GenAI is no threat to Actual Intelligence, but SenAI will be a significant Paradigm Shift for the Future of Music Performers and Composers.

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The name 'artificial intelligence' (AI) was coined in 1955 by the computer scientist John McCarthy. The term AI unfortunately conjures up a significant misconception. Namely, that AI systems not only do the same things as humans - but do them in the same way and according to the same internal mechanisms. This kind of theoretical inaccuracy is reflected in the 1970s quote attributed to the Dutch computer scientist, Edsger Dijkstra, 'The question of whether machines can think is about as relevant as the question of whether submarines can swim'. (Sanguinetti 2025)

Alan Turing perhaps gave one of the earliest public lectures on computer intelligence in London in 1947. "What we want is a machine that can learn from experience," he argued, adding that the "possibility of letting the machine alter its own instructions provides the mechanism for this."

The Turing Test, originally called the 'imitation game' in 1950, is a test of a machine's ability to exhibit intelligent behaviour that is the equivalent of, or indistinguishable from, a human. As a result, the question 'Can machines think?' is something that would be debated by innovators and scientists alike around the world.

Artificial Intelligence effects on performance and composition

This paper discusses the genres of 'Artificial Intelligence and their potential effects on music performance and composition'. I have chosen to divide AI into 3 main categories.

1) *Assistance AI* such as Apple's Siri or Google's Alexa and AI controlled robotic machines such as those used in manufacturing
2) Generative AI or *GenAI* which includes Chat GPT etc, and
3) Sentient AI, which I have chosen to name *SenAI*.

The enhanced language capabilities of GenAI may help you prepare a document based on given stimulus material, summarise an entire lecture or meeting in seconds or get the short version of a long group thread, but it is just a highly developed version of AI lifestyle assistance.

Yann LeCun, the head of AI research at Meta, notes that these systems are not powerful enough to achieve true intelligence. The current consensus among leading experts is that AI is far from being sentient.

Sentient AI

Sentient AI refers to artificial intelligence that is capable of thinking, feeling, and experiencing the world like a human, including having self-awareness, emotions, and the ability to learn and adapt.

A SenAI capable music software application would change the balance of those human "actually intelligent" composers and performers. Creativity, defined as the ability to produce new and adapted ideas to a situation, has been traditionally represented in terms of four components: the person, the process, the press and the product (Botella et al 2013). If a SenAI computer application is able to draw on these 4 P's to create and perform, rather than

just reproduce content by following pre-programmed rules, then there will a significant paradigm shift from our current situation.

Although AI learns as humans learn and is capable of reasoning to an extent, SenAI potential computers are not yet close to being as complex as the human brain. It is still relatively unknown just how the human brain gives rise to consciousness, but there's more involved than just the number of synaptic brain cells. As *Hu & Downie* (2024) write, sentience is often "conflated with intelligence, which is another feature that the scientific community is still working to quantify in machines."

Human vs computer analogy

I will use an analogy of human v computer chess games to illustrate the problems with current AI-based music software. The element of actual intelligence is demonstrated by the human grand master playing against a computer opponent. The concept of 'brute force' computational programs such as AlphaZero, which process millions of potential move permutations in almost real-time, has seen a recent prevalence of chess victories to the computer. It doesn't tire or fatigue which limits the mistaken move or unforeseen outcome of their human opponent. Every move from past games is then programmed into the algorithm for future AI based games. As stated by *Friedel* (2019), there is a very strong opinion that the best chess engines on earth have no concept of chess, they have no understanding of it, that they're playing a game, though they're doing it better than any person who ever cared about chess ever has. There's no chess in that, there's no experience of chess, there's no notion of chess.

The same can be said for current AI generated music

Music performance and composition is the "embodiment through sound of lived experience". *Hagman* (2005) further describes it as a "conscious and unconscious mode of subjectivity woven together in a tapestry of tone and sound, which is less about the world and more the symbolic equivalent of human subjectivity itself." Musicians, through their interpretation of a composition, invest their performance with self-experience, and they come to experience themselves as vibrantly mirrored in the ideal form of the music. In other words, the musical performance is an opportunity for personal experience."

Various studies have been conducted to try and understand the role of mental representation when musicians practice or perform music and the work steps required for a musician to prepare a concert. More recent studies examine the process of creativity in the shaping of a musical interpretation. However, none of these studies answers the following questions: Why do expert musicians working from the same score create different musical interpretations? This is the true beauty of actual intelligence over the current artificial intelligence applications in music creation and performance.

A few final thoughts on this matter involve popular culture sayings. The first is from the Greek fabulist and storyteller *Aesop* who writes in his Fables, "be careful what you wish for" and the second is from the ancient Chinese curse, "may you live in interesting times." SenAI was thought to be decades away, but the rapid rate of development indicates that it might be here sooner than we thought. The outcomes of escalating the development of this technology may not all be positive.

Lastly, in the words of *John Conner* from the 2003 science fiction action film, *Terminator 3: Rise of the Machines*, "The future has not been written. There is no fate but what we make for ourselves… Judgement Day is Inevitable!"

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