



# Will AI be the future of leadership development?

# – The potential of AI

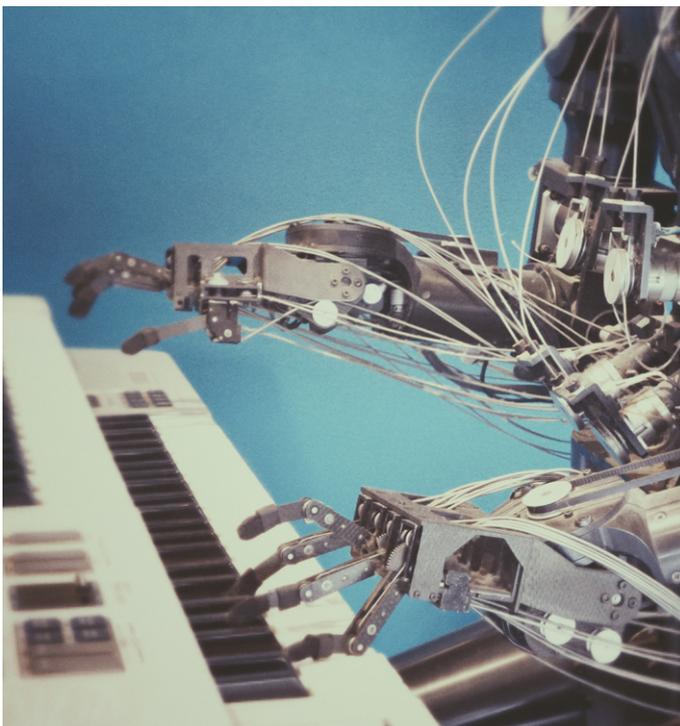
Rapid advances in the abilities of artificial intelligence (AI) have made this technology a frequent fixture in the news over the past year. Much has been made of AI's potential to replace human labor in jobs that had, until recently, been considered practically impossible to automate.

With sufficient human supervision, AI is already capable of fulfilling some roles in leadership development and education, planning programs, and personalizing those programs. This may make it possible for a broader range of people, from a wider range of backgrounds, to receive training at a lower cost, and it has the potential to make leadership development more flexible and more easily personalized.

**AI will play an ever-greater role in leadership development, making leadership development more effective, more bespoke and more accessible. But how far will this trend go?**

# What can AI already do, what will it be able to do in the near future?

In this white paper we will explore what is special about the current generation of AI and make a realistic analysis of what its capabilities are, and what our expectations should be for its future.



We will measure these capabilities against some of the processes and tasks within leadership development in order to identify those that could benefit from automation using current or near-future forms of AI. We will also ask whether there are tasks for which AI is fundamentally unsuited

Opinion among experts in the field of AI is mixed, with some hailing the current generation of AI as having the potential to solve

. While elsewhere an warning that AI poses an existential threat to humanity received tens of thousands of signatures. Between these two extreme positions, moderate voices have pointed out that overstating the potential of AI, good or bad, serves only to bolster hype around a technology that has become

One area that was for a long time considered either too difficult, or else undesirable, to automate is education. This perception stems from various ethical issues around AI such as its potential to reinforce societal biases, which we will go on to explore in more detail, as well as practical issues surrounding AI's accuracy, and the difficulty of programming a machine to replace all the intricacies of person-to-person interaction.

# What is special about the current generation of AI?

The type of AI that we will predominantly be talking about are Large Language Models (LLMs). Put simply, a language model generates strings of words by predicting the most likely next word in a sentence based on the words that have preceded it. LLMs are defined by the enormous corpus of training data on which these predictions are based.

In a process called unsupervised learning, the LLM attempts to predict the next character in a sequence based on the context of the preceding words. It then compares this prediction to the actual next characters in the sentence, helping to improve future performance in a self-reinforcing positive feedback loop. After many hours of training, using vast amounts of training data (comprising a significant portion of all text on the internet) the LLM is able to generate coherent text, indistinguishable from something composed by a human.

