Artificial Intelligence Could Revolutionize HVACR

The newspapers are full of stories that tout the many ways in which [artificial intelligence (AI)](https://www.achrnews.com/keywords/17695-artificial-intelligence-ai) is in the process of revolutionizing our lives. And let’s hope the hype is true, because not only could AI be used to help us do our jobs more efficiently and accurately, it could actually save our lives.

Consider how AI is already being used to prevent deaths in hospitals. In a recent newsletter, Peter Diamandis, founder and executive chairman of the XPRIZE Foundation, said that over 400,000 patients die prematurely in U.S. hospitals as a result of heart attack or respiratory failure. These patients don’t die without leaving plenty of clues, he said, but given information overload, human physicians and nurses alone have no way of processing and analyzing all necessary data in time to save these patients’ lives.

“Enter WAVE, an algorithm that can process enough data to offer a six-hour early warning of patient deterioration,” he said. “Just last year, the FDA approved WAVE as an AI-based predictive patient surveillance system to predict and thereby prevent sudden death.”

AI is also proving helpful in diagnosing lung cancer. According to Diamandis, Johnson & Johnson is teaching IBM Watson to read and understand scientific papers that detail clinical trial outcomes. One such Watson system contains 40 million documents and ingests an average of 27,000 new documents per day. After only one year, Watson’s successful diagnosis rate of lung cancer has reached 90 percent, compared to the 50 percent success rate of human doctors.

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The Pentagon is also looking to save lives by using AI to analyze data gathered by drones to improve how wildfires are fought. According to an article in The Wall Street Journal, the wildfire project uses algorithms to assess still and video imagery – some of it sourced from National Guard drones – to help predict the paths of wildfires and improve efforts to tackle them. This may help save lives in places like California, which just suffered through its deadliest wildfire in history.

While usually not a life or death situation, think about all the ways in which AI could be used in the HVACR industry. Wouldn’t it be amazing to get a 6-hour early warning alarm that a refrigeration system was going to fail? Or that a chiller was about to break down? This could significantly reduce the number of emergency calls contractors receive in the middle of the night or on weekends.

These are not far-fetched scenarios, as some OEMs are already experimenting with how they can use AI predictive modeling to foresee when a breakdown may occur, giving contractors time to fix the problem before it results in downtime. And the repair will be faster, because the system will likely be able to self-diagnose, so the contractor will not have to spend hours trying to find the problem.

AI-enabled HVAC systems can also offer benefits for building owners and occupants. By monitoring and analyzing conditions inside a space, as well as outdoors, the system can constantly make adjustments to the environment based on the data being collected. This could lead to not only more comfortable occupants, but lower energy bills for building owners.

So what could hold up the adoption of AI in HVACR? Many buildings and food retailers already have some type of control system in place to monitor and report conditions, but there are numerous vendors in that space, and all collect and process data differently. It would be challenging to ensure the accuracy and consistency of the data, given the various ways in which control systems are configured and applied. Not to mention that many of these systems are proprietary, and vendors may not be willing to share their data with the rest of the world. In addition, it takes time – and money -- to create the algorithms needed to analyze data trends and make sense of them.

Even with all these challenges, there is no question that AI is coming to the HVACR industry. The OEMs are already deep in the research and development of AI-enabled equipment that will facilitate their collection of more data, which, in turn, will help them create better products. And that could result in making the lives of everyone a little better as well.

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