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AI Arena: Entertainment

With the huge variety of applications for artificial intelligence, it is unsurprising that the entertainment industry has adapted and used this new technology. We will look at AI use in music, sports, art, video games, and literature.

Sporting events are a main industry for entertainment and their recent use of AI has made it easier and more fun for fans around the world to watch and follow them. Artificial intelligence has already been developed to automatically select the perfect camera angle, provide subtitles in different languages for viewers based on location, and also provide insights into the best time to display certain advertisements based on crowd excitement (Joshi). Minor League Baseball, in an attempt to expand media coverage for the league, recently invested in a startup company called Wordsmith, an automated journalism AI capable of taking statistics and writing game reports in “natural language.” The system can cover 13 leagues and 142 different teams while producing 1.5 billion pieces of content annually (Utermohlen). The PGA tour uses artificial intelligence to create five minute highlight videos of individual players’ rounds, a process that used to take hours to produce and post (Staff). As artificial intelligence in sports continues to improve, many look to what the future may hold for their sport and the advantages it would provide. NFL analysts believe AI could be the savior for an organization dramatically losing its viewers each season. AI could more accurately determine rules and penalties, eliminating many disagreements among fans. The technology could also provide insights into the tendencies and play of opponents without the extreme film study previously required by the athletes (Harpaz). Artificial intelligence is improving sports entertainment in nearly every sport and as technology increases, so will the applications.

Another prevalent area of AI in entertainment is video games. The world of video games is growing, and so is AI within it. With the application of neural networks to gaming, for example, AI offers a sort of unparalleled competition. It learns new ways to succeed in games and becomes more proficient than the best of professionals. Take the time, this year, that OpenAI’s 5 Dota bots beat the reigning Dota 2 world champions in two back-to-back games (Piper). For context, Dota 2 is an online, multiplayer, team-based strategy game. During the games, the bots had uncanny judgement and powerful new techniques, unbeknownst to the champions. This kind of AI can teach gamers brand new techniques and strategies and gives a standard to strive for in gaming. AI doesn’t have to simply stomp the competition though, much of AI is actually used to pair the user with a well-fit, challenging competitor AI in order to develop the user’s skills. AI opponents can make it easier to find or rather create an opponent that specifically suits the user’s skill level. This becomes a wonderful feature because often there is no ideal competitive matchup between human users. This ideal matchup makes competing more enjoyable as it’s not mercilessly difficult and it’s not mind-numbingly easy. So, AI in video games becomes a skilled example to strive for, a tool for user specific skill growth, and enhances the enjoyment of gaming!

In addition to Sports broadcast and the video game industry, the influence of AI also looms in the wings of the concert hall as technology gains the skills to tackle music tasks. AI helps bridge the vast technical gap between the ear and the record, but could very well put human composers out of work.

AVIA is a music composing “emotional” assistant for the modern musician (AVIA.ai). The subscription based AI composes based on input, and presets and outputs MIDI data (Musical instrument digital interface), or an audio file. The program doesn’t have the ability to respond in realtime to a human composer’s input, or the ability to dynamically perform the music it makes. Using tools like the AVIA AI assistant is an accepted trend going back to artists like David Bowie who famously exploited AI lyric writing, in favor of a robots infinite lexicon, but this assistant goes much further to actually provide workable clips of audio. The danger with using an AI like this is that by skipping the theory and trial and error of composition, human composers will start to rely on the AI to construct basic melodic structures rather than using their imagination to hear a melody to vocate.

Advertisers from Vodaphone and TED use AVIA for their audio needs (Avia.ai) Though the AI is cheaper than commissioning human composers, advertising is a major income stream for human composers, meaning human composition must be truly excellent and revolutionary to overcome the ability of the AI. In this way AI will help human composers to better identify concepts and patterns that their audiences respond to, and working with a guaranteed expert (the AI) helps the composer adopt proven effective habits with the AI. Other tech like OrchExtra provides digital performers when real ones are not available (OrchExtra). These new systems will help bring on a new advanced breed of musicians whose abilities will soar with the speed of electricity.

After AI’s sheer dominance of the industrious workplace, with accelerating development in autonomous driving and medical functions, we decided that creativity was one of the few areas that would remain human. But now we have AI tools called Generative Adversarial Networks (GAN) that are capable of generating artworks according to certain styles that it learns. For artworks created by an AI program, copyright of the artwork is a confusing territory because most copyright laws do not account for artworks made by machines. WIPO, the global forum for intellectual property policy, points out that some laws (as by the US Copyright Office and the CJEU) do not grant copyright to works that are not created by a human being, while laws in some countries (like Hong Kong, India, UK) attribute the copyright to the AI programmer instead (Guadamuz). In the case that the AI is developed by larger groups over the years, instead of complicatedly distributing copyright to every developer, in some cases we can also bestow copyright to the final owner of the artwork (Schlackman). Besides copyright, we have an even bigger issue of deepfakes, fake images and videos that look almost realistic, being on the rise. The rising amounts of deepfake videos are pushing us to a point where images, audios, and videos may not be reliable sources of information anymore (Fuscaldo). These could be very harmful as those videos can be targeted towards minority groups and women who are already facing challenges in society. Two new legislative laws in California make it illegal to use deepfakes for political or pornographic purposes. AB 730 bans the use deepfakes for creating false videos of politicians that aim to alter people’s perceptions and propagate fake news (AB-730). AB 602 illegalizes the use of deepfakes for depicting people (such as celebrities) onto pornographic material (AB-602). On top of legislative laws, we also have researchers working on identifying deepfakes using warping artifacts and inconsistent head poses (Li; Yang).

One of humanity’s oldest creative arts is also one of the most difficult for Artificial Intelligences to emulate. To date, creative writing has remained the sole province of wetware, however as natural language processing continues to improve, it becomes feasible to ask whether an AI can learn to write poetry, drama, and prose. We have already seen AI-produced poetry, though its merits are certainly up for debate. The inherently exploratory or transgressive nature of many poems makes it difficult to establish objective quality standards. Perhaps a more meaningful question is whether an AI can create poetry indistinguishable from that generated by a human. The Bot or Not project allows readers to rate a poem as written by meat or by silicon. The top half-dozen computer generated poems, successfully fooled the readers more than 55% of the time (botpoet). More rigorously, researchers at the University of Kyoto were able to train a neural network to generate poetry based on images. Human readers found the poetry relevant to the images, and lay readers were almost as likely to pick one of the AI poems as a human poem as representative of the image. Even poetry experts chose the AI poem 40% of the time (Liu, Fu, Kato, & Yoshikawa, 2018).

The explicit and implicit rules, replete with contradictions and loopholes, for writing prose make it a more challenging genre for AI authors. To date, no AI author has published a fiction volume which has either been mistaken for a human creation or had received substantial literary recognition on its own merits. However, we have seen some progress towards that eventuality. In 2019, the Beta Writer AI released a textbook summarizing the current state of research into Lithium-Ion batteries (Beta Writer, 2019). This book is more than a mere compilation of existing work. It extracts key concepts and ideas, generating a true summary of its sources. While true literary success has proven elusive for AI authors, all indications are that more advanced AI systems are poised to break into the field, just as they have in sports, music, art, and video games. Over the next several decades, the entertainment industry seems poised to undergo a computational revolution as profound as the industrial revolution was for manufacturing.

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