AI IN MUSIC REPORT

RECORD-PLAY

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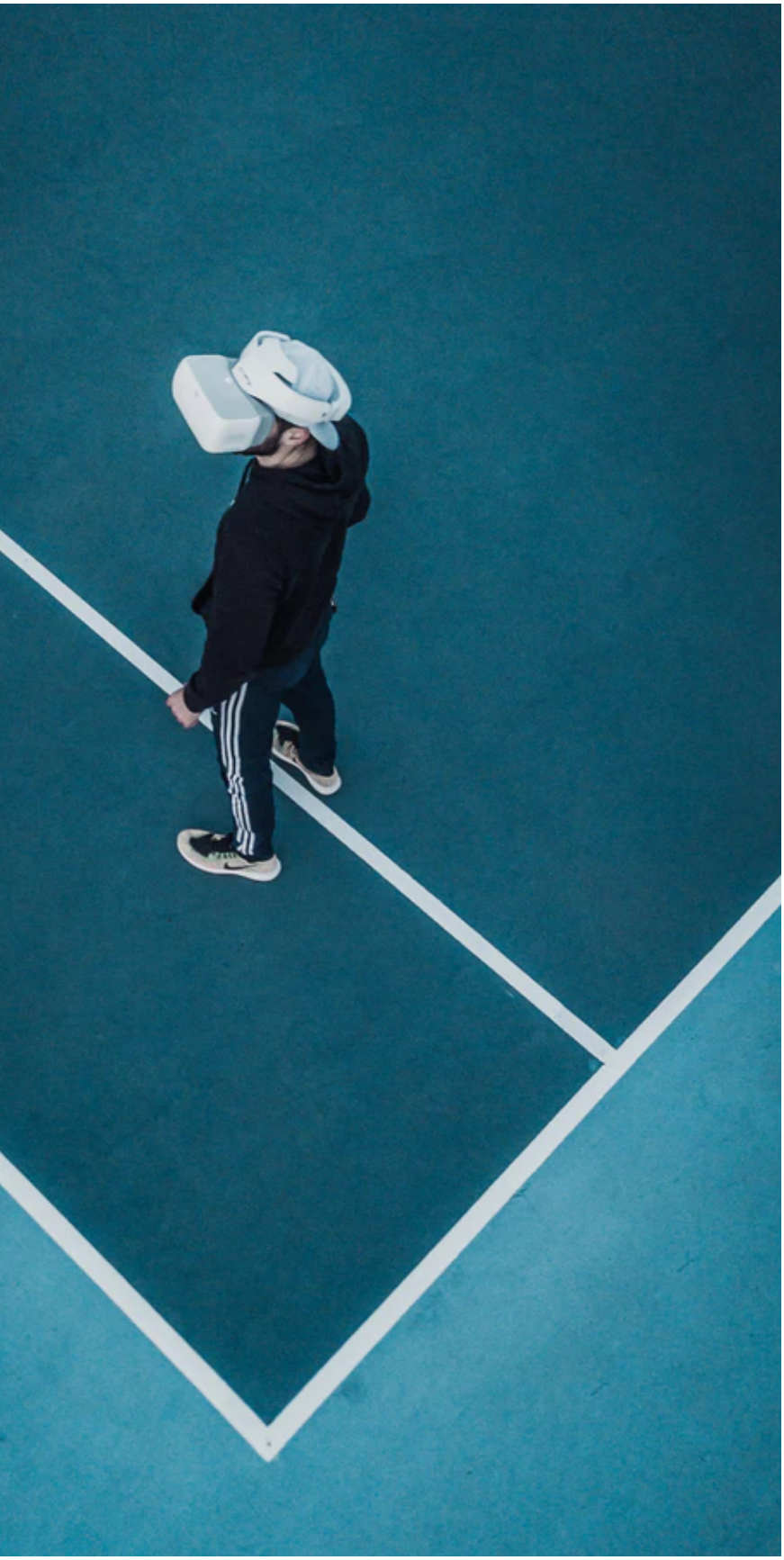

INTRO-DUCTION

Artificial Intelligence is a subject that sparks the imagination - and splits opinion. Proponents point to the problem-solving potential of machine learning, and AI's ability to make many laborious and time-consuming tasks a thing of the past. Others worry about the effect it may have on everything from the labour market to the existential survival of the human race. One thing everyone can agree on is that whether good or bad, the effects of AI will be wide, deep and probably irreversible.

