Science trends and Digital immortality: AI accelerates movement towards an unattainable goal

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Abstract. The development of AI, social networks, digital technologies, and in particular Big Data, has brought humanity closer to digital immortality. Despite the risks of psychological, social and technological adaptation to using the possibilities of digital immortality, it is confidently introduced into various spheres of social life. However, currently it is mainly about simulating immortality, since decision-making is still beyond the reach of this technology.

1 Digital immortality boom

1.1 Efforts to create security institutions for next-generation AI systems

Scientists, leaders and experts in the AI industry (in particular, Steve Wozniak, Elon Musk) called for the suspension of the development of artificial intelligence, as they believe that this poses a threat and a huge risk to humanity. The appeal was signed by: the founders of SpaceX, Apple, Pinterest, Ripple, professors from the world's leading universities and artificial intelligence researchers. This is stated in a letter published by the non-profit organization Future of Life Institute. They are calling for a six-month pause in training for systems more powerful than GPT-4. The authors of the letter called for the development of advanced AI to be suspended until collaborative security protocols for such projects are developed, implemented and verified by independent experts. “Powerful artificial intelligence systems should only be developed when we are confident that their effect will be positive and the risks manageable,” the letter says [1].

AI research and development should focus on making modern systems more accurate, secure, interpretable, transparent, resilient, consistent, reliable, and loyal. A working group of independent experts and AI labs should be formed to develop and implement common security protocols for AI development. Also, in parallel, AI developers should collaborate

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with policy makers to significantly accelerate the development of robust AI governance systems.

In addition, they should include, as a minimum: new and capable AI regulators; supervision and tracking of high-performance artificial intelligence systems and large computing capabilities; provenance and watermarking systems to help distinguish genuine from synthetic and track leaks of models; a robust audit and certification ecosystem; liability for damage caused by AI; strong public funding for technical research into AI security; as well as a well-resourced institution to deal with the dramatic economic and political upheaval (especially for democracy) that AI will cause.

1.2 Scenarios of technological apocalypse: from Hollywood to life?

AI can take over the world and threaten the existence of mankind - this is what the director of "Terminator" D. Cameron thinks. The celebrity suggests that dangerous technological processes may be too late to stop. That is, in his opinion, robots capable of killing humanity could already take over our world. The Oscar winner who created The Terminator, Alien, Avatar and other cult films wondered if humanity wants to end up at war with "someone smarter than us." He believes that the AI may already have taken over the world, and it may be too late to stop it. Cameron, 68, admitted that he was worried about the real threat to life posed by artificial intelligence: “I am not afraid, but I am very worried about the possibility of misuse of AI. I think AI can be very good. I think it could also be literally the end of the world. You talk to all the scientists about AI, and every time I raise my hand in one of their seminars, they start laughing… And do we really want to fight someone smarter than us, which we are not? In our own world? I don't think so," said [2]. He believes that AI could take over the world and manipulate it, but even if it happens, then people may not know about it, since the technology will completely control all the media and everything else.

Clearly, Cameron is building on the ideas presented in the Terminator film series, in which SkyNet's computer network rebelled against its human creators. It was originally developed as a defense system, but it ended in a war between robots and humanity. These paintings are seen by many viewers as cautionary tales about the potential dangers of technology.

1.3 The temptation of digital immortality for the elite

The film industry has long learned to “revive” Hollywood actors, dead musicians periodically appear on stage in the form of holograms, and at the end of 2020, and The Microsoft received a patent for the creation of an interactive chatbot that can plausibly conduct a dialogue on behalf of any person, including those who have already left this world [3]. Does this mean that, if desired, any of us can replace the departed loved ones with their virtual copy or even take care of our own “digital immortality” in advance? And why does the prospect of a virtual life after death scare some, while others, on the contrary, seem tempting?

When American fashion model Kim Kardashian celebrated her 40th birthday on a small private island in October 2020, the performance of her father, Robert, was the brightest and most discussed among the many congratulations. “Happy birthday, Kimberly! he began, emerging from the darkness onto the stage before the spotlights illuminated his face. – Just look at yourself, you are already 40 years old! She has completely grown up - and still the same beauty that she was as a little girl. The usual, it would seem, congratulations, if not for one "but". The fact is that the real father of the star could not attend her 40th birthday. For a very good reason: in 2003, he died of esophageal cancer. So for the guests who did not know in advance about the expensive hologram ordered by the husband of the hero of the day, Robert's appearance at the party 17 years later was a real shock. “I follow your life,” the deceased continued meanwhile. – Every day I watch you, your sisters and brother, your children. Sometimes I even give signs so that you know that I am there ... ". Probably, many

of such “hello from the other world” would be uncomfortable, but Kardashian herself was completely delighted with the gift and immediately posted a congratulations record on Twitter: “Kanye gave me the most touching birthday present in life. A real surprise from heaven. Hologram of my dad. He looks so real! We watched the tape again and again – and we were overwhelmed with emotions" [4]. However, not all Twitter users shared the delight of the hero of the day. Many of them were not shy in their expressions.

