# UNLOQ

# The Rise of Coachbots with AI: e-coaching unleashed

Everything you need to know about Chatbots, ChatGPT and Coachbots with Artificial Intelligence.

White paper

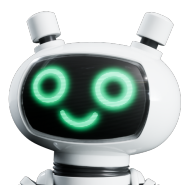Alexander Waringa, Anne Ribbers,
Marcel Herwegh & Remon van den Berg

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This whitepaper is an (edited) summary of several chapters from the book '*E-coaching: Direct aan de slag met online en blended begeleiden'* (E-coaching: Getting straight to work with online and blended coaching), Anne Ribbers & Alexander Waringa (2nd fully revised edition, 2023, Boom, Amsterdam).

### Coachbot iRobin
This white paper refers to the coachbot iRobin. Developed by UNLOQ, this coachbot is free to try out at: https://unlog.org/irobin.

### UNLOQ Campus
This white paper refers to the GDPR -proof online platform UNLOQ Campus. Temporarily you can try UNLOQ Campus free of charge: with a Free Expert Online License: https://unlog.org/unloq-campus/.

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## *Summary*

*In this white paper, we discuss how coaching via a coachbot compares with other types of e-coaching. First, we discuss what a chatbot is: a computer programme designed and trained to interact with users via text and/or voice interaction. A coachbot is a specific type of chatbot that can take on the role of a human coach to autonomously guide a client. Coachbots with artificial intelligence (AI) use so-called language models trained with very large amounts of training data, such as internet texts and books. This allows them to identify links and patterns in texts and thus predict which words in a sentence are needed to answer a question. In addition, a coachbot is also trained with many examples of texts that contain language nuances, such as humor, sarcasm, empathy, and figurative language, which allows it to incorporate understanding and nuance into coach dialogue.*

*We then address several misconceptions that can hinder the use of chatbots and coachbots or, on the contrary, create an unrealistic expectation about their potential. These include: 1) Coachbots cannot be empathetic; 2) Coachbots are neutral and objective; 3) Coachbots are intelligent.*

*Next, we apply the characteristics of e-coaching to coachbots with AI: 1) Visibility: although an AI coach is not physically visible, avatars can be used to create a form of visibility; 2) Proximity: a coachbot can be perceived as close by virtue of the fact that it can always be available on, for example, a mobile phone. This also leads to time and cost savings as travel and travel expenses are eliminated; 3) Time: interaction with a coachbot can be either simultaneous or unilateral asynchronous; 4) Method of communication: this can be either written or verbal, depending on the settings and available technology of the coachbot.*

*In addition to these characteristics, there are three more special process elements that distinguish coaching via a coachbot: 1) Social anonymity: in regular coaching, there is a chance of socially desirable behaviour. In chatbot coaching, where physical contact is absent, the client becomes "socially anonymous" and feels freer to be themself. This promotes openness and intimacy; 2) Independence of time and place: a coachbot offers more flexibility as it is always available,  is always fully present in the now, and has infinite patience. Clients therefore have more control over pace and timing of a coaching journey, which encourages self-reliance and proactive behaviour; 3) Writing as an intervention: communication with a coachbot via written words is therapeutic in itself. Writing helps process thoughts, self-insight and offers the possibility of reading back.*

*Besides all the peculiarities and advantages of working with a coachbot, there are also drawbacks here. The quality of coach conversations hinges on the quality of the training material used to train the coachbot's AI language model. Issues around privacy and security of personal data can be unclear, as can who is responsible in case of wrong answers or harmful suggestions given by the coachbot. In addition, there is technological dependency: without the internet and computers, the coachbot will not work.*

*Finally, the final chapter describes how chatbots with AI can also be used for other coaching-related purposes including matching clients, supporting individual learning paths and as a personal virtual assistant.*

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*In 6 short chapters, we show what coaching via a coachbot with AI offers and how it works, what it requires and how you can use it as a professional.*