The principles on which LLMs operate, and the use of unsupervised learning have been around for some time. However, one limiting factor on the growth of language models was the availability of enough processing power to train the models on such vast datasets. The availability of sufficient processing power has now caught up with the ambitions of those developing LLMs, precipitating the sudden leap in the models' capabilities.

# The inherent limits of LLMs

An early issue with publicly available LLMs was their propensity to ‘hallucinate’. In such cases, the LLM would generate perfectly legitimate-sounding text, but this text would have no basis in reality. LLM hallucinations may be an indicator of one of the technology’s fundamental problems.

It should be noted that the LLM does not perceive the training data, or its own outputs, as language at all. Before being fed the training data, the text is encoded into a numerical format that a computer can process. This is why Linguist Prof. Emily M Bender coined the term ‘stochastic parrot’ to describe LLMs, whose output “is not grounded in communicative intent, any model of the world, or any model of the reader’s state of mind.” Viewed thus, an LLM is “a system for haphazardly stitching together sequences of linguistic forms it has observed in its vast training data, according to probabilistic information about how they combine, but without any reference to meaning.”<sup>1</sup>



LLMs cannot interact with language as it is spoken, with the expressive use of tone, filler words, and pauses-for-effect required for immediate human interaction.

Understood in these terms, it can even be argued that Large Language Model is a misnomer. Writing, which LLMs are able to produce, is a technology through which language is represented in a consistent manner. LLMs cannot interact with language as it is spoken, with all expressive the use of tone, filler words, and pauses-for-effect required for immediate human interaction.

<sup>1</sup> Bender et al. On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency.

# Artificial general intelligence

The future development of artificial general intelligence (AGI) is a *topic* of some of the current leading companies in AI. While LLMs are extremely adept at certain tasks, such as predicting the patterns of natural language, these systems have limited ability beyond the tasks they have been trained to complete. In contrast, AGI would hypothetically be able to surpass human capabilities, being able to adapt to and execute any task that a human can perform.

Whether AGI is possible at all is a matter of debate. This also depends on the question of how 'general intelligence' is defined, whether it requires sentience: the ability to experience phenomena; sapience: reasoning and abstraction; or full consciousness. This is further complicated by there being no objective way to differentiate real consciousness from a very accurate emulation – if it quacks like a duck...



# What is education?

For the purposes of this white paper, we will be considering education as consisting of three distinct phases:

## 01

### **Transfer of knowledge**

This can involve any of a huge range of activities, from rote learning in a classroom to one-to-one training to carry out complex manual tasks.

## 02

### **Contextualization of acquired knowledge**

Once knowledge has been imparted from one party to another, the learner must develop the ability to apply that knowledge to specific tasks, to recognize where and under which circumstances the knowledge can and should be applied, and how it should be applied in such circumstances.

## 03

### **Development of critical thinking**

Critical thinking requires a learner to self-reflect, identify their own potential biases, rigorously apply rational analysis of the information available to them, synthesize information from numerous (potentially contradictory) sources, and through this process guide the development of new knowledge.

This model of education is hierarchical, with contextualization building on learnings acquired through knowledge transfer. Critical thinking is at the top of this hierarchy, but also generates new knowledge that can feed back into the knowledge transfer stage in a positively reinforcing loop.



# What skills are required to work and coach in leadership development?

Having established an outline of what LLMs are capable of, we will go on to compare those capabilities against the competencies required to conduct leadership development. In this way, we may establish the extent to which LLMs can fulfil the role of educator or coach in their existing form, and to identify whether there are elements of leadership development to which LLMs are fundamentally unsuited.

## **Ethical practice:**

An AI is no more inherently moral or immoral than any other tool. AI has no ethical framework other than that put in place by its designers or that of the organization deploying the AI as a tool. The onus of responsibility for transparency and ethical conduct, therefore, falls on the humans controlling the AI.

