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CHATTERBOT: A COMPUTER THAT TEACHES PEOPLE HOW TO BE SOCIAL

BY BETSY MORAIS

One of the more pernicious effects of constant communication through technology is the magnified anxiety over a system failure when people manage to talk face-to-face: a limp handshake, a joke that doesn't land, an awkward pause, a collision with a doorway. There's the knowledge that, in different circumstances, the blunder might have been deleted before hitting "send." Technology-enabled tendencies like revision, evasion, retraction, and a sense of familiarity that eludes intimacy, have come to feel as natural as the mechanics of an in-person chat. In what should have been foreseen as an obvious twist, a team at M.I.T. has developed technology that can help people perfect their human-interaction skills.

The program is called MACH, or "My Automated Conversation coacH." A computer-generated advisor-bot—either a dark-haired woman with steely blue eyes or a Midwestern-looking fellow with glasses, both wearing the same black T-shirt, gray sweater, and black blazer outfit—simulates a conversation. Using a standard web camera, MACH scans facial expressions, listens carefully to patterns of speech, and reads behavioral cues. As you speak, the robo-coach will attentively nod its head, as if it's hanging on your every word. "It smiles when you smile," M. Ehsan Hoque, who led the research, said. "It gives you the feeling, 'Hey, this software is listening to me.'"

MACH keeps track of weak language, like utterances of "Mmm," "Uhh," and "Basically." And it examines the "average smile intensity" during the course of the conversation to provide feedback about how effectively you have been communicating. The software also plays back a video of your speech, alongside charts monitoring intonation, head movements, and other coded gestures.

"MACH must appear and behave humanlike, adapting its behaviors to changes in the interaction," explains the developers' paper, which will be presented at a conference called UbiComp—short for Ubiquitous Computing—to be held in Zurich this September. To achieve that level of realism, the animation of the virtual coach incorporated "arm and posture movements, facial expressions, gaze behavior, and lip synchronization." Other systems have taken a similar approach to virtual congeniality, such as the "Sensitive Artificial Listener (http://www.youtube.com/watch?v=nUUWMz_lYmk)," the

Computer Expression Recognition Toolbox, and the Rapport Agent, which, according to a paper published in 2007, set out to "to provide the nonverbal listening feedback associated with rapportful interactions." On the TV show "30 Rock," this sort of thing was called "Porn for Women (http://www.youtube.com/watch?v=SGcRz9jJJCU)."

But MACH takes a more instructive approach. The idea sprung from a workshop held by the Asperger's Association of New England, where Hoque and fellow researchers were approached by people seeking a technological solution to their social hardships. "Once I start talking I don't know when to stop, and people lose interest, and I don't know why," one person told Hoque. People asked for a tool with which they could practice human interaction privately—insulated from the insecurities created in social situations.

The software was built over two years, using more than half a million lines of code. As a matter of convenience, Hoque's team used their immediate surroundings to develop a proof of concept: they tested out the interaction-training system by conducting trial job interviews with ninety M.I.T. undergraduates seeking to improve their self-presentation in front of prospective employers. "In a technical university—where people are really, really technical—it's possible that many people would have social difficulty," Hoque explained. For on-campus career prep, "The best thing to do is interact with a human, but that's limited."

In a film of the experiment, the female MACH coach addressed Participant No. 67, "Hi. I am Mary. I am looking forward to doing your interview. Just one thing, before we get started. My movements may seem a little choppy. I hope that doesn't distract you. Just relax and be yourself." The college kid, in a gray engineering T-shirt, looked back at the screen with an accepting frown and nodded, "O.K."

Another guy began biting his nails nervously. He hunched over slightly, and thought aloud, "I don't know."

Mary prodded, "Hi. Are you still there? I can't find you." He waved his hands at the screen. "Ah, there you are," Mary responded. "You were saying?"

The boy's jaw dropped. "That was awesome."

"Everybody hated watching their videos," Hoque told me. But there's some comfort in receiving an objective, mechanized judgment of your interpersonal skills. "When there's a person there, it's very intimidating," he said. "The fact that a computer is doing it is useful." The team's paper states that MACH led to a significant improvement in social interaction, based on a before-and-after evaluation of subjects by a professional career counsellor.

Beyond job interviews, Hoque said, the program could be useful for helping people with social phobia linked to autism—the root of the project, which he hopes to pursue further—as well as public speaking, or even dating. But extending the software's reach will require more research.

While the prototype runs locally on computers, Hoque, who recently completed his Ph.D. and is now at the University of Rochester, would like to make it widely available online, which he says would take between six months and a year for two or three engineers to develop. He's now seeking funding, and he said there has been interest from organizations that support autism research, as well as from private companies.

Hoque, who has spent more time than anyone interacting with MACH, told me, "I have a love-hate relationship with it. There have been so many conversations at three A.M. when I'm writing code." He doesn't consider this to be genuine communication, though. "Human communication is so rich and the technology is not there yet," he said. "I don't even look at it as a person. It's just software asking me questions. I know it's a bunch of lines of code. I might as well just do this with a blank screen."

Photograph: Manohar Srikanth.

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