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Digital immortality: How your life's data means a version of you could live forever

Your family and friends will be able to interact with a digital "you" that doles out advice—even when you're gone.

By Courtney Humphries

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Photo of Hossein Rahnama

Hossein Rahnama knows a CEO of a major financial company who wants to live on after he's dead, and Rahnama thinks he can help him do it.

Rahnama is creating a digital avatar for the CEO that they both hope could serve as a virtual "consultant" when the actual CEO is gone. Some future company executive deciding whether to accept an acquisition bid might pull out her cell phone, open a chat window, and pose the question to the late CEO. The digital avatar, created by an artificial-intelligence platform that analyzes personal data and correspondence, might detect that the CEO had a bad relationship with the acquiring company's execs. "I'm not a fan of that company's leadership," the avatar might say, and the screen would go red to indicate disapproval.

Creepy? Maybe, but Rahnama believes we'll come to embrace the digital afterlife. An entrepreneur and researcher based at Ryerson University in Toronto, and a visiting faculty member at MIT's Media Lab, he's building an application called Augmented Eternity; it lets you create a digital persona that can interact with people on your behalf after you're dead.

While most older people haven't amassed enough digital detritus to build a working artificial intelligence, Rahnama posits that in the next few decades, as we continue to create our digital footprints, millennials will have generated enough data to make it feasible. Even as we speak, the digital remains of the dead accumulate. Something like 1.7 million Facebook users pass away each year. Some online accounts of the dead are deleted, while others linger in perpetual silence. "We are generating gigabytes of data on a daily basis," Rahnama says. "We now have a lot of data, we have a lot of processing power, we have a lot of storage capability." With enough data about how you communicate and interact with others, machine-learning algorithms can approximate your unique personality—or at least some part of it.

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And what would the digital "you" look like? Well, what do you want it to look like? It might be a text-based chatbot like the CEO's or an audio voice like Siri or a digitally edited video or a 3-D animated character in a virtual-reality environment. It might be embedded in a humanoid robot.

Twenty thousand personalities at once

We're not there quite yet. It's hard enough to create software agents that can carry on a natural-sounding conversation, let alone capture the personality of a specific person. There's no software that can interact, communicate, and make decisions the way you do. Rahnama says the CEO's avatar will be a "decision support tool," but it won't be capable of running the company.

"There is one thing that is missing in AI today, and that is context," he says. Most chatbots simply offer responses based on the content of a conversation, but our communication changes depending on who we're talking to, where we are, and what time of day it is. The need to include this kind of context was the basis for Rahnama's company, Flybits (for which he was named one of this publication's 35 Innovators Under 35 in 2012). Flybits provides a platform that lets companies tailor their communications to customers on the basis of contextual cues. A bank, for example, might offer different messages through its mobile app depending on your purchase history, your calendar schedule, or whether you're walking or taking a train.

Creepy? Maybe, but Rahnama believes we'll all come to embrace the digital afterlife.

The contextual part was something Rahnama found useful when he started Augmented Eternity. If you're going to construct a digital self, it's not enough to know that somebody said something. You have to know the context in which it was said—was the person joking? Annoyed? Reacting to today's news? These same kinds of clues end up being crucial when piecing together a digital personality, which is why the Augmented Eternity platform takes data from multiple sources—Facebook, Twitter, messaging apps, and others—and analyzes it for context, emotional content, and semantics.

Hossein Rahnama

into a neural network built with Google's open-source machine-learning framework, TensorFlow. The bot was, by Kuyda's own admission, not very precise or polished, but when it answered questions, it often sounded uncannily like her friend.

Kuyda says the main complication with trying to create digital versions of the dead is that people are complicated. "We're extremely different when we talk to different people," she says. "We're basically like twenty thousand personalities at once." For example, Mazurenko had said things to her that he might have left out of a conversation with his parents. She could consult with his family and other friends to figure out which information was too sensitive to share. Could any company realistically do the same?

