

Natural Speech, Intelligent Feedback

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For a fraction of the cost of live operators, pharma marketers can get real-time customer feedback from natural speech telephone technology.

Not since the days of Marconi have the words “natural” and “technology” been used in the same sentence. Now an exciting new application of natural speech technology (NST) offers the industry a relatively inexpensive, user-friendly way to manage customer service calls and convert them to accurate market data.



Using natural speech with “intelligent branching,” a machine “converses” with callers and moves the discussion forward based on their responses, just as in human conversation. Reportedly, the system is so good that callers often find it difficult to distinguish an automated conversation from a live one, because the machine’s replies are based on what an experienced human operator might say in a similar situation.

New and Improved

Current automated voice processing technology, known as interactive voice response (IVR), requires callers to “push this” or “say that” in response to closed-ended questions. Speech recognition supplements IVR by recognizing one or more alternate responses to such questions as “Have you been diagnosed with asthma?” Although in that case, the IVR system may be able to determine whether the caller says, “Yes” or “Yeah” or “No” or “Nope,” it fails when the caller provides a conditional answer such as “My doctor said I might have asthma.”

In applications involving account numbers, IVR tries to recognize digits. It branches to the next prompt by recognizing specific words. If callers say, “Yes, but...” or “What do you mean by...” or “I don’t know,” the system cannot accommodate them, because they gave open-ended responses to closed-ended questions. Because it provides a limited choice of answers, IVR often fails to deal with customers’ requests and is unable to interpret the variety of responses. That inflexibility often results in callers hanging up prematurely, asking to speak to an operator rather than going through the response rigmarole, or avoiding the system entirely.

In contrast, NST is programmed to ask open-ended questions, making it friendlier and more flexible to virtually the entire spectrum of callers. Its processing logic is known as “gisting” because it recognizes the gist of callers’ communication and responds accordingly. Consequently, it accepts a much broader range of possible answers. In a market research application, the question “Can you tell me how you use our product?” might elicit responses that fall into 50 or more computer-coded categories rather than the three or four categories used by IVR systems. Perhaps most important, NST’s free-form responses can provide unanticipated information. For example, callers that are asked, “How do you use our product?” may provide researchers with a new use. (See “Advantage: NST.”)

Nevertheless, NST also has its limitations. For instance, it cannot understand specific words. The course of the conversation with the caller is based on the concept of intelligent branching, in which decision making is complex and based on artificial intelligence. That branching, although reasonably reliable, is a statistically based, imprecise science—as is word recognition, which uses different statistical techniques.

Advantage: NST

After several decades in development, natural speech technology with intelligent branching has advantages over both interactive voice response and live operators:

- The yield (percentage of calls completed) is 50-300 percent greater than IVR’s yield.
- The information received is more accurate than that garnered from either live operators or IVR
- Calls lasting longer than a half hour and involving more than 100 questions have a completion rate of 90 percent.
- The cost is generally 50-80 percent lower than for live operators.
- The technology can differentiate emergency calls from routine calls and switch callers to a live operator if necessary.

Although NST recognizes when a caller gives an account number, it can’t understand the digits in that number. It registers that a caller asked a question, but is unable to give a specific response. In those cases, it would redirect callers to a live call center or take contact information so an operator can respond.

Communication Complexities

Human beings communicate as much without words as they do with them. In fact, according to Albert Marhabian, in his book *Silent Messages*, a well known study shows that only 7 percent of interpersonal communication is expressed verbally, 38 percent is based solely on vocalizations other than words, and 55 percent is based entirely on body language.