The music industry has been subject to the same debate for some time. Some see AI as an exciting new tool that will make business simpler and more secure, as well as opening up hitherto unimagined creative possibilities. Others fear it could kill the careers of musicians, composers, and many of the small businesses that make up the ecosystem of the music industry. Again, where this venn diagram of opinion meets is that change is inevitable.

In this report we have looked at where that change is likely to manifest (or is already having an impact), in order to try and plot a pathway through territory that remains largely uncharted.

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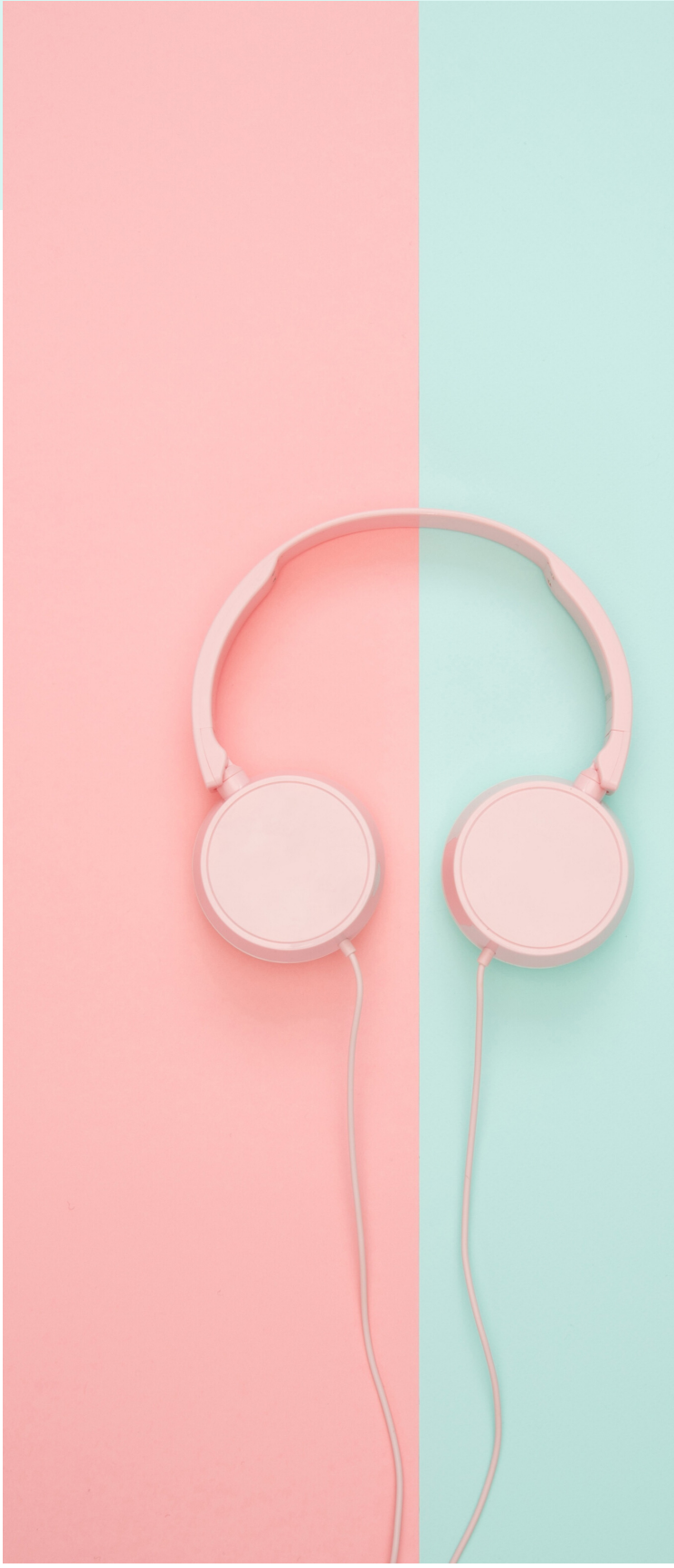
In doing so we will bear in mind what Drew Silverstein, CEO of Amper Music, told Music Ally last year, "If I were a larger business focused on content creation – musical or non-musical – I would have at the top of my priority list 'How do we engage with AI music?' You can partner, build, buy or do nothing. But the worst thing you can do is to do nothing."

