AI's March Toward Democratization

The concept of artificial intelligence (AI), and its continued march toward democratization, has been taking shape around the world since 1955 when American computer scientist and cognitive scientist John McCarthy first coined the phrase.

For consumers, AI has gradually become a normalized part of their everyday lives—from Netflix recommendations to TurboTax, we constantly interact with AI in ways meant to enhance our experiences.

While consumers have flocked toward intelligent products and applications, business and industry have been reluctant to embrace it.

But all that is changing. 2018 is gearing up to be a game changer in the adoption rate of AI, with large and medium-sized companies incorporating AI into their processes, production lines, services and products.

In aerospace, the promise of the benefits of AI is legitimate, so much so that it has almost become synonymous with the definition of "innovation" itself. The advantages of AI include operational efficiencies, such as improving internal processes, new product design, helping with training and other functional duties, as well as applying analytically driven data to increase quality assurance.

As aerospace OEMs, suppliers, MROs, and airlines integrate AI into their processes, these organizations are beginning to understand the magnitude of its promise.

"We see digital as a big growth opportunity for us, a big part of our future, taking it off the aircraft, analyzing it, and making it help us be more efficient," said Jody Franich, vice president of Boeing Global Services Supplier Management at the March A&DSS conference in Seattle.

Franich's hope for more efficiency is perfectly timed with the third wave, or third generation, of AI, which has to do with "deep learning" or machine consciousness. Deep learning allows the AI system to analyze data from multiple interacting systems, associate these data to form relationships or patterns, and therefore make predictions about machine behavior that can make processes more efficient and predictive, ultimately resulting in saving lives, time or money, to name a few of the possible benefits.

However, before AI is able to "think" about and prevent mechanical issues, it requires input from technology that monitors a machine's or an environment's processes: Enter super-sensors. Super-sensors have the ability to track heat, movement, vibration, sound, weight, light, and speed without the need for thousands of individual sensors all over the room or machine.

Carnegie Melon University (CMU) has embarked on a Synthetic Sensor project, underwritten by Google, which is applicable to aircraft. Potentially, super-sensors could be installed directly in an aircraft, or on the assembly line, and could be able to assess whether an engine is functioning normally based on vibrations or temperature.

As thousands or millions of individual variables are brought together, they form information that is greater than their individual parts. These parts can conceivably be utilized through a process called generative design; the concept of an AI engine examining all variables and contemplating all resulting scenarios in order to accomplish the best outcome.

A tremendous amount of progress has been made in regard to AI in the 63 years since McCarthy ushered the concept into the minds of those ready to embark on this journey; yet there is still so much more left to be explored, deployed, adopted and conquered. Only the future knows what heights AI can help us reach.

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