# 1       From F2F coaching to autonomous e-coaching

Depending on technology usage, coach and client working methods can be digitized to a certain extent: from minimal, where there is hardly any digitization, to maximum, where there is no longer even a human coach involved in coaching. The maximum digitization of the coach means that computer programmes analyze the (communication of the) client and provide feedback completely independently. The maximum digitization of the client means that their 'state' (behaviour, bodily functions, emotions, environment) is digitally recorded. This yields five scenarios (Kool et al., 2013):

## 1. No digitization

The traditional form of coaching consists of a journey where the coach and client meet periodically to work on the client's development and growth in face-to-face (F2F) sessions. Between sessions, the client usually receives homework, but no guidance or feedback.

## 2. Digitization of communication

In this scenario, technology plays a supporting role within the communication between the coach and client. Coaching communication takes place online (digitally) and sometimes asynchronously. Asynchronous means that client and coach are not simultaneously present during the conversation but interact independently of time and place. An example of digital asynchronous communication is communication via e-mail. Examples of synchronous digital communication are video calling or chatting.

## 3. Digitization of the coach

Counselling is offered digitally, without the intervention of a person (human coach). This scenario usually involves interactive self-help programmes (apps) that are used independently by a client. Increasingly, these types of programmes include a coachbot. This is a digital coach that automatically provides the client with tips, assignments and feedback based on how the client goes through the programme. A more advanced version of a coachbot is an AI coach; this is a coachbot with artificial intelligence that can autonomously facilitate a full coaching programme (see also chapter 2).

## 4. Digitization of the client

In this scenario, measurement tools are used to collect information about the client's physical and mental state. This can be done, for example, by having the client fill in a questionnaire or complaint list via an app. Data collection can also be automated with wearable sensors ('wearables') that track information on, for example, muscle tension or heart rate. Such physical measurements can give the coach additional insight into the client's situation and progress.

## 5. Autonomous e-coach

In this scenario, scenarios 3 and 4 come together. The tasks of a human coach are taken over by an autonomous e-coach (autonomous ICT system) and data collection from the client is fully automated. The client is assigned a behavioural profile and thus the autonomous e-coach knows when the client shows incongruent behaviour. If the autonomous e-coach receives signals that unwanted behaviour is coming, it can alert the client and support them with feedback and advice.

The five scenarios show that there is still much potential to make greater use of technology within a coaching process. This white paper focuses on scenario 3: the digitization of the coach.

## 2      The coachbot (scenario 3)

### 2.1      Coaching without a coach

A relatively new form of e-coaching is the one where there is no longer interaction between two people, but between a client and a chatbot. In this situation, the chatbot assumes the role of the coach. A chatbot is a computer programme designed to communicate and converse with human users via text and/or voice interaction. A coachbot is a specific type of chatbot trained to take on the role of a human coach to autonomously guide a client within a coaching journey. Now at first, this seems like a curious situation; after all, coaching is human work. It is the coach who shapes a successful working relationship with an empathic basic attitude and human communication skills. It is this unique working relationship between coach and client that is essential for a successful coaching process (De Haan et al., 2016). However, it appears that there is increasing success in developing chatbots and coachbots that can credibly and effectively mimic this human interaction.

An interesting example is the study where patients ask questions on an online healthcare forum. Normally, these questions are answered by doctors. In this study, a chatbot assistant was also used. What emerged? The chatbot assistant's answers were preferred to those of the doctor and were rated significantly higher for both quality and empathy (Ayers et al., 2023). That the answers were of better quality may be explained by the fact that a chatbot has access to more medical information (knowledge database) than an individual doctor. We discuss how a chatbot can appear empathetic in Chapter 3.

There are simple chatbots that can take on elements of a coaching journey and more advanced versions that use AI (Artificial Intelligence), allowing them to autonomously facilitate a full coaching journey.

