

AI Music Assistants: Cool Tool or Career Takeover?

An STS Research Paper
presented to the faculty of the
School of Engineering and Applied Science
University of Virginia

by

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March 27, 2020

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The world is no stranger to technological job displacement. The Bureau of Labor Statistics reported a 96 percent decline in farm workers between 1910 and 2000 due to mechanization, fertilizers, and genetically modified crops (Wyatt, 2006). Today, Artificial Intelligence (AI), is displacing workers. In his TED talk, AI expert Kai-Fu Lee predicts that AI will replace routine and repetitive jobs within the next decade (Lee, 2018). Generative AI creates new content from samples, and has recently been used in software to produce music indistinguishable from human compositions. How are musicians reacting to AI? Musicians, listeners, businesses, AI developers, and video streamers are all influencing how AI music will be defined. Though AI may threaten musicians' careers, more often they find ways to use AI as a tool to enhance their music. Lee concludes his talk by classifying careers by AI use; some jobs rendered obsolete, some are unthreatened, and some, including musicians' jobs, will use AI as a tool to enhance their creativity.

Review of Research

AI applications are tested with Turing Tests. AI Labs in Taiwan has designed and executed a musical Turing Test in which participants listened to five AI-composed tracks and five tracks cut from Johann Sebastian Bach's Well-Tempered Clavier. Participants labeled which tracks they thought were human composed and which were AI composed. Among 85 participants

the accuracy was 46 percent, showing that the average participant could not distinguish human compositions from AI compositions.

Development of AI artists has economic, social, and philosophical implications. Many question the ethics of developing AI for creative jobs, and whether any product of AI can be considered creative. According to Herzmann (2018) of Adobe Research, the risk of net unemployment due to AI is not significant, because new technology tends to create new jobs as it erases old ones. Hertzmann warns that without “social safety nets” and effective “educational foundations,” job displacement will cripple individuals while enriching the businesses using AI, widening wealth gaps. Hertzmann claims that because art is social, to be an artist, AI must become a “social agent”; otherwise it remains a tool.

Because AI music software generates music at a fraction of the time and cost of a human musician, it can mass produce music, perhaps displacing human composers. Similarly, mass production of food has affected small-scale local producers. But Lang & Lemmerer (2019) found that despite the additional cost, diners prefer small, family-owned, local food vendors visible in the community. Hence even if AI can generate music comparable to top songs, demand for local, small-scale, human-sourced music may endure. The persistence of local bands that perform at restaurants, bars, and community events despite easy access to top artists through the internet and radio is indicative of this possibility.

In China, the proliferation of robotic manufacturing has caused some concern for jobs, but technological innovation has historically created as many or more jobs than it has displaced (Yu, 2019). However, companies are transitioning to robotic manufacturing much faster and earlier than projected, with no government aid for displaced workers. While no mass

unemployment due to is yet apparent, Yu warns workers to be alert, as manufacturing jobs may decline significantly in the coming decades.

Some fear that AI may dehumanize music. In the mid-20th century, music synthesizers induced a similar fear, as shown in Nicholas C. Laudadio's (2011) article on music synthesizers in science fiction. In Stephen Spielberg's *Close Encounters of the Third Kind* (1977), the synthesizer is portrayed as a device that could communicate between humans and aliens, and develop its own consciousness. A repeated threat depicted in other science fiction works is the dehumanization of music by synthesizers as they replace performing musicians. The synthesizer parallels AI, as the former mimics any instrument, and the latter any composition style. AI has an immense and ongoing representation in science fiction, which may reflect anxieties about its implications.

AI Music In Business

AI music software is very practical from a business standpoint. Former Hollywood composer and founder of AI music company Amper, Drew Silverstein (2019) distinguishes between two types of music: artistic and functional. Artistic music is valued for the collaboration and creativity in producing it, while functional music is valued for its use case, such as providing background music in video streams and podcasts. According to Silverstein, AI music reduces time and effort spent searching for music and relieves functional music users of licensing and royalty concerns. AI music is already widely used as background music in public spaces and on game streaming sites, at a savings in royalties cost (Thompson, 2019). Mubert is a service that uses AI to generate unique copyright-free background music in real time, allowing users to avoid

copyright strike, or copy-strike. The CEO of Omlet Arcade, a game streaming site and Mubert partner, says it is an “innovative solution for empowering live streamers to drive their content quality without risking the dreaded copy-strike” (Rogers, 2019). Freelance video editor Jonny Knowles has been using Soundpiece, an AI music platform startup based in Cambridge England. Knowles attests to the platform’s time savings: “It used to take me hours to find a song to use for my documentaries. Now I get a catchy song in minutes” (Coney, 2020). Silverstein insists “Amper is not a music tool,” but rather “an efficiency tool. Fundamentally.” Although Amper does produce music, Silverstein emphasizes that currently the best use case is for business users to increase efficiency in producing functional music. AI Music has been tried and tested by business applications, and it is clear that it will continue to grow in use.

