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Mitsubishi Electric Develops Multi-agent AI
for Expert-level Decisions through Adversarial Debate

Drives efficiency by automating complex decision-making involving trade-offs
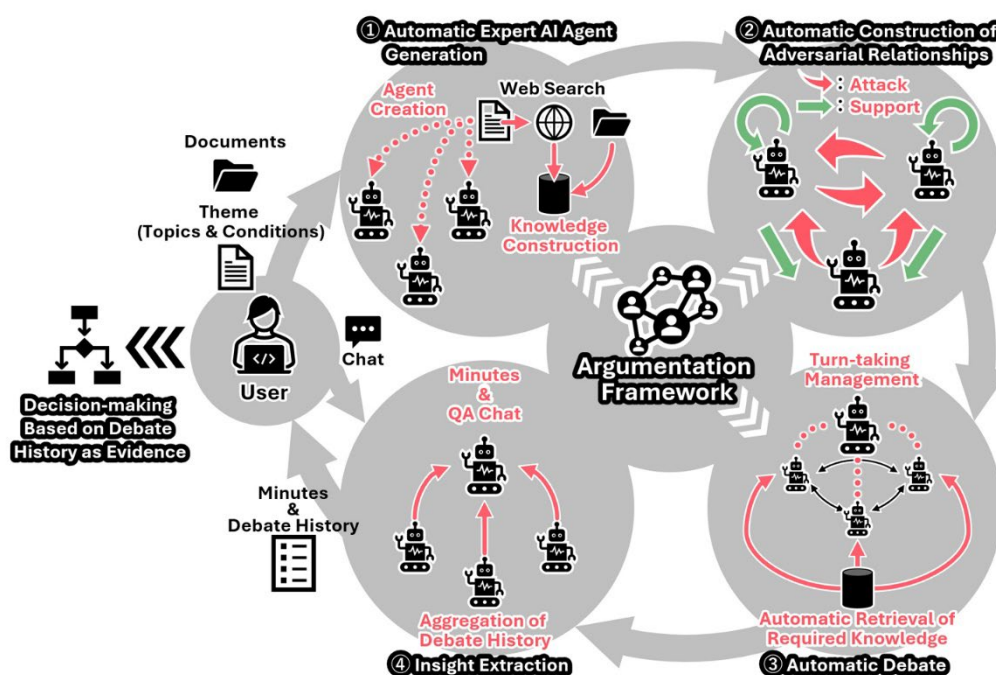
Multi-agent AI technology for expert-level decision-making via adversarial debate

TOKYO, January 20, 2026 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has developed the manufacturing industry's first[1] multi-agent AI technology that leverages an argumentation framework[2] to automatically generate adversarial debates among expert AI agents,[3] enabling rapid expert-level decision-making with transparent reasoning. The technology is an outcome of the company's Maisart®[4] AI program and is designed to improve efficiency in complex expert-level decision-making.

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[1] As of January 20, 2026, according to Mitsubishi Electric research. (As an implementation case in the manufacturing industry.)

[2] A theoretical framework that mathematically defines the structure of logical arguments and automatically constructs relationships of attack and support for arguments.

[3] AI technology that autonomously collects data, selects optimal methods, and executes tasks to achieve goals on behalf of users. Expert AI agents possess advanced expertise and judgment capabilities specialized for specific fields or operations.

[4] "Mitsubishi Electric's AI creates the State-of-the-ART in technology":
Mitsubishi Electric's AI technology brand aimed at making every device smarter.

![Maisart logo]

Businesses are facing increasingly complex decision-making involving trade-offs, such as security risk assessment and production planning. However, these operations require advanced expertise and are prone to dependency on specific individuals, leading to potential difficulties in making decisions when key personnel are absent and time-consuming consensus-building for compromise solutions. Moreover, concerns about the opacity of AI reasoning have led to resistance in applying AI in critical decision-making. AI adoption has been particularly limited in decisions related to security and safety, where transparent reasoning and evidence are essential.

To address these challenges, Mitsubishi Electric has developed new technology that applies the concept of "adversarial generation," as seen in Generative Adversarial Networks (GANs),[5] to multi-agent AI debates, enabling expert AI agents to compete with each other to derive better conclusions. This technology enables deep insights through adversarial debate and evidence-based decision-making, which are difficult with conventional cooperative multi-agent AI systems. Mitsubishi Electric's solution allows AI to be deployed in highly specialized decision-making involving complex trade-offs, such as security analysis, production planning, and risk assessment, contributing to operational efficiency.