MUSIC COMPOSITION



The effect of AI on the creation of music is probably the most frequently misunderstood topic that we'll be looking at. The biggest sceptics of machine-generated music paint a bleak picture of songs created to order by robots, devoid of human input or emotion. However, the current landscape is very different.

While AI programs are able to produce fully composed songs, even the most enthusiastic advocate would admit that they've been something of a mixed bag so far. As with any AI program, the calibre of the output depends very much on the calibre of the input. For a program to 'learn' how to compose a piece of music, it must be fed a huge amount of data, generally in the form of existing, human-written songs. And while it can use this data to recognise what constitutes a song in terms of structure, arrangement, dynamics, instrumentation, etc., and even how different combinations of these will result in different types of song, it has no way of quantifying whether the results will be pleasing to human ears (unsurprising when musical taste is so subjective anyway). There is also the thorny issue of how ownership comes into play when machine-generated music is derived from human-written content, which is something we'll come to later.

MUSIC COMPOSITION

As it stands, the most successful forays into AI music come when technology has been used to 'collaborate' with musicians, rather than replace them. Examples range from the band Yacht feeding an AI their entire back catalogue in order to generate new material, to the artist Holly Herndon building her own AI which was able to 'harmonise' with her on a critically acclaimed album and tour.

Even brands have gotten involved. Last year Glaceau Smartwater sponsored a collaboration between Toro Y Moi and AI startup Endel, which resulted in four tracks named after Smartwater products, while LG worked with Amper Music and Australian artist Betty Who to create "the most motivational song ever" after analysing hundreds of motivational songs and playlists. The result was performed at the LG-sponsored Color Run event in Los Angeles.

Many artists and programmers also share excitement about the possibility of using AI to create entirely new forms of music. As Stephen Phillips, CEO of AI company Popgun, believes, "AI shouldn't just compose original music. It should sound completely different. It should be pleasurable, but also 'Holy hell! Like nothing I've ever heard before!'". While AI may never be able to make artistic and creative decisions in the way we understand them, it certainly has the capacity to facilitate and inspire human artists to make bold and groundbreaking ones.

Whether by accident or design, the way AI interprets musical data can also throw up interesting results. See SKYGGE, aka French artist Benoit Carré, who fed the program Flow-Machines with French pop from the '80s and sculpted the feedback into the 50-minute record 'Hello World', which is claimed to be the first fully AI-assisted album. Last year he followed it up with 'Black is the Colour', which swapped the French pop database for traditional American folk songs. In both cases the results bear the obvious mark of the source material, yet warped into fresh and unexpected forms.

However, Carré's creative input into the music cannot be understated. As compelling as the idea is that you could feed The Beatles' back catalogue into an AI program and be instantly rewarded with 'new' Lennon and McCartney compositions, so far such attempts have failed to produce convincing lyrics, let alone music. (Similar experiments by the Elon Musk-backed OpenAI have proved interesting rather than enjoyable, as well as potentially raising a raft of legal questions.)