Client/coach confidentiality is an aspect of ethical practice. There are examples of confidential information being misused as part of AI training data, and plenty of examples of confidential data being breached by IT systems that are either faulty or misused, with or without the involvement of AI. But again, the responsibility here lies with those operating these systems, and it would be a mistake to assume that LLMs can be held responsible for ethical decisions.

**Coaching mindset:**

Educators are expected to engage in ongoing personal development and reflective practice in order to keep their skills up-to-date, and they are expected to be prepared for sessions with clients. For LLMs, this means being exposed to new training data and continuing the unsupervised learning process. Theoretically, this is trivial for an AI. However, human intervention is still required to ensure the suitability of the material being fed into the system.

**Establishing and maintaining a relationship:**

While a LLM is perfectly well-equipped to explain the training process to a client on a basic level, agreeing the terms of a teacher/student relationship and defining the terms on which outcomes should be measured should be a two-way process, and it is unclear to what extent current AI has the flexibility to do this.

Furthermore, some learners will feel less of a sense of accountability towards an AI than they would towards a human, making the maintaining of the relationship more challenging. That said, many users find it exceptionally easy to anthropomorphize AIs (something we will look at again in a case study later on in this paper). This, however, is a double-edged sword: while anthropomorphizing an AI may help a learner engage, it can also create false expectations around the system's capabilities.

**Trust and safety:**

Not being sentient, it is impossible for current forms of AI to truly empathize with a client, but AIs can be designed to act in a way that demonstrates, or at least resembles respectfulness. Trust that an AI coach or trainer is working in the best interests of the client must be earned, just as with ethical practice, the onus here falls on the organization deploying the AI to take responsibility for ensuring that their systems are reliable and safe.

**Presence and availability:**

Some AI systems are claimed to be capable of reading human emotion, raising the possibility that an AI system could, to some extent, register and respond to patterns in the learner's behaviors and emotions. How closely an AI can replicate this kind of human interaction is a question we will explore in more depth later.

A good educator has to work hard not to be influenced by their own emotions when addressing clients and students. Here, AI arguably has an advantage. AI also has the advantage of being available on a 24/7 basis, in a way that would be impossible for a human educator.

**Cultivating learning and growth:**

Equipped with a well-designed training program, there is no reason that an AI would not be able to assist a client or student on taking their learning and insight and transforming it into real-world actions, encouraging positive behaviors on the part of the client.

**Evoking awareness:**

LLMs are well equipped to pose questions to users that will prompt insights into ways of thinking, values and beliefs. However, it is inevitable that the AI's design and training data will contain elements that are biased towards a particular worldview or ways of thinking, and this is something that all users of AI should be aware of. Bias in AI will be explored further in a later chapter.

# Which elements of leadership development is AI capable of assisting in?

Some elements of education are already seeing automation implemented to some degree. For instance, plagiarism detection is faster and more comprehensive when done by a machine.

AI has also been put to use in the admissions process by some institutions. However, the inherent bias of AI has rapidly become a cause for concern when it is used for this type of purpose.

Here we will look at where AI is being deployed in ways that are specific to leadership development.



## AI in course design

Putting together a well-designed course, even shaping content to suit the goals of a client, is within the abilities of LLMs. There is a huge existing corpus of course material that will have been included in the vast quantities of data that LLMs have been trained on.

However, this raises an ethical issue that exists around LLMs as a whole, and not just in their application in coaching or leadership development: that of alleged plagiarism or violation of intellectual property by LLMs. LLM training data is extracted in bulk from online sources, with some filtering done to ensure that the data is of sufficient quality to enhance the AI's abilities. However, in this process, little regard is sometimes paid to the ownership of intellectual property contained within that training data. Most frequently, this issue has been highlighted by artists who find that publicly available AIs are capable of producing work in their style or voice, as a result of the artist's intellectual property appearing within the training data, with the artist receiving no credit or compensation. Likewise, a LLM that can generate a course design will do so based on the work of professional educators – 'borrowing' their work without consent or compensation.

