

AI Solution for Call Centers Slashes Training Time for Operators and Halves Average Response Times

Call centers and help desks play an important role in improving customer satisfaction. To achieve this, operators must be able to provide quick and accurate responses to customer inquiries, while also demonstrating a high level of operational knowledge when required. Companies face two main issues; the length of time it takes to train operators and the high level of skill variability among individual operators. As a result, some companies have recently started using artificial intelligence (AI). This article looks at the AI revolution occurring in call center and help desk operations



Receiving a wide range of inquiries from customers, inbound call centers and help desks play an important role in improving customer satisfaction. The goal is to provide quick and accurate responses, but this is not always easy to achieve. The challenges faced by many call centers and help desks can be divided into two main types (Figure 1).

The first type relates to human challenges. An example is the difficulty of ensuring that all operators are equally skilled. Many call centers and help desks prepare FAQs based on past inquiries to help their operators quickly respond to customer calls. However, this requires an instant decision on the right combination of keywords to properly search for the solution. With different language expressions having basically the same meaning, they would also need to decide on the best word combination to find the right answer.

Teaching new operators these skills requires both time and money. The problem is that employee retention in these types of operations is not always optimal, which results in a continuing cycle of operators with varying skills and an inability to train everyone equally.

Separate to the people-related issues is a second type of challenge. Technical issues can make it difficult, for example, to develop systems that enable operators to quickly search through FAQs to find the right solution. There are also no mechanisms for operators to share their knowledge, which makes it difficult to bring all operators up to the same skill level.



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Recently though, artificial intelligence has been identified as a suitable tool for resolving these types of issues. This article investigates the real-life application of AI in this scenario.

Using AI to identify search parameters and bridge the skills divide

A traditional FAQ search typically begins with the operator understanding what the customer wants, then identifying search parameters and searching through a database. If the search result does not

● Human Challenges

1. Difficult for all operators to be equally skilled
2. Varying levels of skill among operators
3. High cost of training new operators

● Technical challenges

1. Operators take too long using keywords to **search the FAQ** for accurate solutions
2. No framework for operators to share their knowledge

Figure 1. Call center challenges

help, the operator changes and adds keywords to search again. Identification and addition of keywords is a special skill, so if an operator lacks this skill, they tend to take much longer to find a suitable response for the customer.

This is where artificial intelligence can be useful. AI is a machine-learning mechanism that can learn the logic behind historical input and output data. This combination of inputs and outputs is called training data. Just as humans learn patterns of behavior from their daily experiences, AI uses training data to understand the relationships between inputs and outputs, and builds models that can be applied to various tasks. These pre-trained models can be used to produce an output from any given input.

Takuya Sato, Director, Strategy Planning, Global Business Promotion

Division, Global Business Strategy Unit, Fujitsu Limited is promoting his company's AI solutions business. He says that, "By applying this concept to FAQ searches, AI can learn the relationships between past inquiries and their responses. If it then encounters a similar inquiry, it is able to evaluate the degree of confidence, or probability of being correct, for any response to that question." According to Takuya Sato, the solution that makes this possible is known as 'FAQ Search', a Zinrai Application-oriented API.

When using the FAQ Search API, voice recognition produces text from the conversation. AI then automatically generates appropriate search parameters and searches the FAQ, listing the returned solutions in order of the degree of confidence. By following this ranking, even inexperienced operators are able to easily find the answer they are looking for (Figure 2).