Of course, Robert Kardashian was not the first person to temporarily rise from the dead with the help of digital technology. Eight years before him, in April 2012, rapper Tupac Shakur, who died in 1996, “performed” at the Coachella Music Festival in California, performing two songs from the stage [5]. The hologram flashed brightly for a moment – and then vanished into thin air right before the eyes of the stunned spectators. No less a sensation was the appearance on stage of Michael Jackson – five years after the death of the singer. In May 2014, its digital copy triumphantly performed at the Billboard Music Award ceremony [6]. Since then, actors, musicians and other show business figures have regularly “returned from the afterlife” to perform in a grand show, record another video or even act in films.

1.4 Near digital resurrection for everyone

In 2011, British TV Channel 4 launched the sci-fi series Black Mirror. Its action takes place in a rather uncertain, but very near future – however, the series of the show are not connected to each other by either the plot or the cast. They are united by a common theme: the prospects for the development of already existing information technologies and the huge destructive potential that they bring to human relations. One of the episodes of the second season called "Be Right Back" tells the story of a young couple: Ash and Martha move to a new house to start a new life there [7]. However, the very next day, while returning the rented van, Ash dies in a road accident. And soon after the funeral – according to all the laws of the genre – Marta finds out that she is expecting a child from him. She wants to tell Ash about her pregnancy so much that she decides to use the services of a strange company that promises to give her the opportunity to talk to her dead lover using artificial intelligence (AI). By feeding the smart program all of Ash's existing videos and giving full access to his correspondence in social networks, Marta gets his digital copy – a chatbot. The virtual interlocutor with whom she first corresponds and then calls up is practically indistinguishable from the real Ash. He speaks in the same voice, uses the same phrases, and even jokes some "inside" jokes that only the two of them can understand. However, the end of the series is far from being as optimistic as one might think.

In 2013, when the second season of Black Mirror first aired, it was already intuitively clear that the creation of such technology was only a matter of time. However, the future seems to have arrived even earlier than we expected. The documentary "Meeting You" aired on South Korean television, the heroine of which was given the opportunity to "meet" her 7-year-old daughter, who died in 2016 from a rare blood disease, using virtual reality technology [8].

And in December 2020, Microsoft received patent US10853717B2 [9] on "Creating an interactive (conversational) chatbot of a specific person" - that is, it opened up current and future opportunities to order your own " Ash" for anyone [10].

To create a digital copy of any person (dead or alive, it doesn’t matter), you need, as in the Black Mirror, to let the neural network analyze his database: photos, posts in social networks, personal correspondence - the more the better. It is very good if audio recordings are preserved - then the avatar will be able not only to correspond, but also to talk. Oddly enough, the video is far from being so important: artificial intelligence has already learned quite well how to animate and colorize even very old black and white photographs quite believably.

As with the Kardashians, the news of the Microsoft patent has sparked a heated public debate. Most of the discussion was limited to listing the ethical problems that may arise as a result of such a "pseudo-reincarnation". Some recalled the sad story from the Black Mirror and predicted the coming apocalypse of any social ties. Others expressed doubt about the technology's real capabilities, reminding us that most of us behave differently online (or not at all!) than in real life. And consequently, a digital copy of a person, created in the image and likeness of his Internet correspondence, will not have much in common with the original.

2 Scientific analysis of the benefits and risks of the transition to "digital immortality"

2.1 Reducing the threshold of adaptation to communication with a digital copy of a person

These circumstances, obvious to everyone, require careful preliminary verification and classification - before making radical decisions about the degree, and most importantly, the direction in which protocols for safe interaction with advanced AI should be developed.

However, if you read the comments, it becomes obvious that for many the topic of "digital resurrection" turned out to be very painful – and, according to scientists, this is not at all surprising. “Everything new is shocking – especially when it comes to a fundamentally new media technology that requires some kind of reorientation from us. And even more so when they start using it on dead people”, explains John Troyer [11]. D. Troyer is the head of an interdisciplinary center at the University of Bath that studies the phenomenon of death – Center for Death & Society [12]. Exactly the same reaction, according to him, caused at one time the first photographs of dead people. And by the end of the 19th century, photographs with the dead (especially children who had just died) even became fashionable.