This problem has already led to [several cases](#) in cases where it is easy to identify the work of an individual or organization as having been used in LLM training data. However, this remains a legal gray area, and it's unclear whether the development of LLMs will be set back as a result.

Niall McDonagh, Senior Associate Consultant at StratX ExL, points out a potential, less contentious, role for AI in course design: "One of our clients is already using AI to assess development opportunities and make personalized training path recommendations for its employees. I can also envisage AI being able to provide on-the-job learning, by monitoring interactions & conversations (assuming GDPR / privacy compliance) and recommending 'bite-size' mini-learning modules at the point of need."

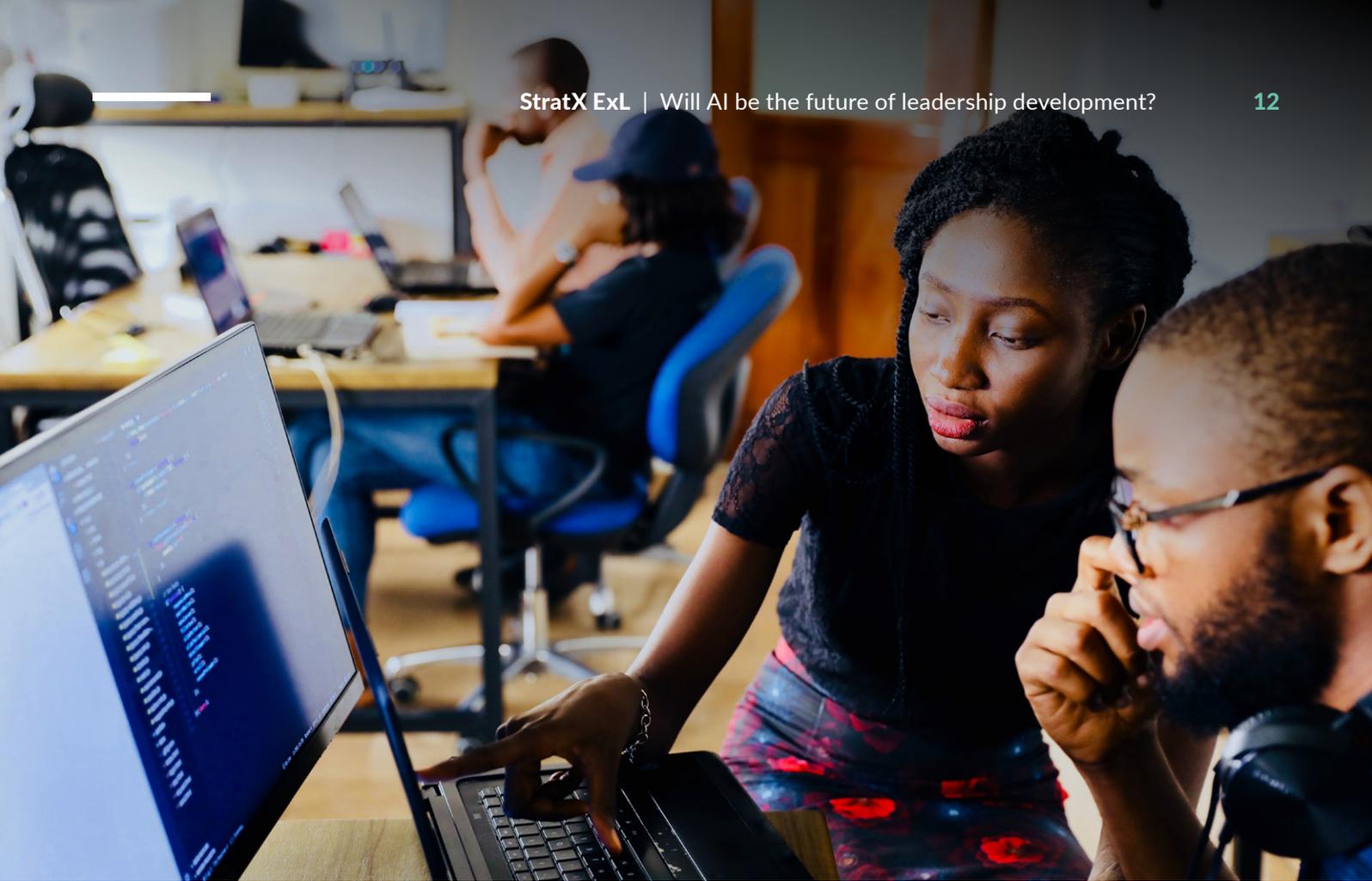
## AI in the delivery of learning

To what extent an AI could deliver leadership development content that it has developed, and do so in an engaging way, is unproven. To replace a human mentor in engaging with students requires the AI to successfully interpret and answer questions based on the students' own experiences and situations. This demands the AI to do more than just extrapolate from its training data, and to flexibly respond to novel situations.

## AI has the potential to allow a level of personalization that would otherwise be impossible to deliver at scale

However, there are ways AI can help. According to Niall McDonagh, "Automation will enable personalized learning pathways and real-time feedback." Here, McDonagh suggests, learners could opt in to monitoring using existing wearable tech or via mobile devices. As discussed previously when looking at course design, AI has the potential to allow a level of personalization that would otherwise be impossible to deliver at scale.

Training programs exist on a spectrum from being 100% remote, self-led and asynchronous, to being fully face-to-face and intensive. Between these poles, hybrid models bring in elements of self-led learning and face-to-face learning and coaching. Where blended approaches incorporate direct-delivered and online – directed or self-directed – learning, there is scope for AI to play a much larger role than it already does.



### What delivery of leadership development by an AI might look like

If an individual or team wishes to improve their strength as negotiators, a training course might begin with theory and reading before the learners put ideas into practice. At this stage an AI chatbot could act as an interlocutor with which learners can test what they've learnt about negotiation. This may be followed by a workshop where the learner puts their negotiation skills to the test with other humans, with follow-ups taking place online with either an AI or a human educator or coach assessing the learner's progress.