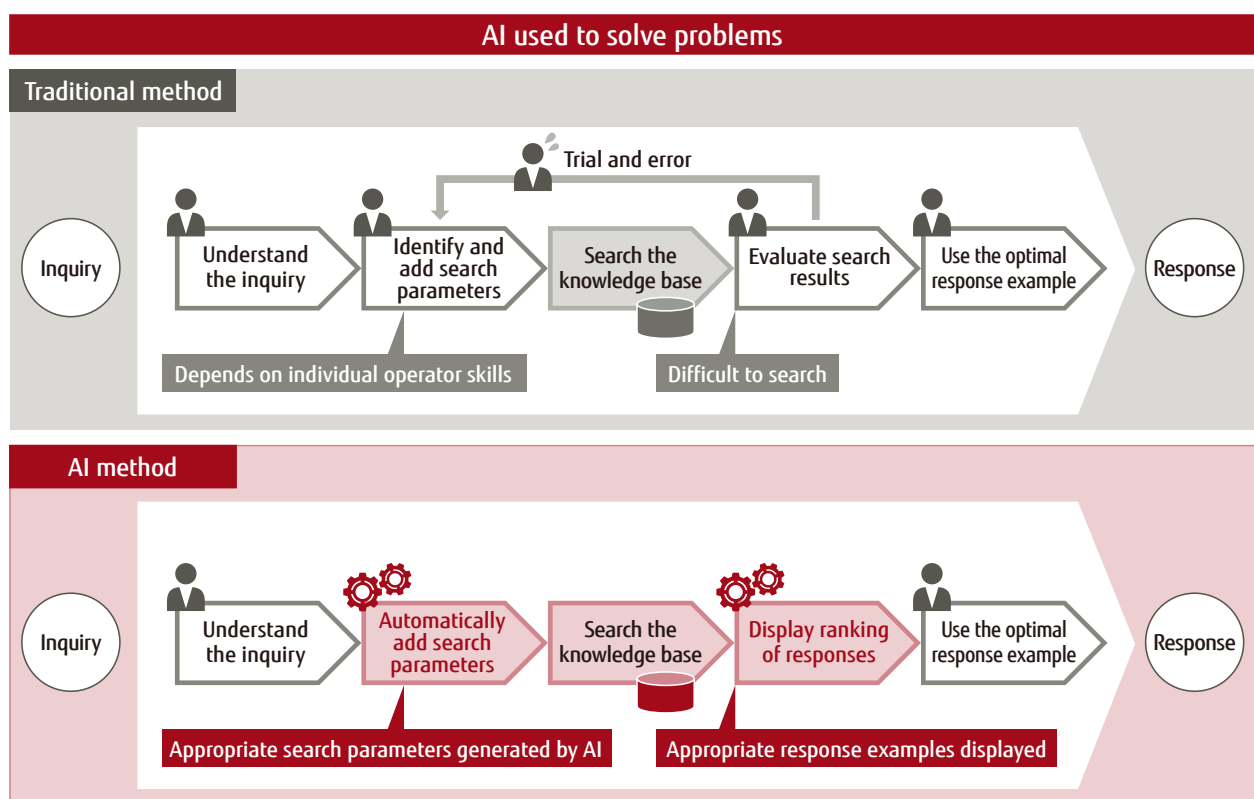


Figure 2. Differences between a traditional FAQ search and Fujitsu's 'FAQ Search', a Zinrai Application-oriented API

Operator training times reduced to between one-third and one-sixth, with dramatically improved search accuracy

Figure 3 shows a typical search result returned by the FAQ Search Zinrai Application-oriented API.

At the top of the screen, a question is entered using natural sentence structure employed in daily conversation. In the background, AI automatically generates a series of search parameters, the FAQ is searched, and the results are listed at the bottom of the screen. Numbers indicating the degree of confidence in the response appear to the left of each example.

Takuya Sato explains, "What is important about this is that the customer's words can be used directly to find the correct solution." For example, if a customer tells an experienced operator that "the computer sound just suddenly stopped," the operator could do a search on certain technical terms such as 'audio' and 'default device' to quickly find a suitable response, which is not so easy for inexperienced operators to do. Fujitsu's AI solution, on the other hand, makes it possible to find the right solution just by entering the customer's actual words: "the computer sound just suddenly stopped."

This way, differences in skill levels between experienced and inexperienced operators can be eliminated.

Another important element of this screen is the list of keywords shown under the question text box. These keywords have been determined by AI to be relevant to the question content. The operator selects the most appropriate words from this list and adds them to the query to improve the accuracy of the search. Takuya Sato adds, "Data simulations have shown an 84% increase in accuracy compared to searching without using AI, while the percentage of correct responses ranked first for degree of confidence has increased from 10.3% to 19.0%. Incidentally, Fujitsu currently has a patent pending on this proprietary functionality."

In addition to in-house implementations, Fujitsu has conducted field trials with this solution for around 10 of its enterprise customers. During in-house testing, it has managed to halve average response times, while achieving stable response times overall. Users have commented that it also enabled them to confidently answer questions outside their areas of expertise. Furthermore, Fujitsu achieved massive reductions in the time required for operator training, from the previous three to six months, now down to only one month.