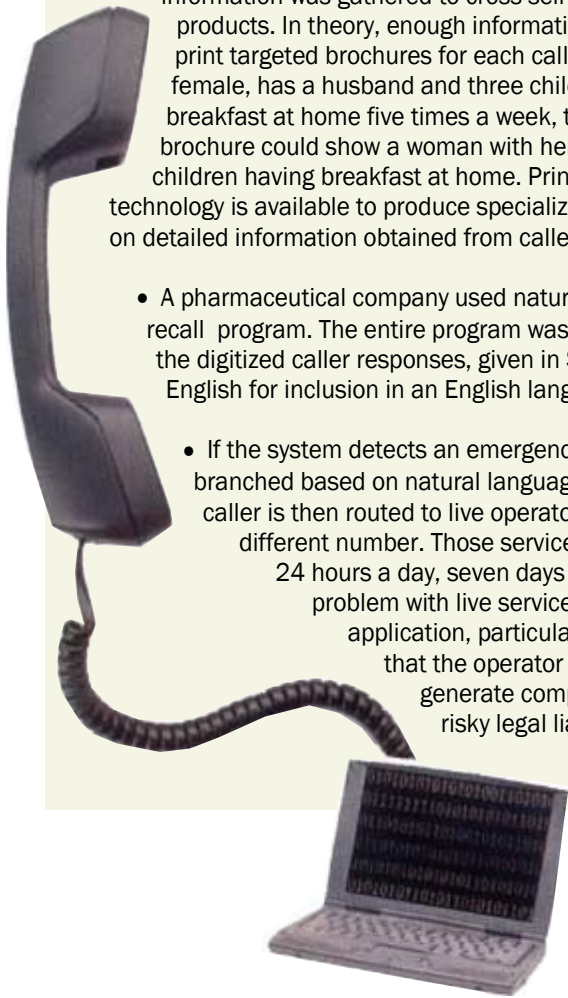
To recognize the importance of voice tone, consider the expression “Thank you very much.” Regardless of the speaker’s intent, the listener might interpret those words from either a sincere or a sarcastic point of view. Because the caller can’t see the other party, he or she imagines what that person looks like, their facial expressions and disposition. When a machine—or a person—limits callers’ answers to options that are unsatisfactory to them, their emotional temperatures rise and favorable or neutral visual images erode. As politicians and salespeople can attest, nonverbal communication is key to delivering messages in face-to-face speech to make listeners hear what the speaker wants them to hear.

Because IVR technology cannot recognize those nuances, it forces callers to deliver a limited number of answers. Furthermore, because its scripts are annoying, they rarely elicit worthy feedback. Marketers should realize that callers are unresponsive not simply because it is a machine but because of the unnatural way IVR systems communicate.

In the Real World

Natural speech technology can be used for simple information gathering as well as more sophisticated jobs. Here are a few application examples:

- A pharmaceutical company wanted to promote a product for three months by offering a free sample. Using natural speech technology that generated complete information from more than 90 percent of the respondent's calls reduced the promotion's cost per thousand by so much that the campaign continued for more than a year.
- In another lead-generating application, enough additional caller information was gathered to cross-sell the company's other products. In theory, enough information can be obtained to print targeted brochures for each caller. If the caller is female, has a husband and three children, and eats breakfast at home five times a week, the cover of the brochure could show a woman with her husband and three children having breakfast at home. Print-on-demand technology is available to produce specialized brochures based on detailed information obtained from callers.
- A pharmaceutical company used natural language for a recall program. The entire program was in Spanish, although the digitized caller responses, given in Spanish, were sent in English for inclusion in an English language database.
- If the system detects an emergency situation, calls are branched based on natural language responses. The caller is then routed to live operator or asked to call a different number. Those services can be maintained 24 hours a day, seven days a week. A major problem with live services in such an application, particularly if outsourced, is that the operator can misinform callers, generate complaints, and create risky legal liabilities.



How Speech Becomes Data

NST, on the other hand, is modeled on the conversation between a live operator and a caller. With a natural speech answer, the system automatically recognizes only the gist of the response, not the words. When the call is complete, details of the voice responses are converted into computer records with a set of pre-arranged value codes.

The answering machine industry calls that function "transcription." NST uses computer

assisted editing to automatically convert the responses, no matter how lengthy or detailed, to coded digital text. There is often very little, if any, verbatim transcription of the actual response.

Consider a request for a caller's opinion about a product. An IVR system would ask, "On a scale of 1-5, with 1 being the best, how would you rate our product?" The caller is forced to use the numbers 1-5 to express an opinion. In contrast, NST's free-form question would be: "What did you think of our product?" The answer would be equally unstructured. However, when coded, the same five-item scale could be used, based on the marketer's rating system rather than the varying—and unknown—standards of each caller. There also can be multiple categories for callers who make additional comments such as: "Overall, it was good, but I found the product difficult to use." Such an answer could have an additional code.

