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Mitsubishi Electric Develops Dialogue-summarizing AI Based on Knowledge Processing
Halves post-call report preparation time

TOKYO, March 17, 2021 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has developed a dialogue-summarizing technology based on its AI technology Maisart®* that automatically generates accurate written summaries of spoken conversation, thereby enabling call-center staffers to roughly halve the time they need to prepare final reports after calls, as determined in preliminary tests conducted at a Mitsubishi Electric call center.

* Mitsubishi Electric's AI creates the State-of-the- ART in technology

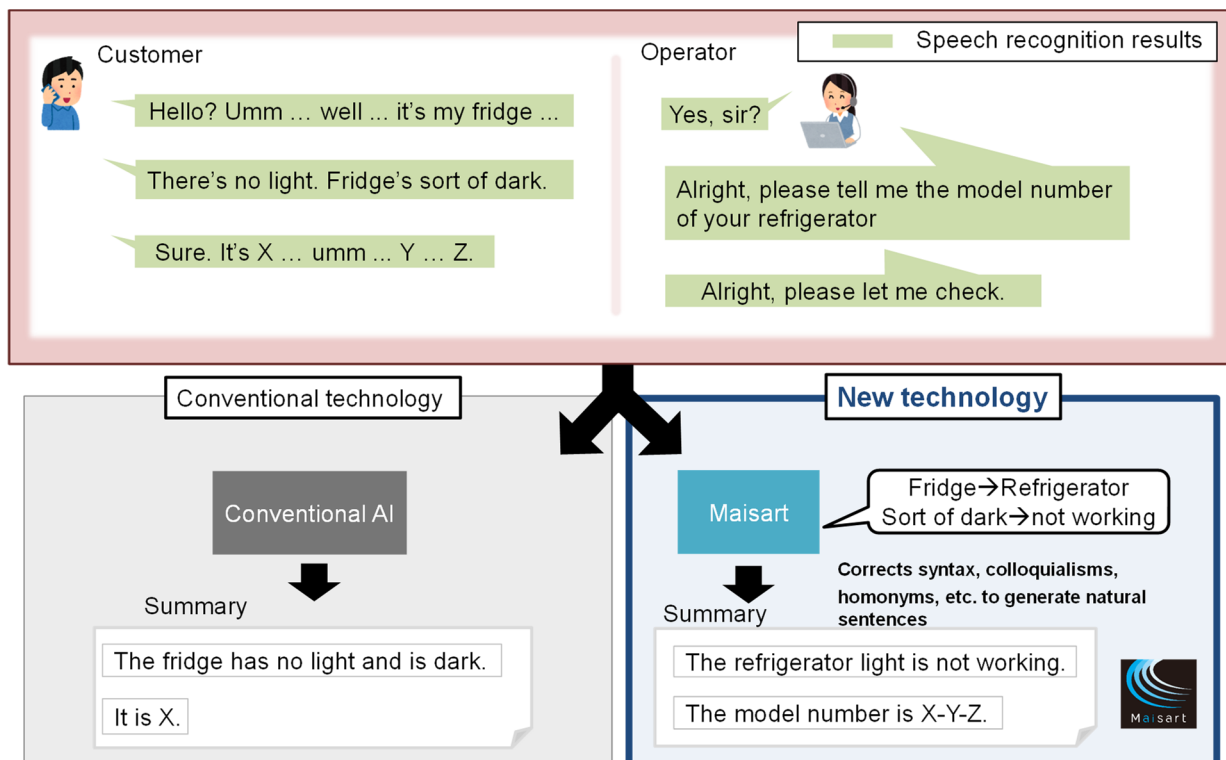Fig. 1: Example application at call center

Key Features

1) ***Automatically generates written records and halves final report preparation time***

Recordings of call-center dialogues prepared with conventional speech-recognition technology typically contain extraneous utterances, broken speech, etc., making it difficult for the software to generate useful written records of the dialogues. Mitsubishi Electric's new technology (Fig. 2), however, learns dialogue contexts to accurately determine meanings, including for colloquial and semantical expressions. It then uses data from past reports to correct broken speech, grammatical errors, word choices, etc. to generate complete natural sentences. Next, it extracts the most similar and shortest sentences from past reports edited by staffers and then finally produces a summarized written record. Internal tests showed that Mitsubishi Electric's new technology not only dramatically condenses Japanese text volume, about 90% of the text is usable compared to about 30% in the case of conventional technology, which enables call-center staffers to roughly halve the time they require to manually prepare their final reports.

