MUSIC AI

The Music Ally Guide
STRICTLY ALGO-RHYTHM

- Artificial Intelligence (AI) can drive cars, trade stocks, play video games, and write news stories... and it can also compose original music.

- A number of AI startups (and some huge technology companies) are tackling this challenge, and exploring potential business models.

- Their efforts are sparking a debate about the likely impact - for better or worse - on human musicians and songwriters.

- As AI music improves, it will also present challenges and opportunities for rightsholders and digital-music services alike.
WHO'S DOING AI MUSIC?

From startups to tech giants
British startup Jukedeck launched its tool for composing music using AI in December 2015. Users choose a mood, style, tempo and length, and the system creates a track to fit.

The company’s business model is aimed at creators of video, games, apps and other content, who need background music with full rights.

It has bigger ambitions. “You can democratise music. As soon as AI understands a bit more about how to write music, you can put that power into a lot more people’s hands. People who aren’t classically-educated can play and tinker with music, which is really exciting,” CEO Ed Newton-Rex told Music Ally in August 2017.

The company also thinks its tech could be used for personalised music. “You can give every person in the world their own personal composer, and music can respond to anything from their environment to their mood or their calendar.”
US-based startup Amper Music was part of the inaugural Techstars Music accelerator in 2017.

Its initial offering was similar to Jukedeck’s: a tool for people to choose mood, length and instrumentation, which will then compose music on-demand in response to those inputs, to be used as the soundtrack to games, videos and other content on a royalty-free basis.

“I firmly believe that at some point sooner rather than later, Amper’s music will be indistinguishable from human-created music,” CEO Drew Silverstein told Music Ally in 2017. “As AI and humans collaborate to make the future of music, we want this collaboration to enhance the creative process in an additive way, not to displace it.”

Amper raised $4m of funding in March 2018, but in September announced that it was shutting down its beta composer tool, because “going forward, we will be focusing on our enterprise products”. More details of how will be announced shortly.
French startup AIVA describes itself as “the artificial intelligence composing emotional soundtrack music”. It also wants to be “a creative assistant for composers and creators”.

The company was a finalist in the 2018 Midemlab startups contest, presenting at the Midem conference in June. CEO Vincent Barreau said that the AI has been trained on scores written by Bach, Mozart and Beethoven among other human composers. “We also have a plagiarism algorithm, so we are not plagiarising!”

Like Jukedeck and Amper Music, AIVA sees an initial business model taking on production music, with creatives able to pay a monthly subscription to use its compositional algorithm to create their background music.

Like Jukedeck’s CEO, Barreau also highlighted potential for personalisation: a future where AIVA can live on people’s smartphones, composing personalised music based on their location, the weather and their activities.
POPGUN

- Australian startup Popgun, like Amper Music, was part of the first Techstars Music cohort in 2017.

- The company started life with the intention of training an AI on popular tracks on Spotify, then deploying it to create new hits. However, a pivot saw Popgun develop an AI called ‘Alice’ which was capable of listening to human piano-playing, then responding with its own melodies.

- Armed with funding from Khosla Ventures (and the appointment to its board of former Pandora CEO Tim Westergren) in 2018 Popgun’s tech has evolved to the point where its AIs can compose and play piano, drums and bass together, including creating backing tracks for human vocals.

- “We are back on ‘we’re gonna make some hit pop songs over the next couple of years’ now,” CEO Stephen Phillips told Music Ally in November 2018. “It’s going to be a new instrument that producers will use. A tool: a more abstracted drum machine.”
Berlin-headquartered Melodrive has developed an AI music system for interactive content, focusing initially on gaming.

In October 2018 it launched the beta of its music engine for independent game developers, in two versions: Melodrive Indie Beta, which is available from the company’s website, and Melodrive Lite Beta, which is available from the Unity Asset Store - both for free.

The company says its system “composes an infinite stream of original, emotionally variable music in real-time”, with the idea being that developers can get a soundtrack that adapts to what’s happening within the game at the time.

The engine launched with four musical styles: ambient, house, piano and rock.
British startup AI Music revealed its plans to create technology to make “shape-changing songs” in August 2017, when it was already part of the Abbey Road Red startups accelerator, based in the famous London recording studios.

“We’re not generating music from scratch. That’s explicitly not what we’re doing. We’re looking at using AI to shift the way in which music is consumed,” CEO Siavash Mahdavi told Music Ally. “We’re shape-changing the music... It’s that idea of contextual AI. Maybe you listen to a song and in the morning it might be a little bit more of an acoustic version. Maybe that same song when you play it as you’re about to go to the gym, it’s a deep-house or drum’n’bass version. And in the evening it’s a bit more jazzy.”

The company closed a £5m funding round in early 2018, and has been working on a mobile app which showcases its technology - as well as exploring partnerships with artists and labels.
Amadeus Code launched its mobile app in March 2018, describing it as “an artificial intelligence-powered songwriting assistant” that generates melodies for songwriters as creative inspiration.

