THE OSH IMPLICATIONS OF ARTIFICIAL INTELLIGENCE
Q&A With Matt Law

Artificial intelligence (AI) and its implications for OSH are a growing concern for safety professionals. We recently asked Matt Law, manager of customer safety strategy at Grainger, to share his perspective on the intersection of AI and workplace safety and health, and how safety professionals can respond to protect workers and their organizations.

PSJ: When we talk about artificial intelligence or AI, what are we talking about?

Matt: A good way to define artificial intelligence is as a computer system that shows behavior in a way that could be interpreted as human intelligence provided the system is dealing with pattern matching. The key question to ask of anything that could be AI or claims to be AI is, is it really intelligent or is it just designed to seem intelligent?

The best example I can give is the Chinese room argument, which Doug Rose presents in his Introduction to Artificial Intelligence course, which can be found on LinkedIn Learning. Imagine yourself in a windowless room with one mail slot on the door. This mail slot is your only method of communication with the outside world. You have a phrase book on a desk and a bunch of notes with Mandarin Chinese symbols on the floor. Now, the book tells you which response you should use to answer each note that comes through the mail slot. Your phrase book says if you see this sequence, respond with this sequence. You have no idea what the notes say or what the symbols mean because they are in Mandarin Chinese. You simply follow the instructions given by the phrase book, matching patterns and symbols. The person on the other side of the mail slot may think you are fluent in Mandarin Chinese, but you are only following a set of rules that allow you to appear fluent. So, in this way, a system may appear intelligent, but it is really just matching patterns based on the information it has been given.

If you try asking your smart home personal assistant a complicated question, it will likely respond with "I don't know that" or "Here's what I found," instead of giving you a direct answer to your question. The reality is that most AI that we see being used today is still considered very weak AI. Truly strong AI is still very much science fiction.

The last thing I'll say here is that machine learning is the most prominent and promising form of AI we see today. This is a process in which machines start by identifying patterns and then learn more as they work through additional data. These systems use data like we use our five senses and continuously grow or learn through observation.

PSJ: What are your thoughts about AI in terms of what it means for safety and practical applications you're seeing in the field?

Matt: Right now, as I've found in my research and interviews that I've done with some of the firms that are working with AI and safety today, there's only one true version of AI that's actively being marketed, and that's computer vision. This is a process in which a system analyzes images and video captured during safety inspections or monitoring processes. Organizations can use these systems to identify hazards, equipment malfunctions and unsafe practices. Computer vision is extremely useful for proactively identifying issues that humans would normally miss.

There are other potential applications of AI, such as data analysis and pattern recognition, risk prediction and early warning systems, and even natural language processing for compliance monitoring. Some existing environmental, health and safety (EHS) software firms are piloting the augmentation of their systems using those applications. But we haven't really seen a true form of AI marketed for these applications. It's only computer vision at the moment.

PSJ: What are some other emerging trends that could change the way safety professionals do their jobs in the future?

Matt: It's really hard to predict. Realistically, AI has only very recently gone mainstream in a way that almost everybody has heard of it and has started to ask questions and think about how it can be used. Because of this, we can't yet put a number to how we think AI application and safety will grow in the future. However, what we can say is that there's more noise in the market and there is definitely more demand.

Personally, I think this will look similar to EHS software trends. In the last decade or so, the software market for tracking inspections, incidents, safety data sheets and other things in safety has exploded. We have more firms offering safety software than ever before. That market is starting to plateau, but it continues to grow as it becomes more affordable and more accessible to folks who need something better than pen and paper and spreadsheets to get their work done.

In the same way, even though only a handful of firms offer true AI solutions in safety at the moment, I think this will exponentially grow as the prospective applications I mentioned become real and as organizations start to discover the value of implementation.

PSJ: How would you encourage safety professionals to use these tools?

Matt: The first thing is that there's no need for safety professionals to start learning how to program AI. I don't build software for safety, but I buy software.

Matt Law

Matt Law, Dr.PH., CSP, REHS, is manager of customer safety strategy for W.W. Grainger Inc. He is also a volunteer teaching assistant for University of Alabama at Birmingham and serves as a U.S. Navy Reserve Environmental Health Officer. Law holds a Doctor of Public Health from Walden University. He is a professional member of ASSP's Central Florida Chapter.

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Right now, it's more important for safety professionals to get this baseline knowledge of what AI is and what it could potentially do in safety. They really need to start brainstorming what issues they think could be solved by AI and start pushing on the vendors who develop AI to solve these issues.

That's really what the future looks like to me. We face real, persistent issues every day as safety professionals. Even as total recordable injury rates continue to decline, our fatality rates have stagnated and even increased in recent years, according to the Bureau of Labor Statistics. As AI continues to rapidly evolve, safety professionals will be able to use it to augment their work, solve problems we couldn't solve before, and start to make a significant impact on workplace safety.