Elsewhere, AI companies from Boomy to Humtap have appeared in order to help 'democratise' songwriting, using tools that can turn a hummed melody or tapped rhythm into a fully-fledged song. The recent inaugural AI Song Contest also showed that music created using Artificial Intelligence is becoming more and more sophisticated. However, the bottom line remains that for the foreseeable future, human input and judgement is very much required to put the 'art' into artificial intelligence.

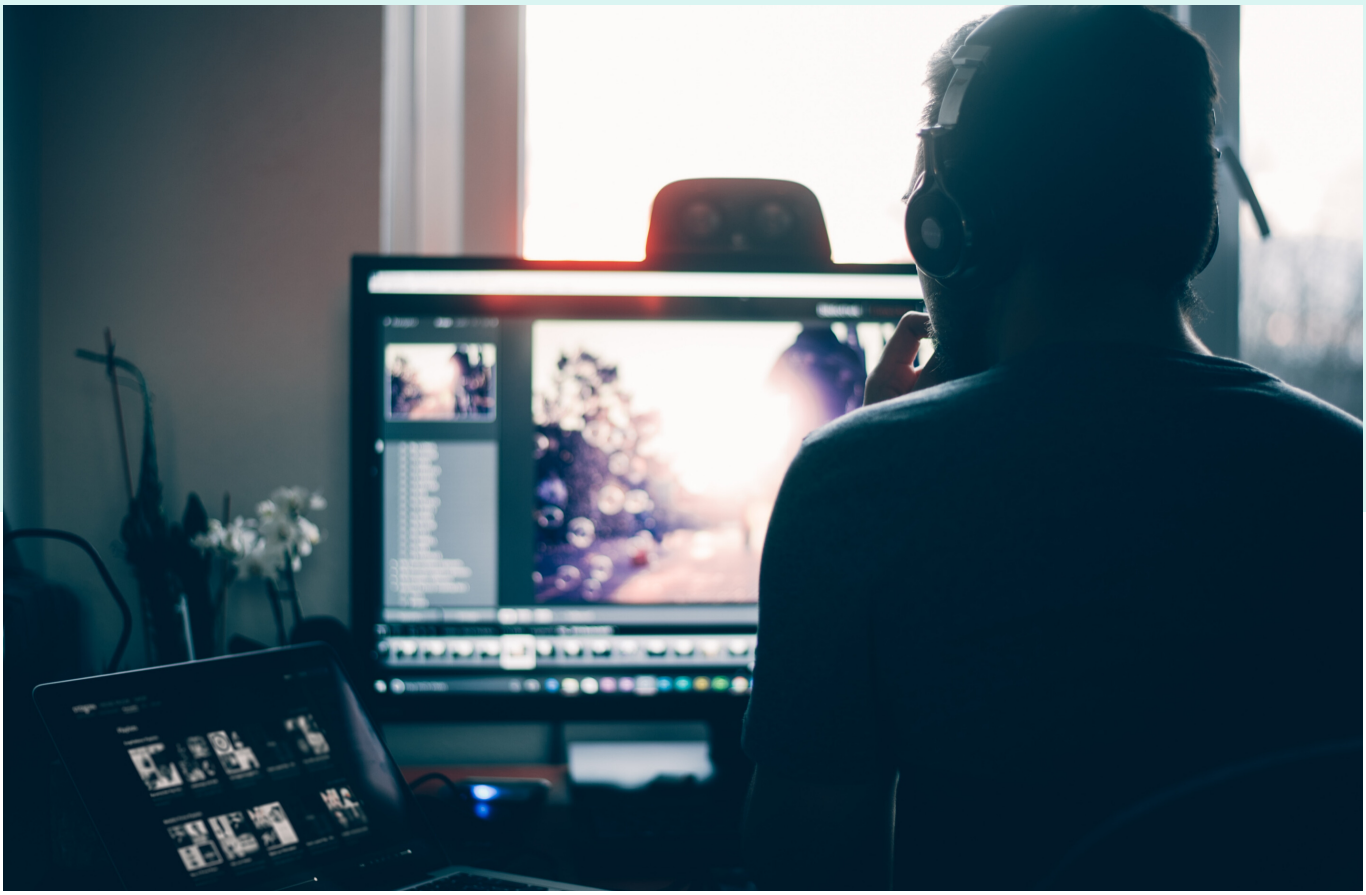
MUSIC PRODUCTION

While the impact of AI on music composition might seem somewhat nebulous, the effect it's made on music production is more on the practical side - less about reinventing the wheel than smoothing it down.

For example, by analysing a large dataset of recordings, an AI studio tool can work out the best compression settings for a variety of different genres, or help speed up particularly repetitive or laborious studio processes.

Even more helpful for many musicians has been the development of AI programs such as LANDR, which makes the subtle, complex and often expensive process of mastering a track accessible to anyone, while constantly adjusting and improving its own algorithms.

While such programs may not be able to compete with top-of-the-range mastering or studio engineers just yet, the ability to turn demo-quality recordings into professional-sounding tracks at the touch of a button will not only help musicians save money but also potentially allow composers to turn around broadcast-quality music more quickly.



MUSIC FOR SYNC

If AI is bringing down the cost of producing music, then it follows that it will likely bring down the cost of production music. In fact, of all the doomsday scenarios proffered by AI sceptics, the prediction that it will destroy the livelihoods of artists who compose for music libraries is perhaps the likeliest to come to pass. Indeed, AI companies have wasted no time venturing into that territory.