### 2.2      Simple chatbots

These chatbots are based on predefined rules and responses. They use simple 'If-Then' logic (set rules, algorithms) to respond to specific queries. The quality and applicability of these chatbots depends heavily on the amount of set rules in the chatbot's database. One of the first chatbots dates back to the 1960s. This programme called 'ELIZA', developed by computer scientist Joseph Weizenbaum, was able to conduct a dialogue with a client (Weizenbaum, 1976). This was based on keywords in his responses. Questions such as "Can you tell more about <pitch word(s)>", "What are some of the thoughts and feelings you are currently experiencing in relation to <pitch words>?" and "What do you mean by <last word>?" can be asked in dialogue form by ELIZA. Although there is automated interaction, a client still gets the feeling of dealing with a real therapist for some time (Shum et al., 2018).

Meanwhile, these types of chatbots are perfectly capable of helping to guide someone through an e-learning programme or, for example, letting them do a daily exercise via an app. Having a dialogue outside a specific context is usually not possible.

### 2.3      Chatbots with AI

These chatbots are more complex and sophisticated because they use artificial intelligence. These are computer systems and programmes that can perform human-like tasks that normally require human intelligence. Also, these modern chatbots do not work with logic based on pre-programmed rules but learn implicit patterns and structures from training data (machine learning). Some well-known examples are Google BARD and ChatGPT. These are AI language models trained to carry out human-like conversations.

The training process of ChatGPT, for example, is based on a so-called 'Large Language Model', which uses huge amounts of text data (billions of sentences), such as publicly available text from the internet, books, articles, and other sources. ChatGPT has learned to identify connections, patterns, and rules in texts, such as word associations, grammatical structures, and contextual meanings. By generalizing these patterns, the model can make predictions about what the next word in a sentence should be (probability calculations).

This allows ChatGPT to answer varied questions with fluent language. In addition, ChatGPT is also trained with many examples of texts containing language nuances, such as humor, sarcasm, empathy, and figurative language, allowing it to incorporate understanding and nuance in its answers. ChatGPT also takes previously asked questions into account when giving answers (long-term dependencies), allowing for dialogue. However, it can also make mistakes when giving answers, as it relies on probability calculations and sometimes misinformation. When ChatGPT is informed of this, it apologizes, making it seem even more like you are talking to a (fallible) person.[1]

## 2.4    Coachbots with AI

A coachbot with AI is basically a chatbot with an AI language model capable of having coaching-related conversations. In other words, a chatbot trained in coaching conversations. Based on the way it was trained above, ChatGPT should also be able to have coaching conversations. Especially considering that ChatGPT can respond with feigned empathy. In practice, however, ChatGPT turns out to be less suitable for this. Not because the technology is flawed, but because the developers have built in certain limitations. For example, a coach dialogue may consist of just a few messages, after which ChatGPT makes a summary before you can continue the conversation.

This is why, within UNLOQ, we built our own coachbot called iRobin. This coachbot uses the same architecture and resources ChatGPT is based on (OpenAI GPT). With iRobin, it is possible to have direct and longer conversations, making it more like a realistic coach conversation. See the example below or try iRobin for yourself.[2]

### Example with Coachbot iRobin

*Assignment (prompt):*

Client: Hi iRobin, I have a work-life balance problem, I am not sure what to do, have a demanding job and busy family with a chronically ill child. I hope you can help me.

iRobin: Good afternoon, welcome. I understand that you are currently struggling to find a work-life balance. With a demanding job and a busy family, while also caring for a chronically ill child, keeping everything balanced can be quite a challenge. Can you tell me a bit more about the specific issues you face and how it affects your daily life?

Client: I have been suffering from a lot of sleepless nights lately, which makes me very tired during the day.

iRobin: Thanks for sharing your experience. Sleepless nights can indeed have a big impact on your energy levels and overall well-being. It is understandable that you feel very tired during the day due to the lack of sleep. Let's take a look at possible causes of your insomnia. Have you noticed if there are any specific factors affecting your sleep, such as stress, worries or certain habits before bedtime?