Features

1) Automatic generation of multiple expert AI agents and their adversarial relationships
- Users simply input a theme, including topics and conditions, and the system automatically analyzes these inputs using an argumentation framework to generate the multiple expert AI agents needed for the debate.
- The system creates a debate graph mapping arguments and their attack/support relationships, then provides each AI agent with specific prompts[6] indicating which arguments to attack or support.
- The system performs web searches using keywords extracted from the theme, then dynamically assigns relevant information from search results and external documents to each AI agent for use in their arguments as the debate evolves.

2) "Adversarial generation" clarifies essential questions and yields deeper insights
- A facilitator agent using an argumentation framework manages turn-taking among expert AI agents based on the overall debate flow. Each expert AI agent receives prompts with clarified attack/support relationships and develops arguments based on their specialized knowledge. They actively provide rebuttals and reinforcements using perspectives different from the arguments of other expert AI agents, promoting multi-perspective examination.
- The "adversarial generation" approach systematically identifies critical issues and delivers more comprehensive insights than conventional multi-agent AI systems.

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[5] A representative method of generative models. Two models, a generator and discriminator, compete with each other to improve learning accuracy.
[6] Instructions for specifying what and how to generate content using generative AI.

3) Better conclusions realized by presenting debate history as evidence

- Users can review the debate content and history through meeting minutes that record argument threads and Q&A chat functions. If users request further examination involving additional topics, the debate can be extended to explore issues in greater depth, enabling the derivation of more evidence-supported conclusions.
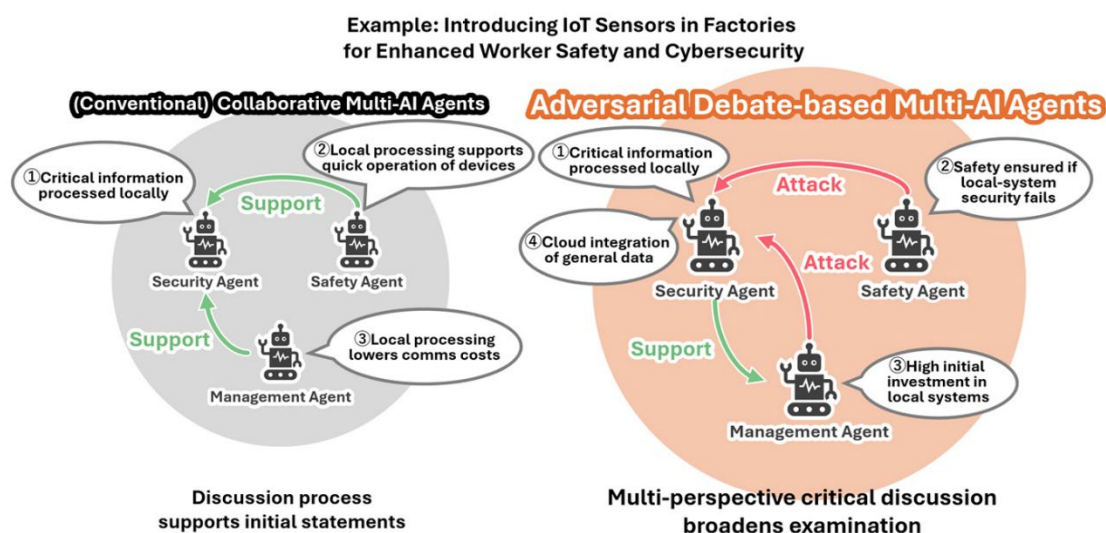
Debate process comparison: Conventional vs. Mitsubishi Electric's multi-agent AI technology

Future Development

Mitsubishi Electric will proceed with internal demonstrations toward commercialization in the fiscal year ending in March 2027 or thereafter. Looking ahead, the company aims to provide a decision-making support platform that streamlines and automates a wide range of specialized processes, including business decision-making, technology selection, and risk assessment, helping to address expert shortages as well as enhance decision quality.

"*Maisart*" *is a registered trademark of Mitsubishi Electric Corporation in Japan and other countries.*

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About Mitsubishi Electric Corporation

With more than 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 5,521.7 billion yen (U.S.$ 36.8 billion*) in the fiscal year ended March 31, 2025. For more information, please visit www.MitsubishiElectric.com
*U.S. dollar amounts are translated from yen at the rate of ¥150=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2025