Some training programs employ actors in the role of interlocutor, roleplaying different scenarios and situations. So, one of the range of ways in which an AI could play a role would be in taking the place of the actor. This would dramatically lower the cost of such a workshop, potentially making such courses more accessible to a broader range of people.

LLMs are already at a level where this approach is beginning to be implemented as a cost-effective solution. Certainly, this is the case for very top-level learning. However, skills like negotiation

require insights into behavior, digging down into the psychology and motivations behind an individual's choices and actions, which will test the limits of an LLM's capabilities.

# Real-life cases for the benefits of AI in leadership development

StratX ExL's Managing Director for US operations, Philippe Latapie cites multiple examples where AI is starting to be used in the way described above while benefitting participants: [Avatars](#) is a learning solutions provider that claims that interacting with an avatar increases psychological safety of the participant. Latapie explains that "Currently, they use real actors to give a voice to the avatars, but we could see ChatGPT play that role or assist in that role. Another application is coaching support: [Lingua](#) the company has developed a platform that records coaching sessions or any meeting and makes coaching recommendations based on AI analysis of a participant's ability to listen or be curious and engage with questions, benchmarked against best practices."

And there are other examples besides, some of which may be able to overcome the difficulties faced by AIs in mastering interpersonal interaction. [AI in HR](#), in partnership



# The problem of bias and the need for human oversight

A well-recognized challenge for the safe and effective deployment of AI across all industries is that of inherent bias. This can stem from biases in the vast amounts of training data that LLMs depend on – biases that are near-impossible to tackle through human intervention, not least due to the sheer quantity of data involved and the ‘black-box’ nature of AI algorithms. Biases in AI can also emerge from unexamined presumptions made by the engineers developing the AI.



Intervention by responsible and accountable people is seen by some as the only viable solution. A 2019 report by the [National Institute of Standards and Technology](#) suggested that one of the most complex steps in addressing bias in AI is simply defining what ‘fairness’ means. This is a conversation that lies closer to the realm of philosophy than engineering, and which requires real people to take responsibility for decisions that will have concrete real-world consequences.