Some entry level musicians will lose jobs. The global market for background music is valued at 1.683 billion USD in 2019, with a 6.1 percent compound annual growth over the next 5 years (Marketandresearch.biz, 2020). The increased popularity of audio and video streaming is credited for the recent and ongoing growth of the market (Technavio, 2019). The industry is largely dominated by stock music libraries, companies that act as a middleman between stock music composers and consumers. Stock music libraries simplify royalties, copyright, and licensing agreements, saving content creators and businesses time and worry in getting the proper permissions to use a piece of music. This is also convenient for composers as the libraries provide a large network to showcase their music, which often lead to direct contracts. However, AI music composers can already generate 90-second instrumental tunes good enough for an ad or video within minutes. Many composers rely on contracts through music libraries to make ends meet, and this market will be the first to be disrupted by AI music (Thompson). To this

Silverstein suggests that composers that focus on functional music will need to “move up the value chain,” onto artistic music or possibly working as specialists in using AI tools.

AI Music As a Tool

People with little musical experience can now produce high quality tracks. AI music company CEOs like Drew Silverstein contend AI can democratize music, letting non-musicians produce the music they want. Taryn Southern is a songwriter and internet personality known for her popular album of AI-aided songs, *I AM AI*. Like other songwriters with limited experience playing instruments, Southern regularly works with a producer to develop composition to match her vision. Experimenting with various AI composition tools, she has found AI producers liberating and easier to work with than human producers, as she can get immediate results and readjust parameters until satisfied (Plaugic, 2017). Jonny Knowles, is a freelance video editor, amateur musician, and a customer of AI music startup Soundpiece. Knowles says “it used to take me hours to find a song to use for my documentaries. Now I get a catchy song in minutes.” and “I love the fact that I can edit the songs to add a bit of my own creativity to them.” With the democratization of music users can save time and make direct refinements to the music they use.

Experienced Musicians are elevated by using AI music software. Lucas Cantor, an Emmy-award winning composer worked with AI developed by Huawei to finish Franz Schubert’s *Symphony No.8*, a piece left unfinished from nearly 200 years ago. The AI was trained on Schubert’s other works and works from his inspirations. After the AI produced a melody, Cantor would bring understanding, experience, and emotion that the AI could not replicate. “The smartphone couldn’t have written it without me, but it would not have been the

same piece without the smartphone.” Cantor describes the AI as the “ultimate brainstorming partner.” American pop band YACHT experimented with machine learning algorithms trained on their own music, and produced a melody that involved chord changes and movements they were not used to. Band member Chlair Evans said “AI forced us to come up against patterns that have no relationship to comfort. It gave us the skills to break out of our own habits.” YACHT received their first Emmy nomination for this project. In both cases, the musicians exposed themselves to the new AI tools and achieved impressive results.

AI Music Quality and Musicians’ Goals

AI isn’t that good yet. While many companies have developed AI powered composers, producers, predictors, and other tools, none of them can produce an entire song from start to finish. The first widely recognized AI based song Daddy’s Car by FlowMachines took inspiration from the Beatles to create an initial melody, which was then mixed, remastered, and lyricized by a professional musician. The final product is described as “pleasant,” but not “groundbreaking,” with a resemblance to the Beatles, “but more derivative than revolutionary” (Mench, 2016). This highlights that AI can learn from and mimic works of the past, but cannot make something completely new. While Daddy’s Car impressed many people for it’s achievement of being made with AI, it has also been described as “a frustrating jumble of psychedelic rock tropes that fails to come together in a meaningful way” (Chow, 2020). Oleg Stavitsky, CEO of Endel, a company specialized in algorithmic sound environments admits that “AI music is simply not good enough to create a song that you will listen to and be like, ‘I would rather listen to this than Drake.’”

Most people don't want AI to become the best at making music. Siavash Mahdavi is the CEO of AI Music, a startup that uses AI to modify existing music to match the listener's environment and state of mind. The theoretical end-goal of AI music production is a "button that could write a full symphony." Madhavi initially considered working toward this button, but decided not to because "It's very difficult to do, and I don't know how useful it is." He explains that "Musicians are queuing up to have their music listened to," and "the last thing they need is for this button to exist" (Dredge, 2017). Many of the other AI music companies echo this idea, and focus on objectives other than producing top hit songs. AIVA CEO Pierre Barreau (2018) emphasizes the idea of personalized music, that is generated for the individual listener's personality and story, effectively producing the best music for an individual. Silverstein emphasizes the democratisation of music to non-music specialists, and providing an inspiration and collaboration device for existing artists. A group of composers and University faculty in London gathered musicians for a concert called Partnerships showcasing works that involved varying levels of AI input, but fully performed by humans. The music was well received, but there was concern that AI played a part in the compositions. One of the composers Una Monaghan reported that reactions from musicians ranged from a bit negative, "to outright 'why are you doing this?'" (Brown, 2017). In response to an AI music article, one member of PCMag commented that they are "sick of the tech 'geniuses,'" and warns that "We lose all humanity if this kind of research keep up and our vile media reports everything tech with breathless anticipation" (OgOggilby, 2017). There is both fear and disgust toward AI music, but developers are not trying to replace all human musicians from music production, but providing services to complement existing music and artists.

