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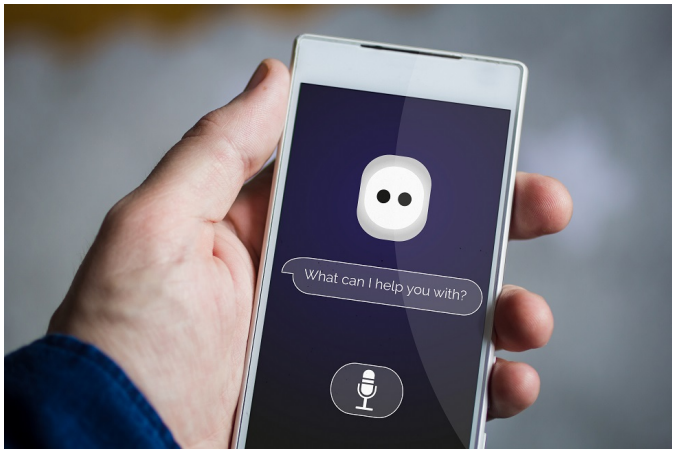
Voice-based control is becoming increasingly important in connected devices-- leading MIT researchers to develop a low-power chip designed specifically for automatic speech recognition.




According to the researchers, a smartphone running speech-recognition software uses around 1W of power. In comparison, the chip requires between 0.2 and 10 milliwatts, depending on the number of words it has to recognise, leading to power savings of 90-99%. This means it can bring about voice-based control in wearables, as well as the power-constrained devices making the Internet of Things (IoT).

The chip uses a simple "voice activation detection" circuit to monitor ambient noise and determine whether it is speech. If the answer is yes, the chip fires up a more complex speech-recognition circuit. It also can compress data and evaluate a small audio section within onboard memory in order to keep energy consumption low.

"Speech input will become a natural interface for many wearable applications and intelligent devices," Vannevar Bush Professor of Electrical Engineering and Computer Science Anantha Chandrakasan says. “The miniaturisation of these devices will require a different interface than touch or keyboard. It will be critical to embed the speech functionality locally to save system energy consumption compared to performing this operation in the cloud."

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