The AI has been trained on a catalogue of “the world’s top composers” so that it can create ideas for songwriters to develop. “Your next golden idea is just a swipe away,” is the pitch. “Keep only what you need and just swipe for the next idea.”

The app is free to download, but users can pay $1.99 to purchase individual songs, or $119.99 for an annual subscription to the app, providing unlimited access. The app can tap Spotify’s library to identity chord progressions from the user’s favourite songs.

“AI has this peculiar ability to find novel solutions - some successful, some not so much. These are suggestions which a composer can take or leave,” said co-founder Taishi Fukuyama in September 2018.
The HumOn mobile app started life as a spin-off from South Korean technology firm Samsung. The app let people hum a melody into their smartphone’s microphone, with the app using AI to turn that into a full song. The app was a winner at the 2017 Midemlab startups contest.

By June 2018, the company had honed its business model, like other AI-music firms, into a B2B pitch to video creators who need soundtracks.

“Our product will be sold to power-users who upload hours of videos online every week; these video producers can use this tool to generate accompanying music tracks - without any copyright issues,” explains parent company CoolJamm’s profile on investment site AngelList.

The HumOn app is currently available for Android and iOS via the app stores of Google and Apple, including in-app purchases to unlock genres like disco and hip-hop.
WaveAI

WaveAI is the newest startup included in this guide: Music Ally first reported on the company in October 2018.

It has an app called Alysia which “allows everyone to create original songs in minutes” using AI and machine-learning technology. It creates lyrics as well as melodies, with users encouraged to then record themselves singing and share their creation online.

Currently in invitation-only beta, the app was showcased in October with the release of a three-track EP (via distributor DistroKid) on Spotify and Apple Music. ‘Invisible Tides’ is credited to humans Igor Verkhovsky, Dusti Miraglia and Gwyndolyn as well as to Alysia itself.

“Just like photography, which used to be accessible to the few but has now been democratised, we’ve made songwriting readily accessible to anyone with a smartphone,” said CEO Dr Maya Ackerman.
MUBERT / ENDEL

- **Mubert** isn’t an AI-powered music-creation app, although it does create music. Instead, it’s a full streaming service that “creates royalty-free background music in realtime”.

- Users choose an activity (for example, studying or sports) or genre to generate a stream of suitable music. “Just turn on Mubert, put it in your pocket and focus on your hobbies. If your life is like a movie, then Mubert is its soundtrack,” is the pitch.

- **Endel** is a similar app, creating adaptive music based on “circadian rhythms, pentatonic scale and sound masking” as well as signals like time, weather, heart-rate and location. Its music is provided through four modes: relax, focus, on-the-go and sleep, to suit different use cases.

- Endel was part of the Techstars Music accelerator in 2018, as well as Amazon’s Alexa Accelerator. Its app was released for iOS devices first, but the company plans to also launch it for Mac, Apple TV, Android and Alexa.
In February 2017, Google launched A.I Duet, based on its Magenta project exploring music made by neural networks. A.I. Duet is an algorithm that plays piano duets with humans. In May 2017 another Magenta project, NSynth, was a “neural synthesizer” that can create new sounds and instruments.

Sony CSL Research Laboratory in Paris was a pioneer of recent AI-music, releasing two songs in 2016 (‘Daddy’s Car’ in the style of the Beatles and ‘The Ballad of Mr Shadow’ in the style of American songwriters like Irving Berlin and Cole Porter. Sony’s Flow Machines project used AI alongside human composers and producers.

IBM’s Watson Beat uses a neural network for music composition: users feed it up to 10 seconds of MIDI music and give it a mood, and it creates something new in response. Among its examples: the soundtrack for a Red Bull Racing video.

In May 2018, a team of Facebook AI researchers revealed their work on a “universal music translation network” capable of shapeshifting music. “For example, we convert the audio of a Mozart symphony performed by an orchestra to an audio in the style of a pianist playing Beethoven…”
ARTISTS AND AI MUSIC

Human-AI collaborations
TARYN SOUTHERN

➤ Taryn is a US singer and YouTuber who released an album called ‘I AM AI’ in 2017, based on collaborations with companies including Amper Music, AIVA, IBM and Google.

➤ The project was pitched as “the first artist to work with artificial intelligence as the sole composition tool on a music album”.

➤ The video for one of the tracks, ‘Break Free’, has been watched more than 1.8m times on YouTube.

➤ “Now I’m able to iterate with the music and give it feedback and parameters and edit as many times as I need. It still feels like it’s mine in a sense,” she told The Verge in August 2018.
EnterArts is a South Korean music company with a roster of K-Pop artists including SPICA, Produce 101 and Highteen.

It worked with UK startup Jukedeck in early 2018, taking compositions from the latter’s algorithm and developing them into full songs.

Members of its bands performed the tracks at a concert in Seoul on 27 February, before the songs were released on western and Korean streaming and download services.