While AI music libraries may not be quite ready to challenge traditional music libraries in terms of quality or variety, their ultra low overheads are likely to drive down fees for royalty-free production music. Indeed, many of the companies to have made moves into this space, such as Mubert, Escrett and Evoke Music, have explicitly targeted low budget markets, from indie videogame and app developers to YouTubers who need cheap background music.

The technology of companies such as Scored and MatchTune (who recently partnered with production library BMG), also automatically shapes music to match what's happening on-screen. (Having access to BMG's 15,000 tracks should also improve MatchTune's dataset, potentially increasing the quality of its own AI-generated output.)

However, the biggest impact AI has made on music libraries so far has been on functionality. Whereas traditional music libraries have relied on humans tagging tracks correctly, AI will increasingly be able to fill in track metadata far more quickly. Moreover, a good AI with a vast dataset will be able to analyse each track without human subjectivity, theoretically making it more accurate and thus returning better search results. As Amadeus Code CEO Taishi Fukuyama puts it, "we'll learn what kinds of keywords people are searching for, and recommend music that's in our database... All you'd have to say is 'My YouTube channel is about sport, camaraderie, leadership and competition' and it would understand that, and show whatever we have available."

COPYRIGHT

As AI makes inroads into music licensing, it raises some thorny questions around intellectual copyright and creative ownership. For a start, to 'train' an AI to make music, you first need to feed it a vast amount of music, and this often means copying endless songs so the program can read them and learn from them. However, while this is considered 'fair usage' in many territories such as the USA, Japan and China, the act of copying for commercial purposes requires permission in Europe, where rightsholders have the option of opting out from such usage.

