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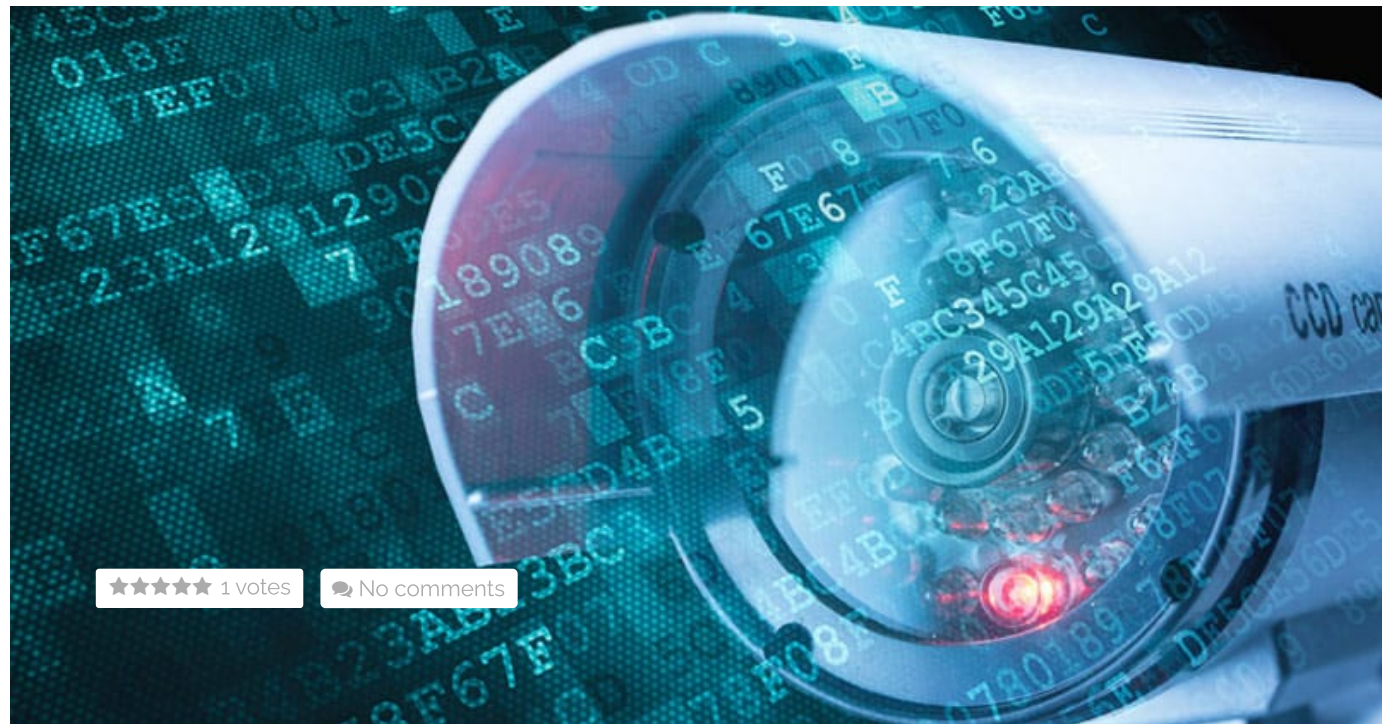
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How video analytics is transforming manufacturing

If a picture is worth a thousand words then a video is worth a million. While video has been around for several decades, it's classically been used for entertainment and recording memories. More recently, it's been used for public and private security (aka, surveillance) and in the workplace where, for example, training videos are used to onboard new employees and, in this time of covid, video communication tools that keep companies functional. It is only recently though that we have reached a point where video can be used in an entirely new way, for assisting people at work, including on the plant floor. Not unlike a spell checker helping you edit a document on your computer.

Computer vision has long helped line associates—the best example being the identification of defects by analyzing single frames (using AI for object recognition). Today, thanks to huge strides in technology, video can be used to identify process deviations even as the line associate makes them (using pioneering technology called action recognition). What this means for a production line is that within 1-3 seconds line associates and production leaders learn of slow cycle times, malfunctioning machinery or training issues. The training issue can be addressed in real-time with live feed retraining direct to the technician to get things back on track.

The technology

This new generation of video analytics technology results from technological advances. First, is ubiquitous sensing. Second, network bandwidth. Third, cloud infrastructure. . While a picture or single image is easily stored, maintaining a database of video used to be incredibly difficult. Modern infrastructure solves this. Inexpensively.

The fourth, and possibly the biggest advance, is due to the development of a new generation of neural network architectures, optimized for the Spatio-temporal analysis of video. A huge step beyond the industry standard of video classification.

Manufacturing resilience

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person believes that all manufacturing is automated, the fact is that roughly 72% of all assembly is still done by hand. The manufacturing of the iPhone is a case in point; hundreds of thousands of young workers in China and India assemble them. The reasons for this are fairly simple: There aren't enough capable robots and humans are the most dextrous, adaptable, thoughtful manufacturing resource there is and will be for the foreseeable future.

The place where humans fall short is their cognitive ability to observe and process data in real time. Even in the best lean environments (as in A3 reports + PDCA) problem solving works in a cycle within an organization — occurrence, detection, reaction and correction. Even done well, the problem definition alone can take a long time — how long does an efficiency manager have to stand on the line with a clipboard and stopwatch before finding the real problem?

The human's cognitive limit

One of the major keys to a businesses success is adaptability, arguably more important even than efficiency (especially in these uncertain times). Simply put, humans are the key to this adaptability.

It is exactly this bandwidth limitation that AI powered video solutions seek to address. The ability to provide meaningful insights, that can be translated into clear problem statements and targeted solutions rapidly. It can be the eye of the efficiency or training manager, making far better use of their time, and aiding in the overall productivity of each process where the solution is used. This ultimately leads to overall greater efficiency, better quality and output. Our customers have proven that adding an AI-powered video solution to a lean production facility leads to levels of productivity never seen before.

The most important distinction

The value proposition is clear. AI-powered video can tirelessly provide benefits within a manufacturing facility. The important thing is that it is doing so by supporting its human counterparts as opposed to replacing them. This is important for the business as humans are our most valuable and adaptable resource. Management will do well to invest in solutions that help better their performance.

The article has been written by Dr. Prasad Akella, Co-Founder and Chief Strategy Officer, Drishti

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