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Less than Human, More than Machine: Artificial Intelligence

The interaction between humans and their machines has, until the advent of computers, been definite and constant. If a user followed the specific operations for which a machine was designed, that user would receive a result consistent with his or her input. Any device that performed some function or returned some output not explicitly defined by its creator would be considered defective. However, advances in artificial intelligence have shifted this paradigm. Now, designers seek to give machines a quality uniquely represented by living organisms: the ability to autonomously adapt and learn. The burden of proficiency no longer rests so heavily upon the user's knowledge of his or her technology, but upon the technology's understanding of its user. In converging technology ever closer to itself, humanity opens up exciting new frontiers and pressing new concerns regarding its relationship with tools.

Mankind's first technologies served to simply amplify capacities that humans did not possess. Hammers, spears, plows, and other such devices have no autonomy, so every action carried out through these tools is controlled directly by the human who wields them. The invention of automation turned this concept on its head. Processes that were once done by hand are handled with nearly no human interaction at all. However, even though automatic machines work without human touch, they cannot deviate from the patterns imbued into them by their designers. Artificial intelligence falls somewhere between these extrema, or perhaps somewhere beyond.

While artificial intelligence has existed in some form for several decades, it has largely been a hidden process. More recently, designers of artificial intelligence strive to imbue their creations with personality beyond mere algorithms. When Apple released a new personal assistant named Siri for iPhones, people began to treat the program as though it were a person. However, this anthropomorphizing was no fluke – Apple's designers had given Siri humor and human speech. The digital secretary had no need of these aspects, but they served to endear the user to the program in a way that technology had scarcely before invoked. Any attachment people had to technology was merely a projection of themselves onto objects. However, humans' relationship with artificial intelligence is closer to our affinity with domesticated animals than with that of "dumb" machines. While we recognize that neither Siri nor a housecat can think on a human level, we project our own preconceived notions of human intelligence onto their limited scope of understanding.

Another example of this phenomenon comes in the form of Microsoft's answer to Siri, Cortana. At Purdue University's Dawn or Doom conference, Dr. Xuedong Huang outlined the design and technological elements behind Cortana, including his team's focus on proactivity and individuality. He referred to the program multiple times as a sort of virtual secretary on whom a user could outsource menial work. Cortana also learns a user's patterns and can preempt what that user may need. Onstage, Dr. Huang demonstrated live how Cortana notified him of his flight being delayed without need for his input. In addition, Dr. Huang described how Cortana's

appearance of simple geometric shapes allows the program to show expressions in a way that evokes human emotion without replicating it.

Cortana's personalization and anticipatory abilities give the user the impression that the program is somehow more than just a piece of technology. However, the most important element of this illusion stems from the software's ability to understand and replicate human speech. Speech is the most basic and natural method of human communication, and perhaps the most intimate. Therefore, a computer that can understand and respond to a user's voice will set off signals in a human brain similar to conversation with another person. This speech recognition software is by no means perfected yet. However, as this sentence was written with nothing other than dictation software, one can see that the technology is very close. According to Dr. Huang, the past 20 years have seen conversational speech recognition shift from having an error rate of 100% to 8%. To put these numbers in perspective, human dictation bears an error rate of roughly 4%. Therefore, the prospect of conversing with a computer as one would with a human seems less like a far-fetched dream than an inevitability.

However, as with all forays into uncharted territory, this novel method of interaction brings a pressing concern. For machine learning to function, a program must rely upon a vast accumulation of data. For the individual user, this data may consist of such sensitive information as purchases, locations, private messages, and so on. If a company providing this technology lacks either ethics or programming skill, this information could become public record. Anyone with sufficient proficiency might then take this information and use it to steal identities, perform illicit surveillance, or reveal personal secrets. The more that people trust their personal assistants, the greater the risk of catastrophic leakage becomes.

This confidence between users and their machines underlies yet another conundrum. What does it mean to trust technology? Trusting another person requires belief that he or she understands you and has your best interests at heart. However, no matter how complicated artificial intelligence becomes, it cannot exceed its directives, and it cannot truly understand your motives. Software may make decisions that seem objectionable to users, but make perfect sense given the code's parameters and objectives. If too much power is given to the machine, such as the ability to make purchases, the software could drive someone straight to bankruptcy out of nothing but logic and poor programming. Ultimately, to trust the software is to trust a developer that you have never met, hoping that he or she is competent and ethical. Some people are willing to take that risk, but others may find the concept unacceptable.

Great risk often merits it existence by great reward, and the case of personal artificial intelligence is no different. If technology can learn to assist us, then we will be freer to pursue our grander goals without concern for minutia. A.I. brings efficiency, and efficiency brings growth in economics and in ideas. Technology has allowed for the democratization of knowledge for millennia, from writing to the printing press to the Internet. Now, A.I. gives humanity further

ability to outsource their collective knowledge, and further accelerate our progress as a species. In the future, humanity will not merely work through their tools but alongside them.