Applications for Pharma

For pharma companies, live operator call centers are a centerpiece of their professional and consumer marketing plans. They also tend to be expensive. Frequently, otherwise solid marketing opportunities are dismissed because the cost of handling calls using a live center is prohibitive. Call centers often suffer from poor performance, including inaccuracy of caller-provided information and delays in replying to inquiries. Legal threats arising from inadvertent or erroneous advice to caller or misinterpretation of caller information are always a concern when using live operators.

The technology of natural speech and intelligent branching avoids those pitfalls. NST allows nurses and doctors responding to promotional material to call in and say exactly what they want and to ask any questions they want. They can send information, computer ready, for the company's action and response within 15 minutes. Some callers may require responses by telephone, e-mail, fax, express courier, or regular mail. The reply mechanism depends on the nature and urgency of the request.

NST has been successfully used for calls lasting more than 30 minutes and receiving responses from callers to more than 100 questions in a single call. One such application, involving questions about public housing and rent assistance, handled a wide range of accents, dialects, and age groups. Nevertheless, more than 90 percent of the calls were successfully completed. (See "In the Real World.")

Because it doesn't ask questions leading to

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specific answers, it not only allows more meaningful responses, it also produces result that can be classified on a consistent scale. Perhaps most beneficial, pharma companies obtain unanticipated information, some of which might be used in market research and product testing, leading to new product development or marketing objectives. With permission, marketers may use callers' responses for future promotions or testimonials.

NST has been successfully used to handle overflow calls to claims desks for major insurance companies. The technology is also applicable to several languages, including Spanish (multiple dialects), French Canadian, and British English, making alternative language marketing economical as never before.

As target audiences respond to traditional promotional activities such as direct mail and advertising, marketers can now obtain callers' contact information at a cost of 50 cents apiece, surpassing both in number and quantity the leads typically obtained from live call centers. Not only does that improvement generate a much higher ROI, it can mean the difference between shelving a campaign that is considered too costly and launching it. (See "Compare and Save.")

Asking detailed information about callers to add to a database and to market additional products more precisely is also a cost-effective alternative. Natural speech leads right into database marketing—they go together like teens and telephones. Information from callers can be expanded at a low cost from simply asking for names, addresses, and phone numbers, to asking for additional information for cross product marketing, market research, and list development.

Room for Improvement

As it develops, NST will be able to handle even greater conversation complexity. Inherent in today's technology are detailed reporting capabilities often overlooked by more conventional technologies, including live-call centers. Besides being necessary to maintain and improve continuing programs, such information is also advanta-

geous for developing additional applications or promotions. Examples include recognizing an unexpected source of calls or unanticipated respondent age group.

For companies that are disappointed with live-call center responsiveness, natural speech is an exciting new technology whose time has come. NST offers the low cost of IVR, caller-friendly interaction similar to that of a live call center, and numerous applications that can generate valid, meaningful market data. It's up to the pharmaceutical industry to develop the new marketing techniques that can take advantage of such a powerful new tool.

Compare and Save

| Item | Live | IVR | Natural Speech |
|--------------------------------|-------------|-------------|----------------|
| Advertising Campaign | \$1,000,000 | \$1,000,000 | \$1,000,000 |
| Number of calls generated | 100,000 | 100,000 | 100,000 |
| Number of Leads generated | 75,000 | 40,000 | 90,000 |
| Est. Cost for handling calls | \$175,000 | \$55,000 | \$75,000 |
| Total cost for campaign | \$1,175,000 | \$1,055,000 | \$1,075,000 |
| Cost for handling each lead | \$2.33 | \$1.38 | \$0.83 |
| Cost per lead generated | \$16 | \$26 | \$12 |
| Cost to generate 100,000 leads | \$1,600,000 | \$2,600,000 | \$1,200,000 |

Assumptions:

- Live calls cost \$1.00 per minute of talk time (Including allocation of fixed charges)
- Average complete call (lead) is 2 minutes
- Average incomplete call is 1 minute
- IVR costs \$0.25 per minute plus \$0.50 for transcription of complete calls (leads)
- Natural Speech costs \$0.10 per minute plus \$0.60 for editing complete calls (leads)
- This response rate of 100,000 responses for a \$1,000,000 promotional effort is offered as an example, the results being proportionately consistent regardless.
- Total Cost for campaign excludes fulfillment and lost opportunity costs which would increase the differential between alternatives.

Source: ConServIT, a service of Conversational Voice Technologies Corporation