In the end, people have always tried to keep the memory of their dead loved ones alive for as long as possible: first, letters and diaries were replaced by photographs, then videos, and now here is a chatbot [13].

All this fits well into the theory of “continuing bonds”, which was put forward in the mid-1990s by the American psychologist Dennis Klass [14]. After the death of a loved one, our connection with him does not break instantly, but continues – as long as we remember him. That is why many people, coming to the cemetery, talk with relatives who have gone to another world, and sometimes even feel their presence.

On the one hand, an interactive digital twin has a fundamental difference from the same photograph: it can maintain a dialogue – not only listen, but also respond. On the other hand, recalls John Troyer, a conversation with a chatbot can only be called a dialogue with a big stretch: “Can such communication be considered a conversation with the deceased? No, you can not. This is just a kind of agreement, an agreement with ourselves – we perceive this communication as if this is the same person” [15].

2.2 Red lines for the intrusion of the recovered digital identity

The resulting feeling of disgust or hostility and goosebumps that periodically run through our skin has been called by scientists the “uncanny valley effect” [16].

Troyer explains: “This is when the robot [hologram or digital twin] already very much resembles an ordinary living person – but still not so much that the differences are not obvious. As a result, these differences instantly draw attention to themselves – they catch the eye and cause in us a strong reaction of rejection, disgust, even fear. The latter, by the way, is actively used by horror film directors” [17].

Many even suggested introducing an official ban on the creation of interactive chatbots of dead people - out of harm's way [18-19]. However, Professor of Internet Law at Newcastle

University Lillian Edwards doubts that such a ban is possible in principle [20]. And it's not even a question of patent. The very existence of a new technology – that is, the possibility of creating interactive chatbots – means that the genie is already out of the bottle. All of its constituent elements (like video editors or speech synthesizers) are readily available – and most of them have a lot of other uses, since they were originally designed for something else. What exactly to ban? And how? [21].

Professor Edwards reflects: "Then it is necessary to ban and use special effects in the cinema? Voice assistants like Siri or Alexa? Or technologies for "revitalizing" old photographs? So people will be outraged – they will say that this restricts their freedom of expression. And they will be right! [22]. Even for non-AI experts, bringing images from old photographs to life with AI is already a snap. This can be done by searching any search engine for Deep Nostalgia [23].

The effectiveness of such bans is also very doubtful, she continues, and it is almost impossible to control their compliance. After all, when a person is driven by the bitterness of loss, he often turns out to be deaf to the voice of reason.

This, according to Professor Edwards, is the main danger of the new technology [24]. People who have just experienced the loss of a loved one have a rather severely limited ability to think rationally. And this makes them very vulnerable and easily manipulated.

Lillian Edwards explains: "Fast food is advertised to kids by their favorite cartoon characters because it's the most effective way to advertise. Now imagine that someone close to you recently died, and the creation of its digital copy was partially paid for by, say, a travel company. After all, advertisers know that there is no more effective way to sell you a ticket than if this avatar says: 'Do you remember how we went to Greece – what a wonderful vacation it was!'" [25]. And this, says the professor and her colleagues, is just one example. What else the new technology will be capable of, it's scary even to think [26].

2.3 Early created digital copies of living individuals

However, for now, it seems there is nothing to be afraid of, says Tim O'Brien, who is in charge of Microsoft's AI programs, assured users (and later a BBC correspondent) that the company has no plans to develop this "creepy technology". Only Microsoft is far from the only company working in this direction. There is a lot of work going on around the world to create digital copies of living (still) people - and, according to O'Brian, there are at least two examples of its very successful use: "mainly because they are under control and do not allow anyone who wants to do what he pleases" [27].

The first is a project of the USC Shoah Foundation, founded by director Steven Spielberg. Since there are fewer and fewer survivors of the World War II genocide every year, for several years the foundation has been recording and digitizing the stories of eyewitnesses of the tragedy, saving them in the form of interactive holograms that are not afraid of old age. In a sense, genocide survivors are being turned into museum pieces [28], ready to answer visitors' questions. Of course, there are many archival records of concentration camp survivors. However, there is a big difference between watching a regular video recording and having a one-on-one conversation with a person on the screen – especially if you know that he is no longer alive.

The second is the StoryFile platform, which helps create digital twins of famous people – of course, with their consent and with their own help [29]. The technology and algorithm of artificial intelligence in both cases are almost identical. The main difference is that this project is commercial – so almost anyone can order their digital copy. For NASA, for example, they made an astronaut avatar that can appear on a smartphone screen and answer questions about space.

