



Jiawei Gu

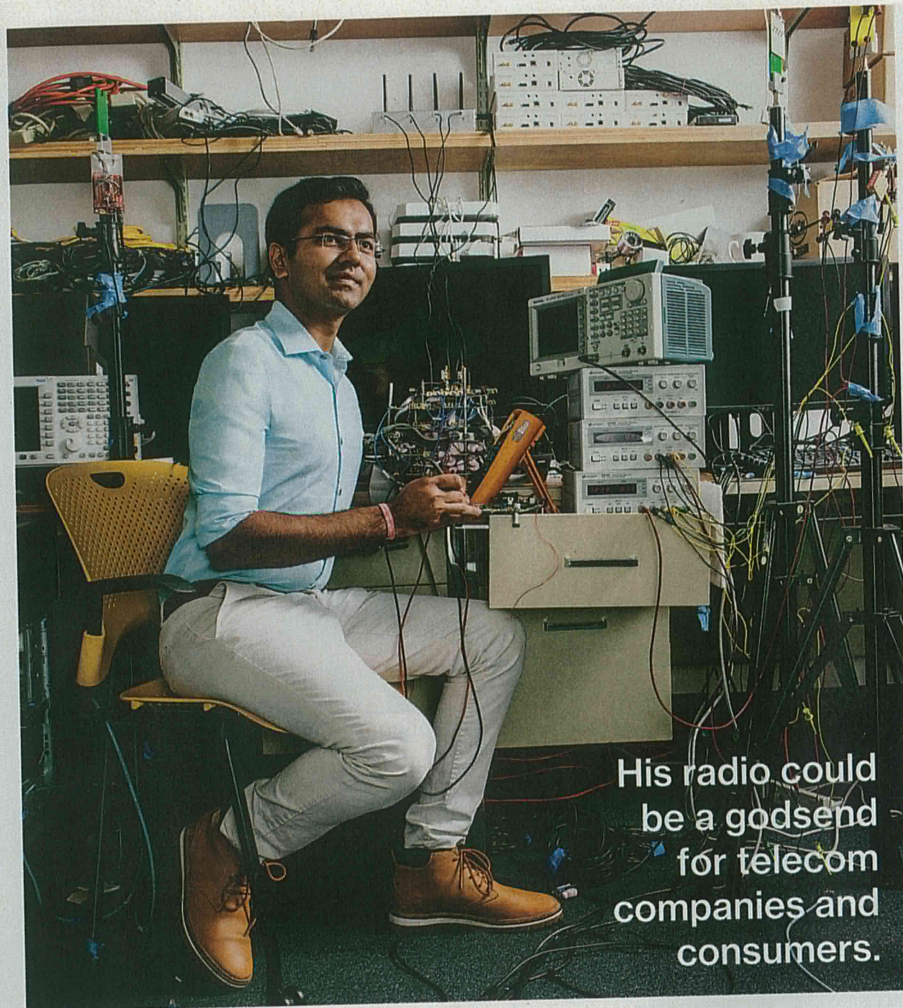
AI expert designs interfaces that let technology assist rather than annoy.

When we meet at a café in Beijing's 798 Art District, a creative hub in China's capital, Jiawei Gu has turned off the notification pings on Tencent's WeChat, China's ubiquitous messaging app, on his smartphone. When he glances quickly to check the screen, he has more than 17,000 unread messages. "The way we interact with information technology is broken," says. "I don't want to be captive checking buzzes," Gu says.

Gu is Baidu's go-to engineer for designing better models of "human-computer interaction." One example, DuLight, is an AI interface that helps blind or vision-impaired people. A camera mounted on a headset or a user's phone can scan bills, train schedules, labels on boxes, just about anything; the objects' words are then identified, using deep-learning algorithms and the processor on a mobile phone, and translated into speech that the user hears through an earpiece. "The facial recognition function is also getting really good," says Gu.

Gu's vision of the future is one in which people can enjoy the benefits of technology without being captive to cords and notification buzzes. "I want to bring humans back to an unplugged age," he says.

—Christina Larson



His radio could be a godsend for telecom companies and consumers.

Dinesh Bharadia

MIT Computer Science and Artificial Intelligence Laboratory

A seemingly impossible radio design will double wireless data capabilities.

Dinesh Bharadia invented a telecommunications technology that everyone said would never work: he found a way to simultaneously transmit and receive data on the same frequency.

Because the signal from broadcasting a radio transmission can be 100 billion times louder than the receiving one, it was always assumed that outgoing signals would invariably drown out incoming ones. That's why radios typically send and receive on different frequencies or rapidly alternate between transmitting and receiving. "Even textbooks kind of

assumed it was impossible," Bharadia says.

Bharadia developed hardware and software that selectively cancel the far louder outgoing transmission so that a radio can decipher the incoming message. The creation of the first full-duplex radio, which eventually could be incorporated into cell phones, should effectively double available wireless bandwidth by simply using it twice. That would be a godsend for telecom companies and consumers alike.

Bharadia took a leave of absence from his PhD studies at Stanford so he could commercialize the radio through the startup Kumu Networks. Germany-based Deutsche Telekom began testing it last year, but since Bharadia's prototype circuit board is too large to fit in a phone, it will be up to other engineers to miniaturize it. —Ryan Cross

COURTESY OF JIAWEI GU, ADAM DETOUR