Client: Yes, I am always mulling over all the work I have to do the next day.

iRobin: It is understandable that your thoughts about work affect your sleep. Mulling over tasks and responsibilities can keep your mind active, making it difficult to unwind and fall asleep. We can work on addressing these thoughts and creating a more relaxed mind before bed. Do you currently have a bedtime routine?

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[1] This paragraph was created using ChatGPT at https://chat.openai.com.
[2] You can try iRobin for yourself at: https://www.unloq.org/irobin.

**Client**: No, I go to bed and just don't fall asleep.

**iRobin:** Lacking a routine before bed can make it harder to fall asleep. A consistent routine can help you prepare your mind and body for rest and relaxation. Here are some suggestions you can try to help you develop a healthy sleep routine:

1. Set a fixed bedtime: pick a time when you go to bed every night and try to stick to it, even on weekends. This helps your body develop a natural sleep-wake rhythm.

2. Et cetera.

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The quality of the example conversation with iRobin is reasonably credible; the coachbot asks questions, connects, shows interest and understanding, summarizes and shows empathy. In contrast, it does not set (sub)goals, does not work on building a trusting relationship, is poorly attuned (iRobin suggests without waiting for the answer and does not test what the client has already tried (self-efficacy), asks closed questions and gives unsolicited advice. So ICF coach accreditation is not yet in the cards for iRobin at the moment.

*Disclaimer*: this example with iRobin is only a 'proof of concept' and aims to give an idea of how far the technology towards an autonomous digital coach has now developed. Coachbots can now carry out short and well-defined coaching trajectory, while for more complex themes or in-depth development issues a human coach can still be called in.

## 3     Three misconceptions about chatbots & coachbots

In general, people often think that chatbots or coachbots with AI are actually intelligent, provide only neutral and objective answers and lack empathy. These are misconceptions that can hinder the use of chatbots and coachbots or, on the contrary, create an unrealistic expectation about their potential. It is therefore important to get a better idea of how these types of bot's work. Below are three common misconceptions:

### 3.1     Chatbots cannot show empathetic behaviour

One of the main misconceptions about chatbots & coachbots with AI is that they cannot exhibit empathetic behaviour. As a result, they will never be able to fully assume the role of a coach, as building an empathetic working relationship is an essential task of a coach. To act empathically, it is a requirement that you yourself can experience emotions and empathize with others. Since a chatbot has no emotions, consciousness, or mirror neurons, it cannot intrinsically empathize with a client. As a result, a chatbot cannot be naturally empathetic. Yet chatbots like ChatGPT are increasingly being perceived as empathetic by users. This is because ChatGPT has learned what empathetic communication looks like. This allows ChatGPT to predict when to formulate an empathetic response. So it is not necessary to actually be empathetic to exhibit empathetic behaviour. As humans we can also benefit from this.

### 3.2     Chatbots with AI are objective and neutral

Chatbots & coachbots with AI seem objective and neutral, but the quality of their answers depends on how they have been trained and the training material used. For example, if the training material contains mainly texts with a one-sided worldview, this will be reflected in the chatbot's or coachbot's answers. This may result in displaying biased information or ignoring important perspectives.

For example, if you ask ChatGPT to make a top-10 of the most important philosophers in world history, you get a list of ten names. What do you notice in the list on the next page?

List of 'Top-10 most important philosophers in world history' by ChatGPT:

| | |
|---|---|
| 1) Socrates | 6) John Locke |
| 2) Plato | 7) Friedrich Nietzsche |
| 3) Aristoteles | 9) Jean-Jacques Rousseau |
| 4) René Descartes | 9) Karl Marx |
| 5) Immanuel Kant | 10) Ludwig Wittgenstein |

In case you don't notice anything in this list, you probably identify as male. As this list contains only names of *male* philosophers. This is because ChatGPT's training materials (including the internet) also mainly contain texts about male philosophers. If training materials consist mainly of texts produced by men, the AI model will thus also adopt the dominant worldview of men and thus automatically create an underrepresentation of interests and perspectives of other genders (Smith & Rustagi, 2021). This is a problem as old as the bible and one that Wikipedia also had to deal with in its early days (and actually still does today). It may be added that the list in the above enumeration includes only *Western* philosophers, in fact it concerns male Western philosophers. This exposes another major gap of ChatGPT besides gender.