“Rather than replacing human composers, the power of AI lies in its ability to be used as a tool by human composers and producers to fuel their creativity,” said the companies at the time.
TALKING POINTS

Discussions around Music AI
WHAT IS THE BUSINESS MODEL FOR AI-GENERATED MUSIC?

➤ Outside the academic sector, AI music’s early business model has been as a soundtrack composer for video and games creators: spitting out backing music that they can purchase the rights to a la carte or as part of a subscription.

➤ There is scope for this technology to be sold to musicians and producers as a compositional tool - something to use in the studio when looking for new ideas, or trying to get out of a writing rut.

➤ The bigger opportunity may be in putting AI music composition into the hands of non-musicians, whether that’s as an app to generate mood-music on demand, or as a tool (likely within apps like Instagram, Snapchat and Facebook) to create copyright-free backing tracks for the videos they want to share on social networks. Those users are unlikely to pay for this feature, but the social networks may want to acquire startups capable of providing it.

➤ Labels could be acquirers of and clients for AI-music technology too: from using it as a tool to pump out their own mood-music for streaming services, to a cheaper way to create remixes of their catalogues.
IS AI MUSIC A THREAT TO HUMAN ARTISTS AND SONGWRITERS?

➤ AI music still creates a lot of tension among the musician, songwriters and producers/engineers communities, whose first response can be to see it (somewhat paradoxically) both as a risible idea (‘An AI could never compose a song like Joni Mitchell can’) and an existential threat to their livelihoods.

➤ The argument from the AI-music startups is very much the opposite: that AI can be a creative foil and compositional tool for talented humans - one that frees them up to make more / better art.

➤ The question of whether AI can create music that’s ‘better’ than humans can is a red herring: human-created music runs the gamut from the truly terrible to the wonderfully sublime (both of which are subjective, in any case). The best AI music currently is… listenable, albeit usually with human input when it’s being created.

➤ AI music can surpass human music for certain specific purposes: a cheaper soundtrack to a YouTube video, or perhaps even a hyper-personalised soundtrack to help you sleep, focus or relax.

➤ It’s important to remember that we love artists for their humanity - for their personality - not just for the music itself.
WHAT WILL STREAMING SERVICES DO WITH AI MUSIC?

François Pachet is one of the most interesting figures in AI-music, and not just because he was director of the Sony lab that ran the Flow Machines project. In July 2017, it emerged that he had been hired by Spotify, where he now works as director of its Spotify Creator Technology Research Lab “where he designs the next generation of AI-based tools for musicians”.

That suggests he may be deploying AI as a creative foil for artists rather than a replacement: his work may sit neatly alongside Spotify’s acquisition in November 2017 of online music-making platform Soundtrap in that respect. Imagine a Spotify-owned GarageBand-style tool for composition, with AI instruments capable of accompanying the user’s own contributions…

But Pachet’s history also raises questions about whether Spotify would ever explore using AI to create music to populate its own mood playlists (for sleeping, relaxing, focusing, working out etc). This makes the music industry feel defensive - because it could dislodge human-made music from those playlists. But Spotify’s sights might be on truly hyper-personalised music: generative tracks that are driven by its data on each individual user’s habits and preferences.
DO AI–MUSIC FIRMS NEED A LICENCE TO TRAIN THEIR TECH?

➤ The most common techniques used for AI music involve training the algorithm on a large catalogue of existing music, whether that be commercial pop or classical performances.

➤ There has been an under-the-radar (so far) debate about whether AI startups require a licence for this training: for example, if they fed the entire back catalogue of Ed Sheeran (or Public Enemy, or The Beatles, or Kraftwerk) into their systems, would that artist and their rightsholders be due a royalty? And would they have any claim on any revenues created by songs that come out of that AI later?

➤ “If I decided to train my AI with the entire catalogue of Beggars, should I have to ask you permission, and do you have to give me a licence?” said Sophie Goossens from law firm Reed Smith in April 2018, when she was on a conference panel with indie label Beggars Group’s digital boss Simon Wheeler. “The idea that you might need permission to train your AI, in order to get access to the data? That’s a really big idea.”

➤ Wheeler replied: “I think that’s definitely the case. We’ve had this discussion with services for a long time. We give you our music under very specific licence, and if it’s not in that licence, you can’t do it. And that includes things like sending it off for analysis and audio-fingerprinting...”
FURTHER READING

More coverage of AI music
FURTHER COVERAGE FROM MUSIC ALLY ON AI

➤ Report from a day of AI-music sessions at The Great Escape in May 2018
➤ Report on the RoboPop AI panel at AIM’s Music Connected in April 2018
➤ Report from an AI session we curated at by:larm in March 2018
➤ Panel report on AI music from NY:LON in January 2018
➤ A long-form Music Ally report on AI and music from September 2017
➤ Music Ally’s coverage of a BPI-hosted AI music event in November 2016
➤ Our long-form report produced in partnership with the BPI for that event
➤ Music Ally’s news archives of AI music stories