2) ***Incrementally learns manual corrections to gradually improve correction accuracy***

When people call to inquire about new products, etc., it is difficult to generate accurate records of these conversations automatically since conventional software cannot refer to call histories and past reports covering similar topics. To overcome this obstacle, Mitsubishi Electric's new AI technology steadily refreshes and updates its knowledge by referring to recently edited reports to learn how staffers manually convert broken syntax, colloquial expressions, homonyms, etc. into more natural language.
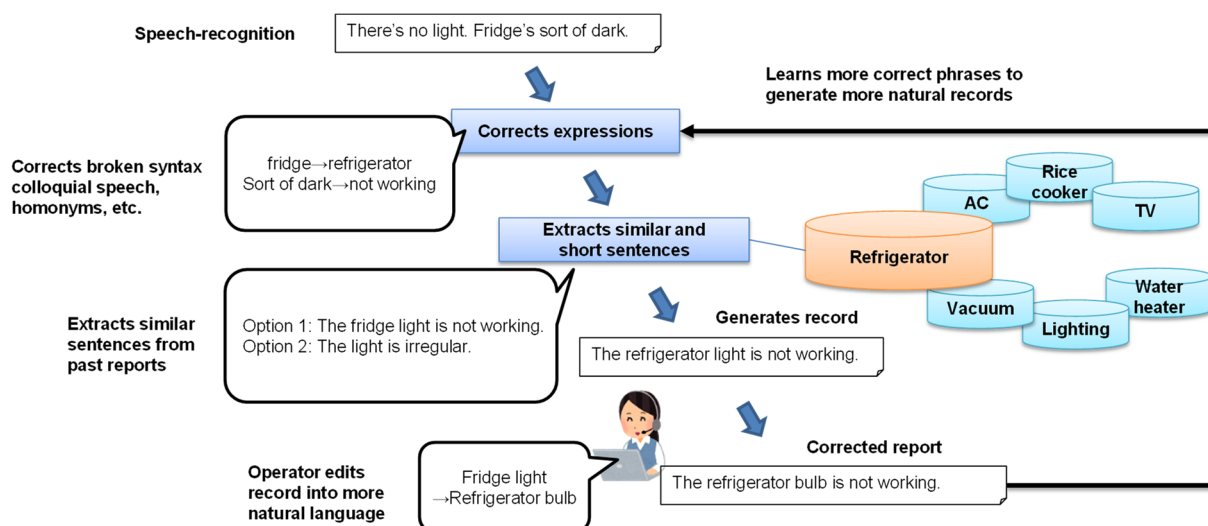

Fig. 2: Summarization process

Comparison of new and conventional methods

	Dialogue processing method	Performance
New	Maisart learns call histories and past reports to create a written record, and then extracts the most similar and shortest sentences from manually produced past reports to generate a condensed record of summarized natural sentences	About 90% of generated record usable in final report
Conventional	AI learns how to convert spoken sentences into summarized sentences through end-to-end machine learning.	About 30% of generated record usable in final report

Future plans

Mitsubishi Electric will evaluate its new technology through demonstration tests at the company's own call center from March 2021, aiming eventually to use it to generate records of phone conversations with customers regarding product malfunctions, product inquiries, etc.

Background

According to a white paper on call centers issued by the Japanese government in 2019, 41.8% of those surveyed said that a key issue is improving operator work efficiency. There is a growing demand to automate the process of preparing reports about phone conversations with customers. Conventional technologies, however, generate records of which only about 30% is usable when preparing final reports about conversations with customers. Consequently, it is still more practical for operators to create such reports manually, without using AI.

About Maisart

Maisart encompasses Mitsubishi Electric's proprietary artificial intelligence (AI) technology, including its compact AI, automated design deep-learning algorithm and extra-efficient smart-learning AI. Maisart is an abbreviation for "Mitsubishi Electric's AI creates the State-of-the-ART in Technology." Under the corporate axiom "Original AI technology makes everything smart," the company is leveraging original AI technology and edge computing to make devices smarter and life more secure, intuitive and convenient.

Maisart is a registered trademark of Mitsubishi Electric Corporation.

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About Mitsubishi Electric Corporation
With 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its "Changes for the Better." The company recorded a revenue of 4,462.5 billion yen (U.S.$ 40.9 billion*) in the fiscal year ended March 31, 2020. For more information, please visit www.MitsubishiElectric.com
*U.S. dollar amounts are translated from yen at the rate of ¥109=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2020