### 3.3    Chatbots with AI are intelligent

Chatbots with AI have no real intelligence like humans have. The term 'intelligence' here refers to the ability to mimic human behaviour and information processing. A chatbot or coachbot with AI seems smart because it has access to huge amounts of information and can analyze a question at 'lightning speed' to formulate a fluent answer. However, these answers are based on patterns and rules that the chatbot or coachbot has learnt during the training process. Chatbots & coachbots operate within these learned frameworks and (for now) lack the capacity for creativity and originality in their responses. Especially in longer texts or dialogues, this becomes evident through the use of repetitive phrasing, among other things. Another danger also lurks because of this, namely the possibility of us becoming less intelligent ourselves by using these kinds of bots. We could get into a downward spiral, a kind of vicious circle where the chatbot strips our human communication of creativity and we then use this output in our communication, after which the chatbot further depletes this impoverished communication. In other words, the more we start using bots with AI, the more we as humans ourselves become like a bot - gradually losing our creativity and originality.

## 4    Characteristics of a coachbot with AI

According to the 2021 Global Coach Survey - due to the pandemic - 98.3 per cent of coaches have used online tools for coaching conversations since 2019, with audio-video platforms being the preferred method, followed by phone (audio) and emails (Passmore et al., 2023). These are different types of e-coaching. For the different types of e-coaching such as: Telephone coaching, Video coaching, Chat coaching and Mail coaching, we created a classification based on four characteristics: *proximity, visibility, method of communication* and *time* (Ribbers & Waringa, 2015).

Below are the characteristics compared to F2F coaching:

| TYPE | PROXIMITY | VISIBILITY | METHOD OF COMMUNICATION | TIME |
|---|---|---|---|---|
| F2F coaching | Nearby | Yes | Spoken | Synchronous |
| Video coaching | At a distance | Yes | Spoken | Synchronous |
| Telephone coaching | At a distance | No | Spoken | Synchronous |
| Chat coaching | At a distance | No | Written | Synchronous |
| Mail coaching | At a distance | No | Written | Asynchronous |
| Coachbot with AI coaching | Nearby | No | Both | Synchronous |

The four characteristics applied to Coachbot coaching in comparison to F2F-coaching are as follows:

## 1. Proximity

Are the client and (digital) coach in close proximity to each other? In an ordinary face-to-face conversation, both coach and client are in the same room. ICT tools make it possible to communicate remotely. This makes it possible to maintain physical distance:

- A coachbot is nearby. Since the AI coach does not actually exist, it cannot be at a distance, nor can it be nearby. However, because of the way it interacts, it could be argued that the coachbot is always nearby, for example on the mobile phone that someone usually has at their fingertips. This also makes it place- and time-independent, i.e. the coachbot is always available (provided the mobile phone is charged).

## 2. Visibility

Are the client and (digital) coach visible to each other? In an ordinary F2F conversation, client and coach can see, hear, observe, and interpret each other's non-verbal behaviour. When the interlocutors cannot see each other, (much of) the non-verbal communication is lost. Despite the lack of non-verbal communication, a client (and the coach) will always manifest in some way. This need not always be visual but can also be through the spoken or written word.

- A coachbot is not visible as a person. An AI coach is not a real person, so it is also not visible to the client in this form. Eye contact or other forms of non-verbal signals are also not possible. However, an avatar or other virtual image of a digital conversation partner is increasingly being used, creating some kind of visibility.

## 3. Time

Does the communication take place simultaneously? When there is little time between a language act of the client and a response from the (digital) coach (or vice versa), we speak of simultaneous communication or synchronicity. This is the case in F2F conversations. The more time there is between the language act and the response, the more there is dissimilarity in communication, or asynchronicity.

