

Abstract

Amongst all things that characterize human beings, creativity is perhaps the most distinguishable attribute that has for a long time separated the abilities of man and machine. The idea stems from the belief that creativity is sourced from emotions and experience that simply cannot be replicated through data systems. However, recent advancements in AI systems have challenged this notion. Machine systems are now also capable of creating unique artwork to an extent that they preferred over human created art. This has obviously challenged the existing legal systems on intellectual property rights and liability laws. This paper will therefore explore the legal issues concerning work created by AI and recommend key ideas that may be used in framing legislations for a near future that will be dominated by machine created work. The paper explores that manner in which creativity differs in art created by machines has compared to that created by AI. The paper then presents two main reasons that prevent application of IPR laws to machines (1) AI do not possess the need for economic incentive or the need for recognition, (2) AI cannot be held liable to copyright infringement as they there is no expected cost or expected benefit from AI breaking the law. The paper then explores the possibility of applying IPR on either of the three suggested parties: the investing company, the Programmer and the end user.

A study conducted by the Artificial Intelligence (AI) Laboratory at Rutgers University found that respondents preferred art created by AI over art created by humans (Cascone, 2017). Up until now AI has predominantly served as a technical tool to enhance and supplement work done by humans. However, the results of this study provide a glimpse into as possible future where 'creativity', a quality so intrinsically unique to humans, may no longer be held by humans alone. Of all things that distinguish humans from machines, the ability to create art and the ability to communicate one's emotions through it has been one of the prime markers of difference. With the increasing involvement of AI in creative mediums, the lack of clarity in the legal aspects of Intellectual property and copyright become more concerning by the day. This paper will attempt to explore the legal issues concerning work created by AI and recommend key ideas that may be used in framing legislations for a near future that will be dominated by machine created work.

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The above mentioned study conducted by the AI Lab aimed at finding out if people could distinguish machine generated art from other art (Cascone, 2017). Participants in the study were asked to look through a mix of images created by both humans and AI. The machine generated images were created by two systems, the Generative Adversarial Networks (GAN) and the Creative Adversarial Networks (CAN).

In GAN, the neural network of the machine is taught to recognize and learn from various painting styles such as Fauvism, Abstract Expressionism, Rococo, Colour fields etc. (Cascone, 2017). Two networks of the system operate to generate the art work. While one of the networks produces the work depending on the styles of painting it has been taught, the other network will judge and modify the work.

On the other hand, CAN is a modification of GAN where the system has been Programed to generate art work that deviates from the existing artistic styles, thereby producing something entirely new. When participants were asked to identify work created by humans, it was found that 53% of the images generated by CAN and 35% of the images by GAN were incorrectly identified as human created artwork (Cascone, 2017). Further, participants also felt that the AI created artwork was more inspiring and communicative.

Artwork produced by both GAN and CAN was based on a software design decided by the Programmer. While GAN was Programed to conform to existing styles, CAN was Programed to deviate from these styles. The Programmer however had nothing to do with the creativity of the final execution of the artwork. Machine learning of this form is being used in other application of AI as well, where the machine learns to make correlations and decisions by itself from the data provided by the Programmer.

One might argue that machine learning artwork differs from artwork produced by humans as machines are 'Programed' and humans are not. Does this then mean that experiences and memory that act as triggers for human artists are not considered as data for the brain? The AI neural system is attempting to replicate the human neural system. Just as how human's create art by processing information according to the individual's experiences, machines are also processing information based on data that is provided. Hence, the process of output of artwork through the input of data is fundamentally the same in both humans and machines.

What differs is the nature of the data. In humans, the artwork is a manifestation of memories that are based on human experiences which grants the art a touch of relativity to the individual who views it. The individual experiencing the

view of an artwork is in some way comforted by the idea that their sufferings are shared by someone else. AI artwork is however based on data that has no correlation with emotions experienced. Since experienced emotions are not the source of art created by AI, this difference forms the crux of the distinction made between human and AI art. It is this very difference that treats art created by AI independently from the rest both in terms of viewership as well as legal ownership of the created work.

The existing legal framework regarding copyright of AI work is extremely vague across the globe. There is no direct reference made in legislations regarding work produced by AI. However, a recent legal case in the United States, involving a picture taken by a macaque can help elucidate the current legal standing on work produced by non-humans. A monkey accidentally took a selfie from a camera it had picked up from a photographer. The picture soon went viral and the photographer claimed rights to the photo. People for Ethical Treatment of Animals (PETA) argued that the rights to the photo must remain with the monkey as the camera was a mere tool taken from the photographer (Hart, 2017). However, the San Francisco court stated that rights to the photograph cannot go to the monkey as the copyright law mandates human authorship. Therefore, art created by AI will also not be liable to receiving copyright as it would go against the requirement of being human. This requirement is reflected in decisions made in the EU as well. The Court of Justice of the European Union stated in the *C-5/08 Infopaq International A/S v Danske Dagbaldes Forening* case stated that copyright is applicable to “original” work and the originality of the work should be reflective of the author’s personality (Guadamuz, 2017). Again, the requirement for the author to have a “personality” prevents AI from ownership.

It must however be considered that having no copyright on machine made art can be highly deleterious to the economy. Currently, AI is being used in the music and gaming industry (Guadamuz, 2017). If there is no copyright on the AI generated music being used in games and movies, then anybody would be free to reuse it. This would be extremely disadvantageous to companies that are selling AI generated music as their work would never be protected by the law. Further, not having any copyright on AI generated work would result in less funding and investments in automated systems. There would be no incentive for funding innovation that does not provide any returns. It is therefore understandable why the hype created over AI through science-fiction books, movies, etc. is necessary for attracting investment in an area where legal frameworks are extremely vague.

