# Intelligence, Machine Learning, and the Great Reveal

The Merriam-Webster dictionary gives this definition of intelligence.

The ability to learn or understand or to deal with new or trying situations.

Where does the word, the concept of intelligence come from? The etymology tells us it comes from the Latin intellegentia — understanding, knowledge, power of discerning; art, skill, taste — from intelligentem (nominative intelligens) — discerning, appreciative. [[1]](#footnote-0)

It doesn’t really help that much. It all just becomes so ridiculously confusing, like a dog chasing its tail. It’s the absence of a concrete noun definition. If I say yellow you understand the color. If I say sun you understand daytime. There’s nothing really to grab on to with *intelligence*.

It has no tangible qualities. It becomes as amorphous as the postmodern language of art criticism, intangible concepts that appear and disappear in our interior life like the silver belly of a fish breaking quiet lake water at sunset. But even if we’re not sure we saw the fish we can confirm the experience by its effect, the slight sound of calm water disturbed and small concentric circles of waves moving out from where the fish broke the surface. It’s the same with intelligence. It’s easier to see the effect of intelligence than intelligence itself.

Let’s look at a simple and amusing analogy, the incredible intelligence of the urban raccoon. These little night time bandits are so intelligent in accessing easy food that companies have marketed raccoon-proof garbage cans, but they don’t work. No matter how you seal up a garbage can, a raccoon will find a way in. The garbage can is a man-made invention. It doesn’t exist in the natural world. There is no inborn mechanism in the raccoon to figure this out, no natural system mystery like a salmon finding its spawning ground thousands of kilometers away. Only a sense of smell and the raccoon's desire to feast bring forth intelligence. In keeping with the general mystery of intelligence, we don’t see the intelligence of the raccoon. We only see the effect of the intelligence — the opened garbage can in the morning and the garbage scattered all across the landing.

So the conundrum is this — if we can’t really define in a concrete way what intelligence is, what hope do we have of defining machine intelligence and machine learning? In fact, it’s much easier to define machine learning and machine intelligence. The reason is we invented the machines. We didn’t invent the natural world we live in, nor the solar system, nor the Milky Way galaxy, and we certainly didn’t invent the universe. We are occupants in something else’s system, actors within a mystery that has beguiled philosophers, mathematicians, and scientists since the dawn of reason. Not so with the world of computers. We invented computers, machine language, compilers, and programming languages. We defined every component of a network transmission right down to the smallest unit, a byte.

We set the standards for communication through the Transport Control Protocol / Internet Protocol (TCPIP). Network provisioning hardware and software is almost at the point now where it can recompile a Zoom or a Skype call based on bytes saved from the transmission. In the natural world this would be like bringing a dead voice from the other side in a nineteenth century seance, but it doesn’t seem quite so *Edgar Allan Poe* in the world of technology. Ironically, as technology advances it acquires a stature similar to superstition in the minds of the technologically illiterate.

As we get deeper into the world of artificial intelligence and machine learning we can learn more about the mystery of learning itself. Aspects of it are very plain and rational. Algorithms are steps or sequences of events based on conditions that arrive at conclusions. A series of concatenated algorithms could easily mimic a decision-making process. What computers have that make them so much more efficient at solving defined problems than the human mind is an infallible memory and an enormous data set across the open field of information that is the World Wide Web. It’s this data and the comparative analysis which algorithms are capable of at a speed that dwarfs human decision-making processes that create the mystery of artificial intelligence.

Going back to the example of the clever raccoon, we can easily say that machines are intelligent. The principle of machine learning sets up learning algorithms on data test sets. The knowledge acquired from these learning cycles is aggregated. The machines become more intelligent. They have memory and can reproduce their effects. They can get the lid off the trash can. They can figure things out. They grow, just like the intelligence of a child grows year after year as the child’s cycles of learning aggregate. This is so manifest now in the world of artificial intelligence and machine learning that it cannot be denied. The only error might be in the language. There is nothing artificial about intelligence. The more apt title would be inorganic intelligence.

What of that little understood aspect of human intelligence that is even more mysterious, the epiphany? In antiquity an epiphany was the appearance of a god. In modern usage it means a sudden change of consciousness. The brilliant Irish novelist, James Joyce, is accredited with modernizing it. It is one of the most mysterious aspects of human intelligence. You go from non-understanding to understanding with no trace how you came to it, no breadcrumbs in the forest.

Can a computer do this? Not of or for itself, but it will greatly refine the definition of intelligence and consciousness, and it will do so with no intent, but rather as an inevitable consequence, in the same way dissonance reminds us what harmony is in music. Michelangelo once quipped that the statue was in the marble and he just took away what wasn’t needed. As we move more into the infallible logic of computer reasoning we will begin to see the David in the marble, and it will be the death of superstition and irrationality, finally defining intelligence in a tangible way, not by telling us what it is, but by demonstrating what it is not. The great reveal will be that, through dissonance, we find harmony. And it will come from computers.

Here’s another Merriam-Webster dictionary definition salient to the context, irony.

the use of words to express something other than and especially the opposite of the literal meaning.

It’s ironic that as machine learning and artificial intelligence embed themselves all through the world wide web, especially in verification techniques, like the selection of pictures that are similar, the qualifier is human intelligence. We are time and time again asked to pick out all the street lamps in an array of pictures, or bicycles, or some other common image, and we’re told it’s to make sure we’re not robots. That’s ironic. As the interplay between machine and human intelligence continues to evolve, so too will the general definition of intelligence.

1. https://www.etymonline.com/word/intelligence [↑](#footnote-ref-0)