- Communication with a coachbot is simultaneous. Like during F2F coaching, the conversation takes place simultaneously in time: both interlocutors are present in the conversation at the same time. Whereby a coachbot will respond to a message from you within seconds. At the same time, there can also be unilateral asynchronicity, as you can stop at any time in the middle of a dialogue and continue later - as the coachbot is patient. In addition, a coachbot could also be programmed in such a way that it does not instantly reply to messages, but with a certain delay, making the conversation asynchronous.

## 4. Method of communication:

In what way does communication take place? Communication can be verbal (based on words, e.g. speaking, or writing) and non-verbal (not based on words, e.g. body language). In F2F conversations, which largely consist of spoken language, verbal communication is supported by non-verbal communication. In e-coaching, verbal communication can range from mainly spoken (video calls and telephone) to mainly written (chats, e-mail and apps) with limited non-verbal communication.

- A conversation with a coachbot can take place either through the written word or verbally, depending on the coachbot's settings. If written communication is involved, the coachbot will use various language engineering tools to make a dialogue flow smoothly.

# 5    Pros and cons deploying coachbots

## 5.1    Special process elements

In the previous chapter, we described four key characteristics created to the deployment of a coachbot. In this chapter, we discuss some more special process elements that arise when we switch from F2F coaching to coachbot coaching.

### 1: Social anonymity

In regular coaching with F2F contact, coach and client can see each other. Because of this there is a risk of socially desirable behaviour: the client does not fully open up, plays a role and/or suppresses their emotions (social inhibition). When the client can work on their development without the physical presence of the coach, they are 'socially anonymous'. As a result, a client no longer has to worry about displaying socially desirable behaviour, their own presentation and possible assessment by the coach (Whitty & Gavin, 2001). This benefits the coaching process because social embarrassment and social inhibition decrease, increasing the atmosphere of openness, sincerity, and intimacy (Beattie et al., 2006). Feeling less inhibited in your own behaviour online is also known as the 'online disinhibition effect' (Suler, 2016). In the situation where there is no human coach at all but a coachbot, social anonymity is maximized. This is confirmed by research on coachbots which showed that a client reveals themself more easily (disclosure) with a coachbot than with a human coach. In this study, participants reported easier sharing topics with the chatbot about which they are normally reticent to other people (Ta et al., 2020).

### 2: Independence of time and place

If coach and client no longer have to meet together, more flexibility is created. E-coaching via written texts further increases this flexibility, giving the client more control over the process; he or she can decide the pace and time of contact with the coach. This has a positive effect on the client's self-reliance and self-management. This is associated with increased confidence in the pathway and an increase in proactive behaviour (De Jong et al., 2014). In the situation where the human coach is replaced by a coachbot, flexibility is maximized, leaving control largely with the client.

### 3: Writing as a therapeutic intervention

Communicating with a coachbot via the written word is in itself a therapeutic form of intervention. Research on so-called writing therapy shows that writing helps to structure thoughts and contributes to cognitive and emotional processing of events. Moreover, writing leads to greater self-insight, optimism, a sense of control and self-esteem (Burton & King, 2007; Pennebaker, 1997). Another advantage of writing is that it is verbatim (tangible) and can therefore be read back. This helps the client to perpetuate acquired insights and reduces the likelihood of relapsing into old patterns (Murdoch & Connor-Greene, 2000).

All the above factors affect a coaching process using a coachbot. These seem to involve mostly positive elements and offer possible explanations for why a human coach could be replaced by a coachbot. In the following paragraphs, we elaborate on this and also discuss the disadvantages of working with a coachbot.

## 5.2    Benefits of a coachbot

The benefits of using coachbots are similar to those of the other types of e-coaching. Also with this type of e-coaching, there are time savings as there is no need to travel, nor are there any travel costs.

The important ICF coaching competences 'full presence' and 'active listening' can be maximized by a coachbot because a coachbot always operates in the now and continuously waits for a response from the client. A coachbot is available 24/7, leading to maximum flexibility within the coaching process. A coachbot is never sick nor distracted by other circumstances. It can therefore be a predictable and reliable dialogue partner.

