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IMAGE-GENERATING NEURAL NETWORKS: PERSPECTIVES AND ARTISTS' CONCERNS

Samsonchyk A.I.

Belarusian State University of Informatics and Radioelectronics, Minsk, Republic of Belarus

Malikova I.G. – senior lecturer of the department of foreign languages

Annotation. The article discusses the recent development tendencies of AI and Neural Network technologies. The principles of AI and Neural Network technology are covered briefly. The concerns of artists regarding perspectives of image-generating AI, which can lead to the loss of work for them are considered.

Keywords: AI, neural network, image-generating AI.

Introduction. In recent times, one of the most widespread and most actively discussed scientific topics has been the Neural Network technologies, which have made a huge leap in their development. For example, around 37% of businesses have had AI integrated into them, and most of the companies think it can bring them serious advantages. It surely has a big amount of advantages, still, as Sophoculus once said, «Nothing vast enters the life of mortals without a curse», and so, according to the statistics, around 80% of digital marketers predict risks in the field of content writing [1]. There are text-based AIs that can write scenarios or answer questions, as well as there are the ones capable of generating full-fledged digital artwork using only the resources of user's PC and a single line of prompt. Today, we will cover briefly how image-generating AIs work, and why their working principles make digital artists seriously disturbed.

Main part. So, to get into how image-generating AI is working, first and foremost we need to know what neural network actually is. Neural network is a chassis architecture of AI, that is organizing and processing data in a way similar to the one happening in human brain [2]. Generally speaking, it is one of the main concepts of AI-building, based on data analysis, recognition and, most importantly, comparison.

Image-generating AIs. Neural Networks are not only capable of processing a plain text, they can as well work with images, which is, in fact, a giant leap forward in the development of AIs, as it is literally taking their capabilities into a whole new dimension. And, with that, it takes a lot of additional processing hardware power just to produce a singular image. Stable Diffusion, for example, requires shocking 16 Gigabytes of RAM and 8 Gigabyte VRAM GPU in a PC. This is due to constant comparison to the Neural Network models, which happen dynamically in the process [3]. Yet, the result is stunning. Doubling the dimensions also means doubling the learning material for AI. And thus, it requires a gigantic amount of images to actually start recognizing the simplest patterns. This problem has been solved by making AIs open-sourced, which made pretty much anyone able to create their own models to make the learning process of AI faster. But, as users can invest by sorting the «Good» and «Bad» generated images to make generation cleaner, they can straightforwardly steal pictures of digital artists, just so they can make AI copy their style.

Artists' concerns. Thus, artists have two main arguments against AI technologies. The first is the fact that their work is getting less valuable. The very probability that AI will someday manage to completely replace all the artists is more of a dystopian concept than an actual chance, but it can have a huge impact on how the society values the real art. This is due to consumers being less motivated paying for artwork when they can buy a subscription to some AI generator for the same price and have decent artwork on demand. The second and the biggest argument is that AI is using the works of the artists to create its own art. Many artists are openly opposing the AIs because their work is getting literally stolen to be provided as a learning material. And that fact, overlapping with the first argument, is truly creating the resonance in the artist community. For example, one of the most well-known cases of AI copying artist's style is Greg Rutkowski [4]. He

has a unique style, which cannot be mistaken with others, but still, there are now countless images drawn in a style that looks exactly like his, generated by AI. Here is the example:

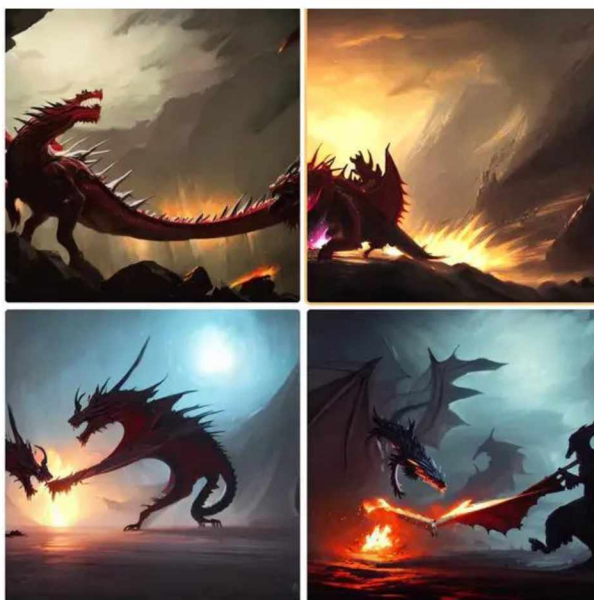Figure 1 – «Dragon Cage by Greg Rutkowski»

Figure 2 – Images created using «Dragon battle with a man at night in the style of Greg Rutkowski» as prompt in Stable Diffusion

Artists are trying to limit access to their work, either by stopping posting their works online in a free access and moving completely to posting only private commissions, or by quitting their career at all. Artists that are not so radical about it still write «Do not use my works for AI learning» in their profile statuses in the social media that they use to distribute their works on.

Conclusion. Thus, artists who draw digital art are really on the edge, because AI not only makes generating artwork open to everyone who wants it, making their work less relevant, but AI is usually being taught to use their artwork, which makes the situation even more disturbing. Real artists are not up to be replaced, however, the value of being one is at risk of dropping as never before.

References

1. 149 AI Statistics: The Present & Future Of AI At Your Fingertip [Electronic resource]. – Mode of access: https://www.authorityhacker.com/ai-statistics/. – Date of access: 02.02.2024.

2. Machine learning versus neural networks [Electronic resource]. – Mode of access: https://www.simplilearn.com/tutorials/machine-learning-tutorial/machine-learning-vs-neural-networks. – Date of access: 02.02.2024.

3. How to use Stable Diffusion to create AI art on your PC / D. Wolski [Electronic resource]. – Mode of access: https://www.pcworld.com/article/2072987/stable-diffusion-generate-ai-images-locally-on-the-pc.html#:~:text=Both%20tools%20have%20different%20strengths,a%20well%2Dequipped%20gaming%20PC. – Date of access: 03.02.2024.

4. Artists say AI image generators are copying their style to make thousands of new images – and it's completely out of their control / B. Nolan [Electronic resource]. – Mode of access: https://www.businessinsider.com/ai-image-generators-artists-copying-style-thousands-images-2022-10. – Date of access: 03.02.2024.