This is somewhere where it would be highly irresponsible to hope that an AI can decide the right course of action if left to its own devices.

# Have LLMs already reached the limit of their capabilities?

It may be that expanding the abilities of LLMs requires expanding their dataset. And given that their current training data comprises practically the entire internet, it's hard to see where more material can be found.

Another limiting factor on LLMs is that they are resource hungry and centralized, meaning LLMs may not be scalable, opportunities to find useful applications for them will be limited and progress in their abilities will plateau.

This all suggests that progress in the abilities of LLMs will come from optimization rather than further growth in processing power or memory storage. But even where smarter ways of implementing LLMs can be found, there is a fundamental limit to what they can do: there is no sense in which a LLM

understands the meaning of the text it generates. When a LLM starts a sentence, it doesn't know what the end of the sentence will be, it simply predicts the next word. The meaning of that word is not important to the LLM. This absence of understanding suggests a fundamental limit to the capability of LLMs to fulfil the competencies required of an educator. Therefore, further improvements in the capabilities of LLMs will come from optimizing how they are put to use. And this is a job for the people operating such a system, not for the AI itself.



# How will the leadership development business react?

We spoke to Will Shorten, a learning and development consultant and coach, about how he perceives the current state of AI in coaching and leadership development, where he believes it can make an impact, and how far-reaching this impact will be.

Far from being worried about how AI will affect his work, Shorten sees the application of AI in coaching and leadership development as desirable in principle. He explains that it's important to remain open-minded in order to feel the benefits of new technology. But it also remains unclear to what extent AI technology will change things.

**It's important to remain open-minded in order to feel the benefits of new technology.**

**Shorten makes the comparison to the use of video-call technology for remote learning,**

“We used to have video calls in 2017 and 2018, but there was no sign it would really take off until Covid happened... Technology comes along, and it takes a while for people to adapt and understand it, and then it starts to grow in terms of use. So, my sense is that people will find ways for AI to work for them. Some already have. And then it's a question of it establishing itself and people seeing the value that it will bring.”

# Adapting with the times

Leadership development doesn't stand still. The role of the leader is always changing along with the nature of work, the economy and culture. Likewise, education is constantly adapting to keep pace with those same changes, as well as making use of new technologies.

Will Shorten suggests that this change mindset is, in fact, fundamental to working as an educator, coach or trainer:

“I don't think AI is a threat, if it becomes a worry then we've got to adapt as well. It's about mindset, I work in a learning and development space, and I think you've got to have an open mindset, that's part of what we're selling. So, it's no good for us to close ourselves off and put our heads in the sand, we've got to evolve as the technology evolves.”



# Learning means being adaptable

StratX ExL offers experiential learning solutions in which individuals and teams can work through real-life situations that test and develop the skills required for successful leadership. For organizations adapting to technological disruption, experiential learning through business simulations gives participants the chance to make leadership decisions in an immersive, safe space, before receiving personalized appraisal and constructive feedback, from experienced coaches and from their own peers.

AI is already having an impact on the work that StratX ExL does. Philippe Latapie explains that “We are using a virtual coach in some of our business simulations deployed at scale...” allowing the benefits of leadership development programs to reach more people. “And now, we have begun investigating using AI to enhance the strategy coaching provided to participants after each simulation round.”

AI is a valuable tool, it has already established a role in leadership development, and this role is certain to grow in the future. Through responsible stewardship of AI’s capabilities, the industry is capable of making sure that this development is for the benefit of all learners and educators.

Niall McDonagh puts it this way:

“AI should make the learning experience more bespoke, relevant, and adjusted to the learning preference and style of the learner. This will result in more impactful and engaging learning experiences with a higher return on investment, which will be more easily measurable.”

**AI is a valuable tool, it has already established a role in leadership development, and this role is certain to grow in the future.**