According to Eran Kahana, a fellow of Stanford Law School, AI must not be granted ownerships as the entire purpose of intellectual property is to prevent others from copying or using it so that the creator remains the prime benefiter (Hart, 2017). AI however does not have these needs as it is used as a tool for somebody else's benefit. IP laws exist because they allow creators to be recognized and take pride in their inventions. The pride is a result of being the first one to bring forth an idea or innovation and establish an intellectual superiority over others. The want to be recognized by the world is lacking in AI. Hence, the very basis of Intellectual Property fails for work created by AI.

Further, by including AI in property rights legislations, AI would also become liable to compensation for infringement of copyright law. This is where the argument to include AI within the context of law completely fails. The very functioning of law is based on the simple idea that if the expected cost of breaking the law is greater than the expected benefit of committing the crime, then crime may be prevented. Hence, high punitive costs will act as a deterrent for individual to commit crime. For AI, there is no expected cost and there is no expected benefit. If AI decides to produce its art through copyright infringement, there is no expected benefit for the AI from it. Further, this very action of the AI is based on its programming and not based on personal agenda.

Therefore, the next big question is, if not AI, then who gets ownership of the work created by AI? It is currently presumed that the copyright should be granted to the individual that contributes the most, or plays the most extensive role in creation of the work (Simonite, 2017). What "extensive" means however is yet to be defined. There are three possible parties that can have claim to copyright on AI work: end users, Programmers and the financial funders i.e. large companies. The nature of contribution of each of these parties is starkly varied. The investing company provides monetary contribution through direct funding into research and manufacture. In contrast, Programmers contribute through intellectual and knowledge input. Lastly, end users creatively contribute to the final work by using AI as a tool to create art. Since the type of contribution is so varied, it is difficult to ascertain which contribution plays an extensive role in the creation. One is therefore left to contemplate on which out of three contributions should receive the right to ownership.

In most cases, the Programmer is employed by a company to create software using the resources provided by the company. In India, according to copyright act, the employer has copyright over the work produced by the employee. Therefore, Programmers in this case would hold no claim over intellectual property rights of the work produced by AI.

If one considers AI as tool for creativity, then the end user should ideally receive copyright. A comparison can be drawn to the usage of Microsoft word. Even though Microsoft word acts as a tool for authors to create literary work, the rights to the work goes to the author and not Microsoft. In contrast, if one considers the expected benefits to society through copyright, granting investing companies copyright would ensure continued inflow of funding for research and innovation.

However, work generated by AI presents a more complex case. The type of contribution that deserves copyright would depend on whether AI is producing the art on its own or through collaboration with a user. If one considers art created by GAN, then the end user has very little to do with the creativity of the final artwork. Instead, the Programmer has contributed more to the creativity of the artwork by designing the AI to deviate from artistic styles. However, if one considers the end user as the employer and the AU as the employee, then the user would have claim to the produced work. Hence, in case of work generated by CAN, the user or the employer should receive rights over the artwork produced.

In contrast, art created by GAN is based on the data provided by the user. An artist, Mario Klingemann, recently used GAN to generate art by feeding in data such as photos, videos and line drawings (Simonite, 2017). This has inspired other artists such as Albert Barqué-Duran to produce art using GAN software. In this scenario, since GAN is being used as tool for producing art through data fed in by the user, the user should optimally be granted rights over the work. This is because the creativity of the artwork is a result of the interaction between the data input by the user and the Program design of the AI.

It is therefore established that in both types of AI, GAN and CAN, copyright should be granted to the user.

It must be iterated that the above solution to AI legal issues is based on the premise that machines have no emotions and hence do not possess the need to hold copyright. There is no economic incentive and they do want recognition for their work. What happens then when we start programming machines to possess emotions? Programming emotions into AI is a highly controversial subject as it further puts into questions and complicates our understanding of legal issues. If AI, through machine learning, is Programed to learn and incorporate human emotions within itself, what would prevent it from wanting legal rights for it's work. Further, how would one differently place emotions possessed by AI from those possessed by humans. As AI is Programed to become more human in it's characteristic nature, the further we depart from our current approach to AI legal issues.

In conclusion, this paper reviewed the current legal position on art created by AI and has found that current legislation on the matter are extremely vague. According to legal systems in the United States and Europe, copyright cannot be given to AI as it is not human and does not possess a “personality”. The paper has argued that the current AI systems cannot receive intellectual property rights as AI do not possess the need for economic incentive or the need for recognition. Further, they cannot be held liable to copyright infringement as they there is no expected cost or expected benefit from AI breaking the law. Since, the copyright of the artwork can not be awarded to the AI itself, we are left with three possible parties to consider i.e. the investing company, the Programmer and the end user. The “extent” of contribution can not be used as a measure to decide the copyright holder as the nature of contribution vastly varies amongst the three parties. Further, since the employer in most cases is employed by a company and has created the AI using the company resources, he/she cannot hold rights over the work. If AI is considered as tool for creativity, an in the case of GAN, then the user will hold rights to the work. This is similar to how Microsoft does not own copyright over literary work written using MS word. Further, even if the user does not have anything to do with the creativity of the final work, as it is seen in the case of CAN, the user becomes the employer and the AI becomes the employee thereby making the user the copyright holder.

However, with constant advancement being made in AI, the legal issues will continue to get more complex. This is especially so if the intelligence granted to AI become so advanced that it starts replicating the human need of recognition. Therefore, it is imperative for legal systems to keep pace with the advancements being made in AI. In the words of Stephen Hawking, “the short-term impact of AI depends on who controls it; the long-term impact depends on whether it can be controlled at all” (Stephen, Straut, Max, & Frank, 2014).

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