wired*.
- Polli, F. (2019). Building Ethical AI for Talent Management. *Harvard Business Review*.
- Press, G. (2017). A Very Short History of Artificial Intelligence. *FORBES*.
- Rawls, J. (2001). Justice as Fairness. *The Philosophical Review*.
- Researchers, P. U. (2018). AI ETHICS.
- Rolland, M. (2019). *Hire Education: AI in Business*. The Economist.
- Ross, H. (2014). *Everyday Bias: Identifying and Navigating Unconscious Judgements*. Bernan Press.
- Schockley, E. (2016). *Interdisciplinary Perspectives on Trust*. Springer.
- Schoorman, F. D. (2007). *An Integrative Model of Organizational Trust: Past, Present, and Future*. Academy of Management Review.
- Shirl, A. (2019). *Exploring Artificial Intelligence and Ethics: A Metadata Analytics Approach*. University of Alberta.
- Smith, A., & Anderson, M. (2017). Automation in Everyday Life. *Pew Research Center*.
- Smith, L. (2013). *The Worlds of the Trust*. Cambridge University Press.
- Stephens, A. (2018). Big Data has the Potential to Both Hurt and Help Disadvantaged. *NEXT CITY*.
- Turing, A. (2017). Machine Learning and The Impact of Artificial Intelligence on Jobs. *FORBES*.
- Vella, M. (2017). How A.I. is Transforming Our World. *TIME (Special Edition)*.
- Villegas, S. (2019). *Human Resources as Ethical Gatekeepers: Hiring Ethics and Employee Selection*. George Fox University.
- Weaver, G. R. (2001). The Role of Human Resources in Ethics/ Compliance Management : A Fairness Perspective. *Human Resource Management Review*, Spring/Summer, Issue 1/2.
- Williams, B. (2020). Ethics fo AI - A Way Forward or False Down. Communication Chamber.
- Woods, R. H. (1997). *Human Resource Management, Second Editon* . Educational Institute of the American Hotel Association.
- Yao, M. (2017). *Fighting Algorithmic Bias and Homogenous Thinking in AI*. *FORBES*.