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# How Generative AI and Synthetic Content Will Revolutionize Healthcare

A few short months ago, ChatGPT was released to the world and it's already changing the conversation around AI. This tool is the latest to use generative AI and has Microsoft, Google, and others vying to win the generative AI race.

Whether you've seen deep fakes of Tom Cruise, heard Darth Vader's new voice, or AI winning art contests, you've probably already been exposed to content generated by AI one way or another.

The current state of the technology is rapidly evolving. In a matter of weeks, AI has made tremendous strides in the area of generative models and synthetic content. It has the potential to revolutionize everything from entertainment to advertising. We'll look at existing and future applications and the challenges that must be overcome for it to reach its full potential.

## What is Synthetic Content and Generative AI?

There's a ton of terminology overlap in this field. Generative AI, ChatGPT, and synthetic content are all related to the field of Artificial Intelligence (AI) and Natural Language Processing (NLP). However, they each have distinct characteristics and applications.

Generative AI is a type of AI that is able to create new content based on the data it has been trained on. This can include text, images, and audio.

ChatGPT is a specific type of generative AI built by OpenAI. It is a large language model that is trained to generate human-like text using natural human language in prompts. It uses a large amount of data to generate text that is often indistinguishable from that written by a human. ChatGPT can be used in healthcare to help generate medical reports, summaries, and to assist in medical research and data analysis.

Synthetic content refers to the creation of new content that is not based on existing data. It is created by a machine or algorithm, often also using natural language inputs. DALL-E, Stable Diffusion, and MidJourney are all tools that help create synthetic content producing realistic images from basic prompts like "an astronaut riding a horse" or "a chair that looks like an avocado." The system analyzes the prompt and can return images in a variety of styles in a matter of seconds. Artists are using these tools for inspiration to efficiently create concepts that they can build on to save time in the creative process.

## How is this Technology Being Used Today?

Here are several ways brands are already using this technology to engage with consumers:

1. Creating headlines, marketing copy, and image assets for ads and social media posts
2. Chatting with customers to answer common questions and product issues
3. Generating virtual try-ons with custom avatars and content
4. Helping design immersive metaverse experiences using text to produce videos and 3D assets
5. Assisting copywriters by drafting outlines for complex educational content (like this one)
6. Expediting A/B testing by creating a variety of messaging and personalized content quickly
7. Reducing costs for video production – creating videos for training and education using virtual avatars that have customizable appearances, voices, and settings
8. Helping programmers write and test code for websites and applications

This list isn't exhaustive and grows by the day, but we're already seeing innovative ways for brands to use generative AI to help reach their audience.

## What to Expect in 2023 and Beyond

Even though powerful tools have already been built with this tech, we're still in the infancy for generative AI. ChatGPT is built on a language model called GPT-3 that has 175 billion parameters (800 GB of data). While we are eagerly waiting for confirmations from OpenAI, according to some reports, GPT-4 is expected to be released in the first part of 2023, with 170 trillion parameters. The scale of improvement means future models will be trained on more data, more recent data, and could enable new use cases.

Other companies are also racing to release their own large language models and generative AI tools. Google's version, LaMDA, was announced in 2021, but released to the public for limited beta testing in late 2022. LaMDA will eventually be used to help with Google Search and Assistant. Besides LaMDA, Google is also planning on releasing Sparrow in 2023. Sparrow might be similar to ChatGPT in functionality or even more powerful with the resources of Google behind it.

Microsoft has a significant partnership with OpenAI and has already announced it will integrate GPT-3 into their products. Microsoft announced the release of Teams Premium with GPT 3.5 and there are reports of integrating ChatGPT like features with the Bing search engine.

This is an inflection point. Like in the early days of internet and email, the now-novel technology with soon be commonplace.

## Impact for Healthcare

Generative AI and synthetic content have the potential to greatly impact every industry including healthcare and life sciences companies.

One application is the use of synthetic images and videos to create realistic and engaging product demonstrations and advertisements. For example, companies could create virtual tours of medical facilities, or use synthetic images and videos to demonstrate the features and benefits of medical equipment or devices. This could help to increase the effectiveness of healthcare marketing campaigns and make it easier for healthcare providers to communicate complex information to patients and other stakeholders.

Another potential application is the use of generative AI to create unique and personalized content for healthcare marketing campaigns. For example, generative AI could be used to create personalized medical information and treatment plans for patients based on their individual medical history and needs. This could help to increase the effectiveness of healthcare marketing campaigns and improve patient engagement and adherence.

Once generative AI is integrated into enterprise systems, new plugins and integrations will make healthcare education and patient interactions a lot easier.

Pairing these systems with healthcare-specific AI platforms like Cognitive Core, doctors will be able to respond quicker, generate pre-approval forms, create relevant and accurate healthcare documents, and more patient-friendly content.

Google and DeepMind built a language model specifically for healthcare called Med-PaLM. Their research paper says Med-PaLM can help with clinical decision support, summarizing key findings in studies, and triaging patients' primary care concerns.

Synthetic content and generative AI could also be used in medical education and training. For example, synthetic simulations and virtual patients could be used to train medical students and professionals with virtual avatars with real clinical dilemmas.

Using these AI tools for efficiencies in medical, legal, and regulatory approvals may help expedite feedback and approvals.

However, it's important to keep in mind that synthetic content and generative AI have ethical implications, especially in the healthcare field. For example, synthetic images and videos that depict unrealistic results of treatments may create false expectations and trust issues. Additionally, the use of generative AI in healthcare may raise privacy and security concerns depending on where the data is sourced.

Humans will always play a key role in the healthcare process, especially in healthcare and life sciences when lives and livelihoods are on the line. Even language models built specifically for healthcare are no replacement for clinicians. Human judgment and creativity will still drive this process, even when brands take an AI-first approach.

This technology is moving fast, so we'll be keeping a pulse on the industry for new opportunities and considerations for pharma.