Rahnama obviously thinks so. He says Augmented Eternity will take a step toward accommodating various personalities by tailoring the conversation according to context and letting users control what data is accessible to whom. So someday his daughter might consult with his digital family persona, while a former student could ask questions of his academic persona. He sees it as one way of leaving a legacy—a way to keep contributing to society instead of fading to black.

It's not just for the dead

But a digital avatar might also come in handy even when you're still around. AI could help transform your professional expertise from a scattered written record to a representation of your knowledge that people can interact with. A lawyer who charges hundreds of dollars an hour could let people consult a digital avatar instead, for a much lower price. Celebrities, politicians, and other public figures could outsource some of their public interaction to digital versions of themselves. AI would allow us to consult experts with whom we'd never be able to meet in real life. The ability to represent and share expertise, Rahnama says, "can actually contribute to new business models on the internet." Rather than speaking with a generic Siri or Alexa, you could ask an eminent scientist, a politician, or a coworker. And why attend a business meeting when you could send your avatar?

Another startup, Eternime, based in Mountain View, California, offers to incorporate your personal information into "an intelligent avatar that looks like you" and that will "live forever and allow other people in the future to access your memories." Its founder, Marius Ursache, has been promoting the idea for years, and more than 40,000 people have signed up to Eternime's waiting list, but the self-funded company has still launched only limited beta versions. Ursache thinks the problem is less technical than behavioral: "People don't invest much time in activities that will pay off in decades," he says.

Whether or not it takes off as a business, Rahnama hopes Augmented Eternity will start conversations about privacy and data ownership. "The reason I like this research project is that it addresses a lot of key ethical questions around data science and AI," he says. "Like, who is going to own my information after I pass away?"

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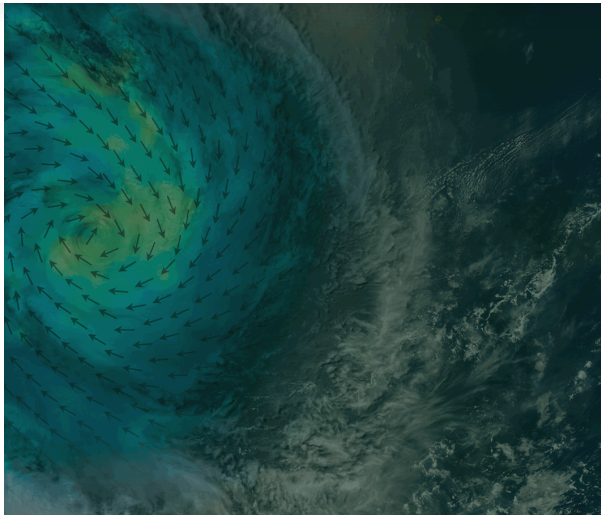
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In a paper published in *Nature Human Behavior* earlier this year, ethicists Carl Öhman and Luciano Floridi from the Oxford Internet Institute argue that we need an ethical framework for the burgeoning digital afterlife industry. Should we treat digital remains by the same code that museums use for human remains? Doing so would severely limit the ways in which companies can use (or exploit) our data. If digital remains are like "the informational corpse of the deceased," they write, they "may not be used solely as a means to an end, such as profit, but regarded instead as an entity holding an inherent value."

digital avatar of her late husband. Over the course of the episode, she progresses from sending a few hesitant texts to a chatbot to purchasing a lifelike robot in her husband's image.

What's often overlooked in discussions about the show is the role of the company that created the avatar. In real life, Öhman says, we should be skeptical of such companies. The power of the digital dead to manipulate the living is enormous; who better to sell us a product than someone we've loved and lost? Thus our digital representations might be more talkative, pushy, and flattering than we are—and if that's what their makers think is best, who's going to stop them?

In the *Black Mirror* episode, the avatar periodically elicits more of the dead husband's data and upsells his widow on more expensive representations of him, until it becomes so lifelike that she can't "kill" it. The rhetoric around immortal digital selves focuses on our desire to be remembered. But wouldn't most of us want our loved ones to be able to let us go? T

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