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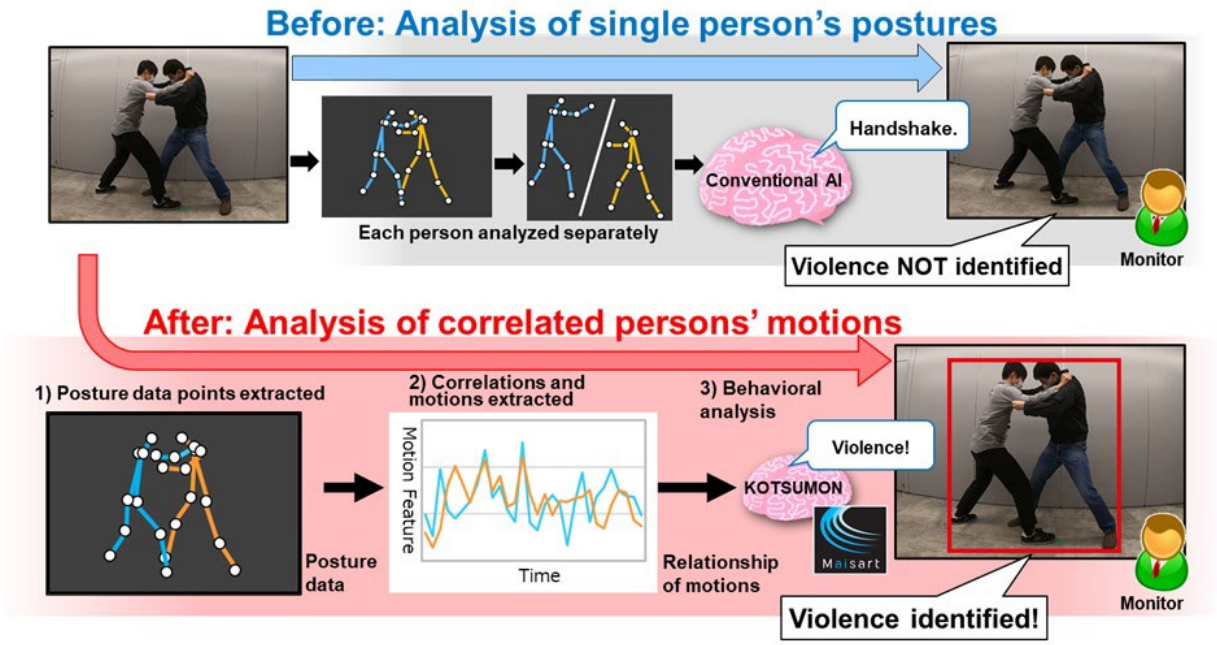
Mitsubishi Electric's AI Detects Dangerous Behavior in Videos

Analyzes multiple persons' correlated movements; Suppresses false positives



Comparison of conventional and newly developed AI technologies

TOKYO, December 7, 2022 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has developed an AI technology to detect dangerous behavior by applying KOTSUMON®* motion analysis, one of the company's proprietary Maisart®** AI technologies. The solution analyzes the movements of multiple persons in a video to identify violence between correlated people.

Needs are increasing to accurately detect dangerous behavior in public areas such as train stations and airports. However, it can be difficult to monitor large areas quickly and then accurately identify acts of violence. While AI technology is increasingly being used to analyze human attributes and behavior from video images, conventional AI has difficulty analyzing the postures and movements of two individuals to determine their behavioral relationship, such as the difference between a handshake and a violent grab.

Mitsubishi Electric's new AI technology, however, analyzes the movements of multiple persons in a video, converting the movements into posture data points, and then determines the behavioral relationship of

* October 9, 2019 announcement: https://www.MitsubishiElectric.com/news/2019/1009.html
** Mitsubishi Electric's AI creates the State-of-the-ART in technology

movements by people who are determined to have a correlation. According to company research, dangerous behavior can be detected about 90% of the time.

Features

1) ***Analyzes motion of multiple persons using posture data points***

Conventional AI converts the movements of individuals in a video into data points for independent analysis, which sometimes results in mistakes when comparing the separately analyzed motions of two people, such as misidentifying a hostile grab as a mere handshake. Mitsubishi Electric's new AI determines correlations between people by simultaneously identifying their motions and then analyzes the behavioral relationship of these motions.

2) ***Detects violence between people with high accuracy***

The new AI simultaneously analyzes the trajectory, distance and velocity of multiple individuals' movements. This allows it to distinguish between, for example, a handshake involving stable poses and short, slow motions and a violent grab or pull involving two or more people moving in the same direction over relatively long distances and relatively quickly. In verification tests conducted by Mitsubishi Electric, the AI, which is trained in the relationship between motion characteristics and behaviors, has been shown to detect dangerous behavior with some 90% accuracy, eliminating most false positives involving innocuous behavior such as handshakes.

Future Development

Mitsubishi Electric will continue conducting verifications aimed at early commercialization of practical applications and services, taking care to ensure data privacy and compliance with all relevant laws and regulations.

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.

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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 4,476.7 billion yen (U.S.$ 36.7 billion*) in the fiscal year ended March 31, 2022. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥122=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2022