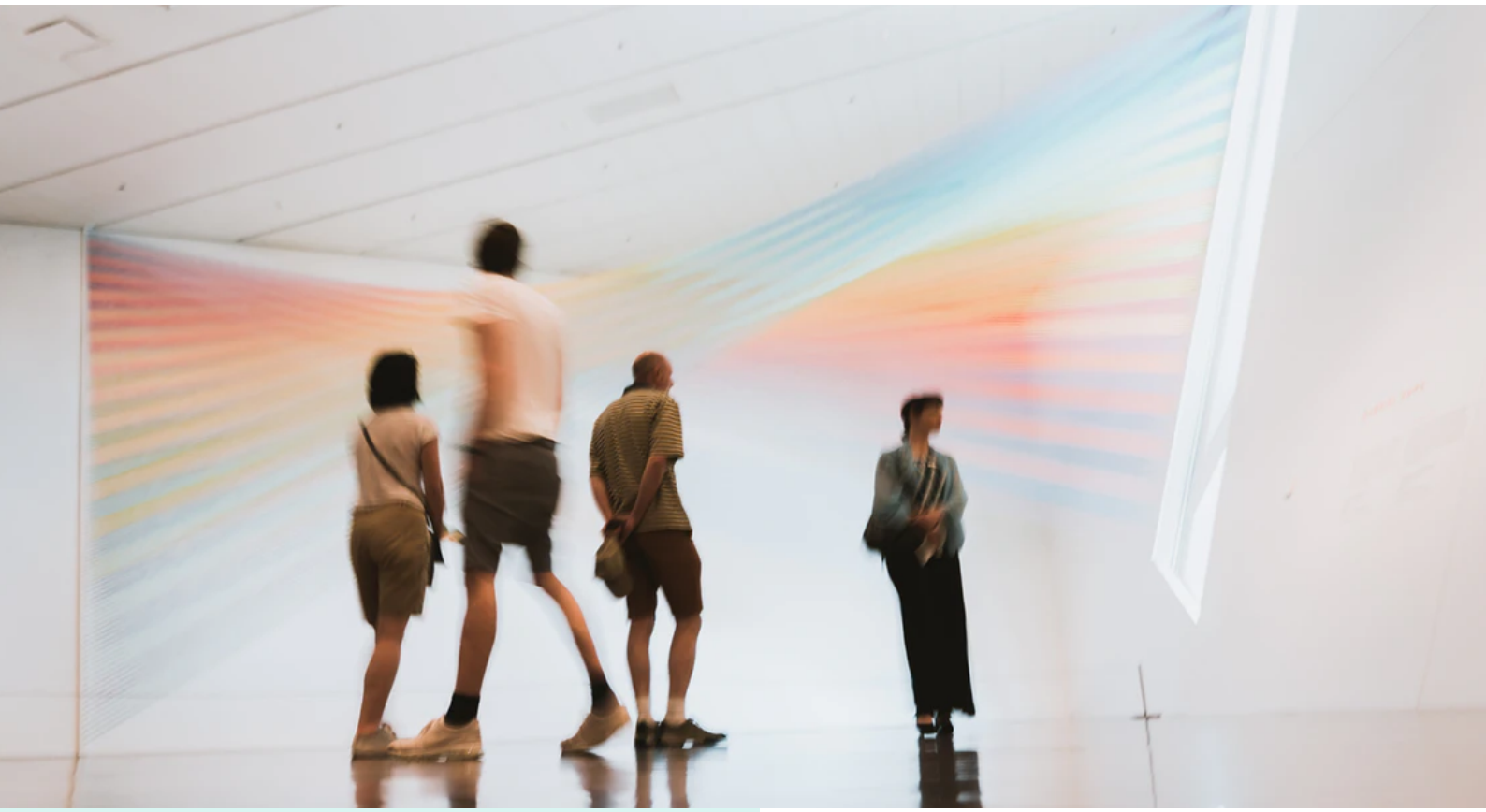
Then there is the question of who a computer-generated piece of music belongs to. Is it the person who input the data? The programmer of the AI who made it possible? Or the many, many musicians whose music would've been in the dataset used to train that AI? While apps such as Boomy, which non-musicians can use to create and distribute music using their AI, allows those users to either earn a cut of streaming royalties or buy the copyright of their finished tracks outright, the fact remains that technology is changing far too quickly for copyright law to keep up.