Just in case, it makes sense to clarify that in both cases, AI, of course, does not create anything new and does not "glue" the desired answer word by word. The program simply

analyzes the question asked, extracts keywords from it – and finds among the many pre-recorded video answers the one in which these words occur most often. However, from the outside – for the person who asked the question - it really looks like a normal dialogue with someone who is no longer alive.

3 "Eternal life" in the singularity

3.1 Turing test in self-fulfilling prophecy mode

From time immemorial, people have made attempts to save themselves and their loved ones from death, adapting the same uncomplicated methods to contemporary realities.

Some leading experts in the fields of AI and futurology claim that people will achieve immortality in eight years thanks to technologies so powerful that they will help them live forever in the singularity.

Former Google engineer Ray Kurzweil concluded that humans will achieve immortality in eight years. He predicted technological advances long before his time at Google, and 86% of his 147 predictions turned out to be correct. This is reminiscent of the Daily Mail publication. The former Google engineer believes that technology will become so powerful that it will help people live forever in the so-called Singularity. Kurzweil predicted that the "technological singularity would happen by 2045, with AI passing a valid Turing test in 2029" [30].Turing test (TT) checks a machine's ability to exhibit human like intelligent behavior – that means equivalent to it, or even indistinguishable from it. Ayse Pinar Saygin, Ilyas Cicekli and Varol Akman in their article "Turing Test: 50 Years Later" stated that "If a machine passes the TT, it should be granted intelligence. However, if it cannot, we cannot say for sure whether it thinks or not" [31]. But now it is situation when people will not care could machine think or no – if machine will cure humans and even give them almost immortability.

Kurzweil said that "machines are already making us more intelligent and connecting them to our neocortex will help people think more smartly. Contrary to the fears of some, he believes that implanting computers in our brains will improve us". Kurzweil believes that instead of a fear of a future in which machines take over humanity, we have much more chances to create a synthesis of human being and machine that will make mankind better. Age-reversing nanobots will cure cancer and many other human deceases – that will be the integral result of inevitable inventions in the sphere of genetics, nanotechnologies and robotics. "These tiny robots will repair damaged cells and tissues that deteriorate as the body ages and make us immune to diseases like cancer" [32].

In the scientific age, belief in the magic elixir of youth has been replaced by the hope that someday scientists will still be able to find a cure for old age, and physical resurrection from the dead has been embodied in the technology of cryogenic freezing of the body until better times.

The emergence of "digital resurrection" technology – in one form or another – was almost inevitable, as Stephen Cave and Kanta Dihal note [33]. Dr Cave, a professor at the University of Cambridge, heads the Leverhulme Center for the Future of Intelligence at the University of Cambridge [34]. Scientists are making stunning discoveries that bring humanity closer to unraveling the code of endless life. But one S. Cave believes that it is necessary to consider whether immortal people will do more harm than good. From the beginning of human history, civilizations have searched for ways to live forever, and stories found in almost all cultures have detailed the desire for immortality in the hope that science could cure death. But Stephen Cave, and author of several books on the morality of aging, is hesitant to attempt it. Dr Cave feels as though scientists are on the cusp of cracking one of the anti-ageing codes – but whether or not this is a good thing is yet to be proven.

Dr Cave notes: "Scientists are becoming ever-more advanced. It is phenomenal how we are understanding the nature of our bodies… It feels like it is only a matter of time before we make significant progress with humans. But at the moment, the relationship between ageing and the killer diseases of the developed world is still not very well understood… It is not as much as you might expect and that reflects the fact that there is this much broader ageing process where are bodies are sort of crumbling and we don't know how to stop that. A lot of anti-ageing researchers believe there won't be one magic bullet, but rather a lot of different kinds of treatments that can treat the many different aspects of age" [35].

3.2 New version of old class struggle or lifestyle choices?

But while some of the luckiest people on the planet may expect to live longer, there are also fears that technologies that could allow people to live longer will be available to only a select few.

Dr Cave warns: "There is a real risk that this could exacerbate social inequality. We read in the papers from time to time that people in the North have a lower life expectancy than people in the South, people of a certain ethnicity, or rich people compared to poor people and so on. And usually, in the UK, we might be talking about a 10 year difference and people are outraged and think it is an injustice" [36].

This brings back to life not only the theory of the class struggle, but also the real risk of a revival and intensification of the class struggle itself. Only the quality and duration of human life will become a new resource for which the old class struggle will go.

"But imagine if the wealthy have access to these technologies and can live many decades longer. Then it seems that death would no longer be the great leveler and people could use their money to buy their way out… Our societies and environments are not ready for us to live longer" [37]. So this will create some really difficult political dilemmas. There is a good chance that it will be extremely expensive, and then we will have to make difficult choices about what we prioritize.

