

# Researchers find a way to decipher some words in the mind before they are spoken

8 January 2016, by Bob Yirka



Credit: Rice University

A team of researchers working at Kyushu Institute of Technology in Japan and led by Yamazaki Toshimasa, has according to Japanese newspaper [Nishinippon](#), found a way to read certain brain waves and to match them to a database, allowing for recognition of the words before a person speaks them. The paper reported that the team also presented a paper at a recent conference organized by the Institute of Electronics, Information and Communication Engineers, describing their findings.

Over the past half-century, scientists have tried many approaches to read the mind, whether for good or nefarious purposes—thus far, none has led to success, though some have claimed some progress has been made. In this latest bit of news, the team in Japan enlisted the assistance of 12 volunteers of various ages, asking each to undergo

EEG scans while they thought about [words](#) and then spoke them out loud. The initial stages resulted in the buildup of brain patterns in a database—later, as each person recited words, the researchers read their [brain waves](#) to see if they could identify the words they were about to speak by comparing current brain wave patterns with those in the database. Similar research has been done before, but this time, the researchers looked specifically at brain waves emanating from the Broca area—which is a part of the brain where formation of words occurs before they are sent to other parts of the brain that are used to actually speak them. By limiting the vocabulary, the researchers found they could correctly interpret the words a person was about to speak (up to 2 seconds beforehand), approximately 25 percent of the time. They also found they could up that percentage to near 90 percent if they focused instead on just (Japanese) characters, or syllables.

The paper noted that the research benefited by using Japanese speaking volunteers, because every character in that language has a vowel in it—the lack of them in many western language, it has been noted, has been making it more difficult for researchers in the field working with volunteers who speak in English, for example.

Toshimasa and his team are reportedly optimistic about improving both their accuracy and the number of words they will be able to recognize as their research continues, perhaps going so far as developing a system capable of deciphering the entirety of the Japanese language, making it possible, for example, for people in a coma to speak, or for conversations in an environments where sound cannot travel, such as in outer space.

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