Creative Machine

Unleashing a new wave of man-machine creativity by letting AI do the heavy lifting of producing it

What if AI writes your haikus? It seemed the final frontier; where technology would automate our repetitive, mind-numbing tasks, we would find our new forte as humans in creativity – an area where AI could never match us. Turns out that Generative Adversarial Networks (GANs) – in which AI systems collaborate in creating and testing results – can create spectacular results in areas as diverse as images, video, audio, text, art, products, medicines, games, and even entire business models. When done well, AI and humans together unleash a new era of great creativity. But the boundaries of what is real and what is fake are stretched, and it takes more than a poetic mind to deal with that.

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WHAT

- GANs let two self-learning neural networks compete against each other: the first one, the generator, attempts to produce realistic data. The second one, the discriminator, tries to determine whether the data is plausible. A feedback loop between the two continuously improves the performance of each other.
- GAN technology has a multitude of applications, from design of software to interiors of houses and fashion, but also the creation of text, music, video, audio, books, art, and test data.
- The possibilities are truly endless, and we are only scratching the surface on the future capabilities of creative AI.

USE

- Biotechnology company, Insilico Medicine announced a generative AI solution was key in their discovery of a medicine for the prevention of fibrosis.
- British news and media company, The Guardian published the article "Are you scared yet, human?" written solely with GPT-3, OpenAI's language generation model.
- In March 2019, Kogan Page published "Superhuman Innovation"; a book not only about artificial intelligence, but it was also co-written by AI.
- Another example is the creation of a new song entirely by AI, that sounds as if it was written by Beethoven.
- In the health industry, generated synthesized data improves the data quality of health screening such as MRIs and brain scans.

IMPACT

- Cost reductions due to automation and augmentation of human creativity and processes.
- New creative solutions – previously unthought of – from humans collaborating with machines.
- Synthesized data in testing results in the improvement in the quality of products and processes. It also answers any lack of existing data, or cost to collect or produce it.
- However, the fake news debate continues as people are no longer able to separate real from fake, resulting in potential security risks and a need for GAN-synthesized detection.
- GAN technology raises questions in terms of Intellectual Property: the USPTO denied patents filed by AI on behalf of DABUS, and published a ruling stating US patents can only be granted to "natural persons."

TECH

- GAN: StoryGAN, DiscoGAN, ArchiGAN, GameGAN, StackGAN, Google GAN, GAN Lab, GANImation
- Language: Generative Pre-trained Transformer 3 (GPT-3) for text generation
- Applications: producing hyperrealistic images of non-existing people, an Art Gallery created by Artificial Intelligence, generating new images every hour, Adobe Sensei for AI-enabled creation of marketing and creative content
- Sogeti's report on Creative AI research: Infinite Machine Creativity

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