The screenshot displays the Fujitsu FAQ Search interface. On the left, three callout boxes highlight key features: 'Input of natural language query', 'Addition of relevant keywords (patent pending)', and 'Optimal keyword selection produces examples ranked by degree of confidence'.

The interface shows a search input field with a natural language query: 'あるポリシーグループから配布先サーバを削除してポリシー配布しようとしたところ、グレーアウトで残ってしまっていて削除ができなくなっていました。なお、削除した配布先サーバの実機は既に撤去されています。' (When I tried to delete a policy group and distribute the policy, it was grayed out and remained. Also, the actual machine of the deleted distribution destination server has already been removed.)

Below the query, a section titled '追加されたキーワード' (Added keywords) shows a list of keywords: 'モード', '互換', '出来る', '変更', '標準'. Each keyword is preceded by a plus sign in a circle.

The search results are displayed below, showing a list of items ranked by degree of confidence. The top result has a confidence score of 83.47 and a title: 'ポリシーモードを標準モードから互換モードに変更したいのですが、ポリシーグループの削除が出来ず、ポリシーモードの変更ができません。原因と対処方法を教えてください。' (I want to change the policy mode from standard mode to compatible mode, but I cannot delete the policy group, so I cannot change the policy mode. Please tell me the reason and the countermeasure.)

The second result has a confidence score of 62.18 and a title: 'ポリシーグループを削除したいのですが、画面上から消えません。原因と対処を教えてください。' (I want to delete the policy group, but it does not disappear from the screen. Please tell me the reason and the countermeasure.)

The third result has a confidence score of 62.05 and a title: 'ポリシーグループ管理画面を確認したところ、特定のCTがグレーアウトされて、所属ポリシーグループ名が削除されていました。原因と対処についてご教壇ください。' (When I checked the policy group management screen, I found that a specific CT was grayed out, and the name of the policy group it belonged to was deleted. Please tell me the reason and the countermeasure.)

Figure 3. Screenshot showing an example of search results displayed when using Fujitsu's FAQ Search.

AI implementation backed by a team of 1,500 specialist engineers

So how was Fujitsu able to develop this AI solution? The company mainly credits its success to the strength of its AI engineering talent. Takuya Sato points out that, "Creating AI-based learning models is not just a matter of dumping training data into an AI learning mechanism." The diversity of AI learning mechanisms available makes it essential to select the most suitable one to use. "Because of the black-box nature of AI, it is difficult to logically explain which learning mechanism should be used at any point in time. Highly experienced engineers are able to quickly determine which learning mechanism is optimal for a certain customer's environment, but without that knowledge it can be quite difficult."

Fujitsu has been researching natural language processing for many years, and is already applying AI to this field. "We are also one of the leading companies in Japan in terms of numbers of patents applied for," comments Takuya Sato proudly. The company is even planning to expand its team of engineers with AI expertise to 1,500 during the 2018 fiscal year.

The more engineers with AI knowledge that a company has, the easier it is to determine whether or not AI can help resolve a customer's problems. For example, as Takuya Sato points out, the FAQ Search function detailed above is suitable for mid-level inquiries where an average user might have access to an FAQ database but nevertheless finds it too difficult to use as a standalone tool, either

because there is just too much information or because the information is too detailed to easily understand. On the other hand, he says that an AI implementation might not be so effective for higher-level inquiries where lack of accumulated data makes AI machine learning difficult, or for basic inquiries where the FAQ itself would be sufficient.

Takuya Sato explains how much training data is needed to enable AI to be used: "As long as you have around 1,000 question and answer pairs, AI can begin to learn and improve in accuracy as it is used." Even without these initial pairs though, when operators follow the manual to respond to inquiries, it is apparently possible to generate training data by creating possible questions and answers based on that manual.

"Fujitsu can also help customers create these possible Q&As," says Takuya Sato. "Using AI in call centers and help desks is not that difficult to achieve. Companies can contact us directly for more information."

Fujitsu also offers the Zinrai Operations Service for post-deployment AI support, helping customers through ongoing maintenance and accuracy improvements. Companies facing issues such as varying skill levels among their call center or help desk operators, persistently high training costs, or time-consuming FAQ use, should consider deploying Fujitsu's AI solution.

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