How to build an echoborg: PhD researcher Kevin Corti featured on the BBC

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Research by Kevin Corti and Alex Gillespie on "echoborgs", a hybrid social agent consisting of a real person who speaks words determined by a computer program, has been featured on the BBC website.

By Brett Heasman and Kevin Corti

In the race to develop artificial intelligence, echoborgs tell us much about our future relationship with machines, and how their communication can be made to seem more human-like. Echoborgs are hybrid social agents consisting of a real person who speaks words determined by a computer program. Using a technique known as speech-shadowing, Kevin Corti and Alex Gillespie have explored some of the fundamental questions human-computer interaction research raises.

"We created the echoborg because we were interested in exploring two general questions, one psychological, and one more philosophical," explains Kevin. "The psychological question we wanted to explore involved seeing how a real human body would shape people's perceptions of and experiences with computer-generated communication (an interesting question considering humans have only ever encountered AI through digital/mechanical interfaces). The philosophical question we wanted to explore concerned approximating a hypothetical future world in which AI machines were physically indistinguishable from real humans so that we could understand whether the absence of any physical/motor differences between humans and machines would lead people to categorize these entities as fully "human.""

The concept of a future where the boundaries between human and machine have been blurred is a hot topic in the social sciences, particularly since technology is increasingly used to augment human capabilities. For example, in the last few weeks we have witnessed the world's first bionic eye transplant in Manchester, while scientists in the US have also begun to explore the possibility of using a 'second skin' to experience both physical and social data in a new way. However although science has focussed greatly on the physical challenges posed by augmenting humans and machines, much less focus has been paid to the social psychological challenges behind such process, particularly when it comes to recognising machines as socially significant entities. This is where Kevin and Alex's research is unique.

Their research, recently published in Frontiers in Psychology, has shown how social psychology plays a key role in human-computer interactions, with the role of the echoborg carrying huge potential for contributing to the field of android science. Android science is a discipline that seeks to build machines that are highly humanlike in terms of physical appearance and motor behaviour. This helps us to understand whether human-like morphology (i.e. the external structure of a being) makes machine intelligence more (or less) inviting to humans. Right now, android science is a long way off from building such a machine (as it turns out, replicating the human body is very difficult to do), but echoborgs can be used as a means of leapfrogging current bottlenecks in android appearance so that the communicative system of the android (the talking bit) can be tested "as if" it was housed inside a perfectly human-like body.

Corti and Gillespie explored people's experiences of interacting with echoborgs across three situations.

"First, we did a Turing Test. In the Turing Test participants spoke with a chat bot via either a text interface or an echoborg. We found that human shadowing did not improve the chat bot's chance of passing but did increase interrogators' ratings of how human-like the chat bot seemed. In our second study, participants had to decide whether their interlocutor produced words generated by a chat bot or simply pretended to be one. Compared to those who engaged a text interface, participants who engaged an echoborg were more likely to perceive their interlocutor as pretending to be a chat bot. In our third study, participants were naïve to the fact that their interlocutor produced words generated by a chat bot. Unlike those who engaged a text interface, the vast majority of participants who engaged an echoborg did not sense a robotic interaction. These findings have implications for android science, the Turing Test paradigm, and human–computer interaction. The human body, as the delivery mechanism of communication, fundamentally alters the social psychological dynamics of interactions with machine intelligence."

Creating impact

Early career researchers are often reminded of the importance of creating impact with their studies, and this is not always easy to achieve. Kevin's appearance on the BBC represents the culmination of a much longer process of gaining the attention of major media outlets.

"It has been something of a snowball effect," explains Kevin. "The journal that published our initial paper on Cyranoids did a press release that got picked up by a few news outlets and bloggers, including the science writer NeuroSkeptic at Discover Magazine. NeuroSkeptic's blog got picked up by WIRED who then contacted me for an interview and subsequently produced a formal feature on my research. I kept in touch with NeuroSkeptic, and when our Echoborg paper was published in Frontiers in Psychology, I asked NeuroSkeptic to consider writing another blog post about it – which he kindly did. This in turn got picked up by both Ars Technica (a science & technology website akin to WIRED) and the BBC. Reporters from both outlets contacted me for interviews because they wanted to produce features on the topic, and I invited each reporter to the department to give them a demonstration of the cyranoid/echoborg technique."

"So the main approach really was just keeping in touch with NeuroSkeptic, whose work is read by several thousand people and whose Twitter following is fairly large. His blog was the launch vehicle that gave my work initial exposure to a broader set of people interested in psychology and technology among whom were journalists from larger and more mainstream publications (e.g., WIRED, BBC, Ars Technica)."

About the author

Kevin Corti is a fourth year PhD candidate in the Department of Social Psychology at the LSE. His research interests include human-computer interaction alongside other research areas including safety culture, risk management, organizational communication, strategic negotiations, digital first-person/life-tracking methodologies, and person perception/stereotyping.

Kevin Corti is also chair of the Interpersonal and Organizational Communication research group (IPOC) at the London School of Economics. IPOC investigates communication, culture, teamwork, misunderstanding and error within laboratory and organisational settings (e.g. aviation, finance, healthcare, energy).

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