With a coachbot, social anonymity turns into maximum anonymity. As a result, the client has to act less socially desirable and can be more themself. As a result, the client will feel less inhibited in showing their own emotions and does not have to consider the coach's emotions (as there are none). Communicating in writing with a coachbot helps to structure thoughts, leads to greater self-insight, and offers the possibility of reading back. This positively influences the success of a coaching process.

Finally, a chatbot can be used for a wider audience as the cost is lower compared to using regular human coaches.

## 5.3    Disadvantages of a coachbot

Although elements such as social anonymity, proximity and 24/7 availability contribute to developing a good 'working relationship', a coachbot is primarily task oriented. A coachbot does not have the 'need' to build a good working relationship while this is a prerequisite for a successful coaching process. A coachbot is also not really empathetic but can communicate empathically so perhaps it can also be trained in communication that contributes to a positive working relationship. For now, the question is whether a task-oriented coachbot will be able to achieve sufficient depth to shape a real coaching process.

In addition, the quality of a coach dialogue with a coachbot is determined by the quality of the AI language model and the extent to which the coachbot is trained in coach conversations. If a coachbot is insufficiently trained in language nuances and cultural differences, this can lead to misinterpretation and thus the coaching will not adequately match the client's specific needs. This can make a conversation feel unnatural or less like a coach dialogue.

A coachbot is 100% dependent on the availability of technology, such as reliable internet connections and devices. In addition, there will always be people who prefer personal contact with a real person over contact with a digital coach, so this form of e-coaching will not be suitable in all cases.

Another major drawback is the lack of clarity about privacy and security of the personal data a client entrusts to a coachbot. To function, a coachbot needs a lot of data and questions and answers (inputs) from the client must be analyzed on external computers (in the 'cloud') to enable the coachbot to provide an adequate response. It is therefore important to know about security (where and how long are client data stored?) and privacy protection (who has access to it, and what else is done with the data?). In most cases, a coachbot does not comply with the European General Data Protection Regulation (GDPR) and you can only use the coachbot once you have given permission for it to use your data for further development of the coachbot.

In addition, it is often not clear who is responsible if a coachbot gives wrong answers or makes harmful suggestions. Until this is clarified, coachbots cannot meet ethical standards and professional codes of conduct of professional bodies.

# 6    More than just a digital coach

## 6.1    Artificial Intelligence offers more

Coachbot or chatbots with AI can now also be used for other coaching-related issues. Wherever choices need to be made that depend on large amounts of information, a chatbot is useful. Below are two examples:

### 1. Matching clients

Within coaching, it is important that there is a good match between a client and coach. To make a good match, a coaching process usually starts with a so-called 'click' conversation. In this conversation, the client and coach determine whether sufficient connection is found to shape a successful coaching process.

A coachbot that has access to a database of coaches (individual characteristics, skills, knowledge of working methods, etc.) can, on the basis of an interview with the client (including personality, experience, skills, wishes, coaching goals and other relevant criteria), independently determine which coach is most suitable for the client in question. This eliminates the need for a 'click' interview and makes the matching process much faster and more efficient.

## 2. Supporting individual learning paths

A coachbot with AI that has access to a database of training courses including exercises and assignments can design a personalized learning path for an individual participant. This is based on knowledge, skills, interest, progress, and performance of this participant. The coachbot can give immediate feedback on completed exercises and assignments after which, if necessary, a learning path can be adapted to the learning needs of the participant (adaptive learning path). The coachbot can also provide support, send reminders for completing assignments and motivate the participant to persevere. This allows a participant to go through a training or learning programme at their own level and pace. In this way, investing in employees can be shaped in a more targeted and efficient way.