The enduring value of creativity

Many people believe that music and art are distinctly human activities that require creativity, emotion, and human connection that cannot be replicated by machines. Attendees of the Partnerships AI music concert filled out anonymous surveys on their experience. One response suggested that “The computer generated pieces ‘miss’ something — would we call this ‘spirit,’ emotion, or passion?” and another claimed that “human musicians obscured the work of the machine, as performers can elevate dull material and make it sound interesting.” Unlike some other AI music events designed as Turing Tests, these attendees were aware that the music was produced with AI. This may have introduced subconscious bias to find fault in AI work, particularly in the second response that claimed that human performance obstructed the machine’s dull material, despite only hearing the final performance. A third response said they are “concerned for the cultural impact and the loss of the human beauty and understanding of music.,” expressing that only humans will truly understand music. According to actor and music hobbyist Jacob Batalon music is something “that you need to feel in a way that only a human can,” so “technology replacing human musicians, [is] almost impossible.” Batalon further emphasizes that producers love working with live musicians, and human-to-human collaboration is needed to enjoy and produce music. The founder of the AI company Jukebox, Ed Newton-Rex, suggests that computers are already creative in their own way, as they can create works humans cannot. Newton-Rex argues that if a human had come up with the strategy AlphaGo used to win against grandmasters, they would be considered creative (Newton-Rex, 2017). While it is a creativity achieved because it was not human, it should still be acknowledged

for its value. Rob High, IBM Watson's Chief Technology Officer admits that "Nothing's going to replace humans and our human creativity, but certainly we can be augmented." (CBS News, 2016). This echoes other AI developers' suggestions that AI will be a tool to enhance current artists. Musician Grimes (Clair Boucher) on the other hand, predicts that humanity is approaching "the end of art," with Artificial General Intelligence (AGI) in the next 20-30 years. As she describes it, "ultimately AI will get to a point where it will be able to emulate all our hormones, all our feelings, all our emotions," and "once there's actually AGI, it's just going to be so much better at making art than us." Public opinion on whether AI music can be considered art is mixed. As this technology develops, there will likely continue to be public opposition and bias.

Even if AI becomes the best musician, people will continue playing music. As Silverstein describes it, artistic music is valued for the process of creating it, and musicians who enjoy this process will continue regardless of how the results compare to other music. Paul Tardy (2017), a PhD student in AI and Natural Language Processing (NLP) and amateur pianist explains that AI won't replace musicians because humans don't care about what AI is doing. "I would continue to learn the piano for myself." AI is already better than any human at chess, and yet chess players still exist because they enjoy chess and humans are interested in other humans who are good at chess. Despite the rise in streaming services that provide music on demand, concerts have seen an increase in attendance. A survey showed that attendees had a strong desire to "be there," and experience the concert in the flesh with other fans. Results also showed that concert attendance could be considered an expression of fan worship. The motivations for live concert attendance are far from objectives that AI currently attempts to cover.

Parallels with the Synthesizer

AI music tools parallel analogue synthesizers in many ways. The synthesizer is a tool that replicates the sounds of any acoustic instruments, as well as sounds beyond acoustic instruments. AI music composers can replicate music composition using inspiration from past works. Shimon is an AI composer given a robotic body with four arms to play a marimba, which in turn allows it to compose and perform music playing four notes at a time, something difficult or impossible with a human body (Burgess, 2017). The synthesizer actively displaced live musicians particularly in Broadway shows and performances where the musicians were not the main focus. Similarly, AI composers can replace the music used in podcasts, computer game streaming, and other videos where the music is a minor element, though compositions for live performances are mostly unaffected. In response to the mass displacement by synthesizers, the American Federation of Music bargained for a job security clause that allowed for a tax on synthesists, decreasing the economic advantage of hiring a single synthesist over multiple acoustic musicians (Milazzo, 1996). Despite some initial concerns, the synthesizer is commonly used in many music studios today.

Conclusion

There are mixed views toward considering AI generated work as art, and some may develop a bias against AI generated music not too different from how consumers tend to prefer locally sourced foods over mass produced foods. This should be considered by businesses adopting AI music. AI is currently disrupting the background music market as AI music

applications offer a better alternative to stock music libraries for businesses and content creators. As a result, composers reliant on work through the music libraries will need to “move up the value chain,” or change areas of work. Stock music composers are the most at risk due to AI music. However, other music composition related jobs may experience increased competition as the stock music composers switch to other jobs. As Hertzman warned, this has the potential to cause an uneven distribution of benefit, enrich business users and the AI software developers, while devaluing composers. As with all occupations affected by mass automation, composers may want to seek social safety nets through unions or legislation, similarly to acoustic musicians in response to synthesizers. As a new tool, AI music software democratizes music to people with little music experience, and elevates those with existing music experience. Many music professionals have started to work with AI music tools, and found increased efficiency and augmented creativity. Music professionals and students should consider familiarizing themselves with AI tools in order to stay ahead of ongoing technological advances. Lessons from AI’s impact on the music industry are likely to be shadowed in all other industries, particularly in digital art and video editing.

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