Sophie Goosens, of law firm Reed Smith, explains further: "If you look at the history of copyright, it was invented in a world of scarcity, where only a handful of people could access the means of production. In a world where making music can happen at the push of a button, the volume of songs created might challenge other copyright concepts, including the concept of 'originality' which is indispensable for copyright protection to exist, at least as far as European copyright is concerned."

Ironically, AI has also made great waves in targeting copyright infringement. Companies like Pex monitor the Internet for rights violations using audio and video fingerprinting algorithms, which are able to identify tracks even if the media is compressed, cropped, recorded in a noisy environment, or otherwise modified. Pex also recently bought Dubset (formerly The Future FM), an online mixed-audio distribution platform that allows DJs to upload, host and share their mixes, podcasts, etc; assuring them that the underlying rightsholders sampled within the mix will be paid royalties for their works.

Even here there are issues though. Sometimes fingerprinting algorithms attribute royalty-free samples purchased on sites such as Loopmasters to a certain artist, and therefore distribute royalties to that single artist by mistake. During the Covid-19 livestreaming boom a related issue has cropped up when the algorithm falsely flags an infringement during a DJ set on platforms such as Facebook and Instagram, and automatically stops the video connection.

Another potential issue concerns deepfakes (super-realistic videos, photos, or audio falsified through sophisticated AI). Roc Nation recently filed takedown requests of fake, AI-created clips of JAY-Z rapping Shakespeare soliloquies, although again the law remains murky.



THE FUTURE

Other notable applications of music in AI include Spotify's personalised playlists, Deezer's AI-enabled ability to spot and label explicit content, 'adaptive music' apps that generate music depending on the listener's location and local weather, and A&Rs using AI to identify potential rising stars. All of these offer a clue as to what opportunities AI may open up next.

For instance, regarding personalisation, if it's possible for listeners to influence the music they're listening to, it stands to reason that music can also influence listeners.

You can already target music fans based on their listening habits, but if certain tempos, harmonies and even frequencies can provoke different reactions in the human brain, can music be automatically generated to match physical activity, body clocks, or even to encourage spending? Or play tracks that mention certain brands, products or activities?

AI is also being used to identify artists who already appeal to consumers of particular brands, which can inform sync, sponsorship and strategy decisions. This will only get more sophisticated, and potentially even more automated, as the technology (and the data) develops.

THE FUTURE

As that happens, we may start to see AI have an impact on the transactional side of sync too. If the underlying data is strong enough, AI programs may allow for a more automated process, where tracks could be licensed immediately for a variety of purposes, with a variable fee that is paid straight to the creator. This may not be something to get too excited about just yet (we're still waiting for the promised new dawn of Blockchain after all…) but it shows the breadth of possibility.

Finally, AI has the potential to not just produce our pop music, but the performers themselves. Yamaha's Vocaloid technology has already helped to bring legendary Japanese singer Hibari Misora 'back to life', but it's also creating new personalities such as the computer-generated influencer turned pop star Lil Miquela.

Even more ambitious is the Auxuman stable of fully formed AI artists being conceived by artist Ash Koosha, who sees this as the start of not so much an incursion into the existing music landscape, but perhaps the creation of a whole new one:

"We focus on experiential content. And we're focusing on Generation Alpha, the next generation, who are just growing up, and who are going to be more comfortable in being introduced to characters who are not human. We think the next social media is like a game world. We're starting by becoming very good at building these characters, but the future might be these large-scale simulated worlds. And then these people are going to be there, and you can visit them from time to time, and make friends. Maybe that's the Netflix of the future! Although yes, it's still far-fetched for now, so we are working only on great digital talent. As people start to understand their influence and communicate with them, we will start to build the case for that world."

THE FUTURE

Far-fetched perhaps, but as AI programs and datasets continue to improve, then its scope may expand even further than the current limits of our imagination.

For now it's already providing a helping hand to both music makers and music users, and perhaps that's the best way of looking at AI - as a potential assistant, not a potential competitor.