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Why Has AI Suddenly Become Interesting?

I have a curious relationship with technology. I have been working with it all my life, and I see topics come and go over the years. This is the third time that I have seen *artificial intelligence* (AI) becoming trendy, and, this time, I think it will stick. Four things are different this time around, and they are (in alphabetical order) Amazon, Google, IBM, and Microsoft. All of these companies have had AI research programs running for years, but the big change now is that there are enough ubiquitous computing resources in the form of the cloud to make it commercially viable to build products around the platforms.

How does AI work? First, I am going to stop using the term AI, which is a catch-all phrase with science-fiction implications that machines will become sentient and take over. All experts agree that we are a long way from that. Instead, I am going to use the term *machine learning* (ML), which more accurately reflects where we are today. Typically, an ML engine consists of some software that can extract information from a large data set and then correlate that data against a set of known outcomes. An example from years ago is a large data set of camouflaged tanks in forests from which data such as edges, contrast, and geometric pattern were correlated against the simple outcome *tank* or *no tank*. The computation required was immense, and the standard methodology of using 80% of your data to train the model and 20% to test the model was used.

Training in this context is basically adjusting the parameters of the model until the ML engine gets the right result for all of the training data. Once you have done this, you can remember the parameters and see if it works for the test data. In the tank example, the results on the test data were pretty good, and it seemed like the system worked. In real life, however, the system was virtually useless. Later scrutiny discovered that, in the training data, all the photos of tanks were taken on cloudy days and all the photos without tanks were taken on sunny days. In effect, the system had been trained to detect that the sun was shining.

Why You Should Be Skeptical of ML

Given this scenario, you may dismiss this as a case of old technology and poorly understood training methodologies. Unfortunately, we still have this problem today. If you're not Caucasian, then you might wonder why facial recognition software doesn't work for you as well as it does for your Caucasian friends. If you're applying for a job in a big organization, then you should be rightly worried about the training sets used to identify the perfect résumé. Googling topics like "blind faith in big data" and "algorithm bias" leads to some interesting TED Talks around the general topic. Searching the @smpteconnect YouTube channel will generate equally interesting SMPTE talks on the applications of ML in the media industry.

Why You Should Be Optimistic About ML

So, in 2019, we still suffer from the issue of not really knowing what we have trained the ML engine to do, but we do know that the results of those algorithms continue to get better and will have an impact on our lives as media professionals.

Voice command and synthesis. I believe they will radically change the way in which we interact with media equipment. On live TV, we train humans and give them voice instructions. It will not be long until software applications join that merry gang.

Auto translation and voice synthesis. This gets better every day and is good enough for many applications. If you haven't played with voice synthesis, then try this link or search for others: https://aws.amazon.com/polly/.

Image, pattern, and emotion recognition. As a tennis fan, I must say that the highlights selected by IBM's Watson for wimbledon.com are amazing. I know that there is additional human curation, but the speed and accuracy empower humans to create packages that would otherwise not get made because there is not enough time. Just remember that every time you search for an image on Google, there is an ML algorithm curating content for you. As ML becomes more aware of emotional context, we will be finding content with an increasingly rich set of metadata to help us.

Will the Machines Take Over?

AI and ML will dramatically change the way we do our media jobs. In the same way the synthesizer did not replace live musicians, I don't think machines will replace humans in the media world. I think the real creatives who understand the technology will make amazing content to keep my aging brain happy. Visit a few of my favorites: https://google.github.io/creatism/, https://jukedeck.com/, and the @smpteconnect YouTube channel to see if you agree. **SMPTE**