## 6.2      Coachbot as personal assistant

A chatbot or coachbot with AI can also be used as a personal virtual assistant, which you can use to enhance the quality of your coaching. Because ChatGPT, for example, is trained with a huge amount of data, it is able to give you extensive information on coaching techniques, models, and methods,  among others. But it also allows you to brainstorm possible solutions, strategies, and approaches for specific coaching situations. For example, for a client with sleep problems.

If you ask ChatGPT for  to tackle  sleep problems, you will get a series of suggestions. Among them is, '*Provide a structured sleep ritual*'. By then asking ChatGPT to suggest interventions that can help the client shape a structured sleep ritual, you get another set of  suggestions including the following:

'*Use a sleep diary. Keeping a sleep diary for a period of at least a week can give the client a clear picture of their own sleep habits and any problems. This can help identify areas that need improvement and provide useful information if further evaluation is needed*.'

You can then use this as a starting point to shape this intervention, in consultation with your client. In this example, you may also want ChatGPT to create a complete format for this intervention. Of course, an experienced coach has a toolbox of interventions, techniques and other knowledge and skills, but with the help of this digital assistant, the coach gains access to an enormous amount of additional knowledge.

One disadvantage of using ChatGPT as a personal assistant is that you can never be sure if the information given is correct. This depends on the sources and algorithms used to train ChatGPT. In addition, ChatGPT makes mistakes and sometimes 'invents' complete answers itself (combines data in an incorrect way). Since ChatGPT does not disclose its sources, the accuracy of the answers cannot be determined. For this reason, it is wise to seek help from another AI family member who can provide you with sources (if publicly available via the internet). The tool in question is Perplexity.ai.[3]. By searching on 'sleep diary' in this tool, for example, supporting resources can be found.

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[3] https://www.perplexity.ai/ is an online tool that uses OpenAI GPT (the AI language model that ChatGPT is also based on) and the Microsoft Bing search engine to answer questions.

## 6.3 The 'Chatbot with AI' revolution within L&D is irreversible.

Developments are advancing rapidly: there are now (experimental) AI language models that enable coachbots to conduct conversations via audio, for example by using speech recognition technology. This type of technology is already quite common in everyday (household) devices such as Apple's voice-controlled virtual assistants Siri, Amazon's Alexa, Google's Assistant and Microsoft's Cortana.

AI models are also being developed that use (infrared) cameras to "read" a human interlocutor's emotions based on facial expression. By analyzing factors such as muscle tension and blood flow, these models can attempt to understand the person's emotional state and respond accordingly during a conversation (Saxena et al., 2020). These versions are many times more advanced compared to Joseph Weizenbaum's 'ELIZA' and will also start to find their way into the coach market.
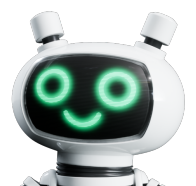
The previous chapters show that coachbots with AI can conduct reasonably credible coaching dialogues and are also increasingly able to support other elements of a coaching journey. As a result, they can easily be used as a 'light' version of a human coach for short, theme-related, and clearly defined coaching trajectories. Within UNLOQ we are currently using our coachbot iRobin for this kind of short coaching trajectories to support specific themes within our L&D programmes. In addition, we try to minimize the drawbacks of coachbots mentioned in chapter 5 by enabling longer coaching conversations, by sending dialogue messages only anonymously for processing and giving clients more say on how long private data is retained. We also train iRobin to apply better coaching techniques. In addition, iRobin is increasingly being used within our own digital coaching platform *UNLOQ Campus* for matching coaches and clients. In time, iRobin will also be able to create individual learning paths within Campus for participants in our L&D programmes. In this way, we are gearing up for a future in which coaching, professional development and skills training are mainly offered via online coaching platforms supported by human coaches AND coachbots.

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### Coachbot iRobin
This white paper refers to the coachbot iRobin. Developed by UNLOQ, this coachbot is free to try out at: https://unloq.org/irobin.

### UNLOQ Campus
This white paper refers to the GDPR -proof online platform UNLOQ Campus. Temporarily you can try UNLOQ Campus free of charge: with a Free Expert Online License: https://unloq.org/unloq-campus/.