The last thing I'll say here, just to put this to bed, is that AI and machine learning cannot, should not and really is not intended to replace the human. It is intended to enhance the human's ability to perform, and that's really what I see for safety professionals in the future.

PSJ: What is a good place for OSH professionals to start learning to understand these tools and how they can improve safety at their job sites?

Matt: I would encourage everyone to come to my session (session 6030) on AI at Safety 2024 in August. I think we're going to have a good conversation on AI and safety.

I mentioned Doug Rose's Introduction to Artificial Intelligence course on LinkedIn Learning. There are also a lot of other short courses out there on AI, and I think safety professionals should use those to build that foundational knowledge to start brainstorming about how AI can and will be used in safety in the future.

The last thing I'll say here, and this is something that I've started doing is to start asking questions of the vendors that are currently marketing computer vision in safety and the ones that are starting to use AI to augment their EHS software platforms.

I mentioned that to my knowledge, computer vision is the only true AI application marketed to safety at the moment. Ask questions about the effectiveness, the implementation process and start asking questions about data privacy, ethics behind AI. These are all things that are going to matter as this continues to develop and evolve. And see if it makes sense for your workplace.

Like I said, I think there are a lot of applications where this is going to make a difference in the future, but we really have to evaluate how we're going to use that, how we're going to give AI good data and make it evolve in the right way so that we can really make a difference in workplace safety.

PSJ: How do you think this could potentially change the face of OSH in the future?

Matt: We spend a lot of time gathering data for our jobs. We spend a lot of time doing inspections and doing compliance monitoring and all of these things to gather data. A lot of times, it just kind of sits there. We're not able to put all of that together in a way that makes sense or helps us find trends that are going to help us address the issues that we're having the most problems with.

I think what's going to happen with AI is we're just going to have a better, more efficient way to analyze that data. I mentioned before, AI is demonstrating intelligence. It's not actually intelligent. It's not able to process things in the same way that we do. So, when we gather information, if we gather poor information, we're going to get poor outcomes from that data output from AI. So, one of the things that we're going to have to do is really think about how we gather data. Are we gathering the right data and are we looking for the right outcomes when we use that data? Because that's the only way we're going to train AI to be useful, if we're training it in the right way.

Again, machine learning learns through data and continuously evolves in that way. And if we feed it the wrong data, we'll get the wrong outcomes. So that's something we're really going to have to work on as safety professionals, making sure we're looking at safety in the right way and feeding the right data.

Think about how difficult it is for a safety professional to explain what they do to somebody who is not a safety professional. In the same way, we are going to have to have that conversation with AI to make sure AI is able to learn how to be a good safety professional and do its job well.

The other thing I'll bring up here again is that data privacy piece. The vendors that I have talked to are very aware of this. We've had a lot of different things happen with data privacy over the years with just software in general—data leaks and privacy breaches. A lot of it is protecting the data that you have using good data encryption systems. You also have to think about the workers you're gathering data on. There has to be a de-identification of the worker in some way, making sure they are protected. And then as you're making sure that happens, being transparent with your workers about the data that's being gathered, how it's being used and what this means to them and to the workplace. So, there are a lot of different considerations as we're thinking about implementing AI.

I think that right now ChatGPT and some of these large language models are really useful tools and I think we can start to play with them. But we also have to think about where does that information go?

How is it protected? And make sure we're keeping ourselves, our organizations and our workers safe as we play with these different tools.

PSJ: That's an important point. Thinking about what happens to potentially proprietary information uploaded into these systems, and what that could potentially mean for your company.
Matt: Yes, and even things like data storage. We rely on cloud systems a lot now for data storage. Is the cloud the right place to store the data that you gather for whatever safety observations you're making? Or does it need to be stored locally on an encrypted hard drive that nobody else has access to?

Some of the vendors are thinking about that. They've started to localize the system to where it's on site. It goes to your hard drive, and it is encrypted. Other folks are talking about end-to-end encryption. Think about taking a video with your phone. A lot of apps that you take videos or photos with, it goes to your photo booth or however your photos are stored on your phone. A lot of times that gets pushed to a cloud. Some of these vendors that are using mobile devices to gather information for AI, they're encrypting it within the application itself. So it does not go to your photo reel, it only goes to that system and it is fully encrypted and protected. That's another way that data is being protected.

But again, a lot of this is so new. Some of these vendors are startups. It's the exact same thing that we saw with EHS software. A lot of startup companies starting to take advantage of this technology and starting from scratch. But I think in the lessons that we've learned in recent history about data privacy, a lot of that is being taken into account. And it's just something that we need to be aware of and push on these vendors to make sure that we're all protected.

PSJ: Anything else you'd like to add?
Matt: The last thing I'll add here is as a researcher, I found that we still don't have a lot of information about current AI application in safety. I know a little bit beyond what we've talked about today, but we still don't have a lot of information. I found some case studies and a little bit of academic research, but we really need more. If any readers have an example of how you have used AI in safety, I'd encourage you to please reach out to me. I would love to collaborate and hear your story. **PSJ**

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