However, these fears may be unfounded. Let's remember the baby boomer generation: they did not strive to live long, and the quality of life was not associated with health – on the contrary, their motto was something close to "Live fast, die young" [38]. But the main thing is that these young people did not want to become hypocritical and pay for their future with their present. They saw the quality of life not in health, but in enjoying the fullness of life: they were not ready to live in installments and enjoy half their strength. It is quite possible that the new class division will be determined not by the material condition that this or that person possesses, but by the goals for which this person will prepare to direct his capital. Not everyone will want to invest "in the long run", even if it is about their own lives. And it's not so much about the "players" or lovers of adrenaline, but about those who aim at the highest achievements and are looking for shortcuts to them. Precisely such people were predominantly the heroes of human evolution - for the history that mankind has already passed. Who will be the heroes for the future of mankind?

S. Cave focuses attention on hard choices in real terms, noting that some people even now are denied intervention because it is "too expensive": "Money is not infinite and hospital managers and doctors are used to making these really hard choices. But I think in the first instance, anti-ageing technology, if it is expensive, which is likely... will create even more pressure on these limited resources, an even more sharper sense of hard choices" [39].

So the idea of digital immortality is another version of the myth and the dream of reincarnation, the transmigration of souls. Only retold, in accordance with the requirements of the time, in a scientific way.

"The idea of the soul is that some core, the essence of the personality, can be separated from the physical body of a person – and it is able to survive his physical death. The idea of digital immortality plays on precisely these hopes. That the real me is not my body. It is data,

information that can be separated from the body and stored in some other form" [40]. However, this feeling is deceptive, Dr. Cave warns. In no case should you think that a digital twin can really bring back the past.

Technology sometimes promises what it simply cannot deliver. From the point of view of skeptics, it is not able to give us anything similar to the communication that we had with our loved ones while they were alive. The deceased, of course, does not come to life. Any chatbot or digital copy is not an extension of a person. It's a weak echo at best.

Exactly the same should be kept in mind for people who hope to conquer death by creating their own digital copy. If you want to live on – in the sense that you somehow feel the world around you, then "life" in the form of a set of tweets is hardly capable of giving you such an opportunity? In any case, our usual existence will end with our biological death.

3.3 Digital resurrection: boon or curse

On the question of whether the "digital resurrection" will become more real in the future, Dr. Cave cannot yet give a concrete answer. "Will we ever be able to recreate the identity of a person from his digital footprint using computer technology? Maybe... Maybe someday we can. But we are still very, very far from that" [41].

However, futurist and computer scientist Ray Kurzweil predicts that humans will achieve immortality, as it is reported by the Daily Star. In his opinion, humanity is on the verge of mastering artificial intelligence (AI), and when this finally happens, people will no longer need to live in their physical body. He believes that humans are on the cusp of a huge technological transformation that will dramatically change our lives with the ability to upload our thoughts and even potentially live forever. Ray Kurzweil says humans could achieve immortality by 2031. Interestingly, the futurist scientist had previously made a number of remarkably accurate predictions about technology. Moreover, as early as 2024, as Ray believes, computers will become so powerful that immortality will be within our reach. "2029 is the exact date I predicted when AI will pass a valid Turing test and therefore reach human levels of intelligence. I set a date of 2045 for the Singularity, when we will multiply our effective intelligence by a billion times, merging with the intelligence that we have created", he shared. Kurzweil believes that humans will assimilate and integrate with computers to the point where we may, at some point, no longer need a physical human body. In the future, he predicts, humanity will achieve the ability to increase human lifespan "by more than a year every year." As a result, according to Kurzweil, immortality awaits us [42].

But it should be corrected: just a part of us can be digitally immortalized – since the most important human abilities are still not algorithmized. The first of them are creative decision-making and variable selective response. And if we shift most of the decision-making to AI, then we run the risk of receiving a formulaic and obviously losing answer from AI at a critical moment that requires a creative non-standard approach. And then there will be no need for any revolt of the machines – AI will lead to disaster simply as a result of its inability to adequately and successfully respond to a non-standard situation.

4 AI simulation of immortality

However, it is quite obvious that so far immortality, or rather the duration of life equal to the duration of the work of AI, is received only by simulations of human activity. Currently it is mainly about simulating immortality, since decision-making is still beyond the reach of this technology. AI does not replace a person in his creative abilities, and even more so is not able to recreate these abilities – neither in their standard basic parameters, nor even in their personalized versions. Some advances in terms of facilitating the solution of human intellectual problems, as well as the restoration of certain human functionalities, indicate the direction in which AI can go forever, but never reach the final goal.

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