

XiaoIce: When a chatbot chat moves up to human-sounding flow

April 7 2018, by Nancy Owanoallison Linn



A user tries out the new functionality in XiaoIce, Microsoft's social chatbot in China. Credit: Microsoft

Do this, do that. Talking with voice assistants is not like talking to humans and, as helpful as it is to be near the technology, we know the difference. A surprising turn has materialized, however, and it is in the form of Microsoft's beefed-up Xiaolce social chatbot. The Xiaolce chatbot AI is capable now of "full duplex" conversation.

Allison Linn, writing in *The AI Blog* from Microsoft, wrote that most [personal digital assistants](#) or even chatbots are part of a walkie-talkie and texting kind of experience but Microsoft wants to raise the bar. Linn referred to a "technological breakthrough," where a person can converse with an AI-powered chatbot closer to a back-and-forth listening and talking experience that a person might have on the phone with a friend.

Nat Levy at *Geek Wire* talked about the strides Microsoft has made.

"Microsoft said the longest conversation so far under the new technology lasted more than four hours, with 1,600 back and forth turns between human and bot. In addition to the longer conversations, Microsoft's new voice technology doesn't require the user to say the wake word constantly and the bots can predict what [humans](#) will say next to keep the discussion moving."

Not saying the wake words? That in and of itself is a step forward in more "real" talk.

"Social chatbots' appeal lies not only in their ability to respond to users' diverse requests, but also in being able to establish an emotional connection with users," wrote Heung-Yeung Shum, Xiaodong He, and Di Li in a paper sent to arXiv earlier this year.

In their paper, "From Eliza to XiaoIce: Challenges and Opportunities with Social Chatbots," the authors state that social chatbots must be able to recognize emotion and track emotional changes during a [conversation](#).

They called XiaoIce an example of significant progress in the development of social chatbots.

XiaoIce developed into a widely deployed social chatbot since its release in 2014 in China. Designed as a 19-year-old female persona, XiaoIce,

wrote the authors, has strong language ability, visual awareness, and over 180 skills. "Currently, XiaoIce has more than 100 million unique users worldwide and has chatted with human users for more 30 billion conversation turns."

Arif Bacchus in *On MSFT* said the XiaoIce Microsoft chatbot can now operate in "[full](#) duplex voice sense" by listening to a user, digesting the information, and then responding more naturally at the same time.

Lucy Black, *I Programmer*, wrote Thursday that the new ability is for [two-way](#) communication, akin to listening and speaking at the same time. In this "half-duplex" mode first one party says or writes something. The other party digests all that and responds.

Problem is, "People don't actually talk that way," said Li Zhou, engineer lead for XiaoIce. Microsoft would prefer something more than half-duplex for its social [chatbot](#). Full-duplex mode is for humans—and, now, for better chatbots. Call it coming closer and closer to the art of [conversation](#). We are now looking at Microsoft's effort to build AI-powered social chatbots at a more sophisticated level.

In telecommunications, a duplex communication system implies two connected devices communicating in two directions. The accent is on social. "Unlike productivity-focused assistants such as Cortana, Microsoft's social chatbots are designed to have longer, more conversational sessions with users. They have a sense of humor, can chitchat, play games, remember personal details and engage in interesting banter," said *The AI Blog*.

More information: — blogs.microsoft.com/ai/xiaoice-full-duplex/

— arxiv.org/abs/1801.01957

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