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## Onkyo Corporation Announces Grant of Patent for AI-Based Acoustic Abnormality Detection Technology

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Onkyo Corporation (Head office: Chuo-ku, Osaka-shi, Osaka, Japan, President: Munenori Otsuki, hereinafter referred to “Onkyo”) announces that it has been granted a patent (JP 7836649 B) for its AI-based acoustic abnormality detection technology as of March 18, 2026.

Onkyo develops systems that combine its proprietary “sound” technologies, cultivated through the development of Onkyo-branded audio equipment, with AI technology. As part of these efforts, Onkyo jointly developed an engine abnormality detection system with Komatsu Ltd. (Head Office: Minato-ku, Tokyo; President and CEO: Takuya Imayoshi), as previously announced in a press release dated April 14, 2023, and filed a patent application for the technology.

The patent has now been granted based on this application. A key feature of the invention is that it does not require a large amount of training data or labeled datasets.

(Press release dated April 14, 2023: [https://www.onkyo.net/news/20230414\\_abnormal](https://www.onkyo.net/news/20230414_abnormal))

### Overview

Title of the invention: Abnormality detection device and abnormality detection method

Patent Holders: Onkyo Corporation, Komatsu Ltd.

Application number: JP2021-154121    Application date: September 22nd, 2021

Registration number: JP 7836649 B    Registration date: March 18th, 2026

### Problem of conventional technology

When an engine malfunction occurs, abnormal sounds are generated. By detecting such sounds, it is possible to identify engine abnormalities.

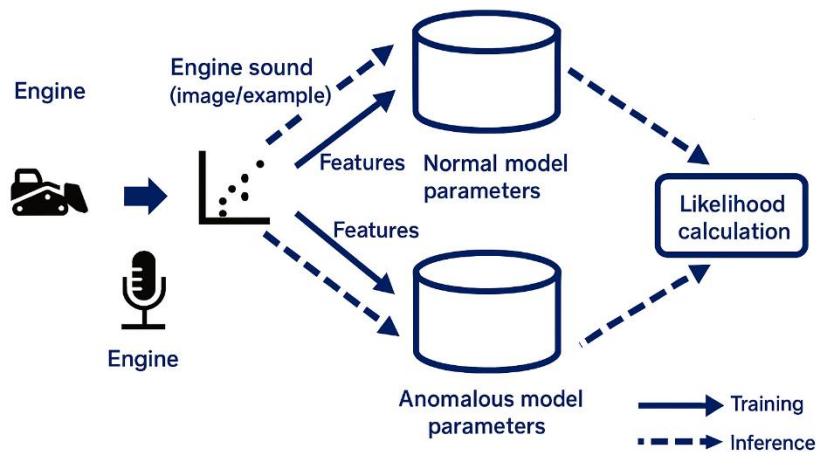
Although AI-based approaches have been considered for abnormality detection, abnormal events occur far less frequently than normal ones, making it difficult to obtain sufficient abnormal data for supervised machine learning. As a result, conventional methods typically build a model using only normal data and determine whether newly detected sounds fall outside the normal range.

However, constructing such models still requires a large volume of normal data, leading to significant time and cost burdens in practical applications.

### Key Features of the Invention

1. Determines parameters for both a normal model and an abnormal model based on acoustic features of engine sounds.
2. Calculates the average likelihood for each model using the extracted sound features.
3. Determines whether the engine sound corresponds to a normal or abnormal condition based on the logarithmic likelihood ratio.

In conventional machine learning, training data must be accompanied by corresponding labeled data. However, in this joint invention by Onkyo and Komatsu, abnormality detection is possible without the need for labeled training data, enabling efficient detection with significantly smaller datasets.



Onkyo will continue to advance its abnormality detection technologies and plans to file additional patent applications based on future development achievements.

### Onkyo’s business

Under its slogan “Change the world with sound”, Onkyo conducts the R&D business as well as the marketing business.

In R&D business, based on “sound” and “vibration” technology that have been developed in R&D of Onkyo brand audio products and speakers, Onkyo is performing R&D in fields of medical treatment, food, industry and infrastructure and providing R&D achievements to our customers.

In the marketing business, Onkyo is planning and selling collaboration products with animations, VTubers and the like and operating stores and EC sites.

Onkyo conducts integrated marketing activities across its R&D and marketing divisions to enhance brand recognition. Please expect our business development in the future.

Contact information

Yasuyuki Tane yasuyuki.tane@onkyo.co.jp

Intellectual property and legal, R&D, Onkyo corporation