The potential for an expert system to replace a human editor

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Since the invention of the computer, humans have been attempting to simulate and reproduce the human brain. Due to recent advancements in machine learning and neural networks, which have lead to inventions such as Self-Driving cars, we are getting closer than we had ever imagined in the past. Within the next few years software developers will create programs that will surpass the entirety of our understanding of artificial intelligence and expert systems. Humans have always pushed the limits of what we could create and are always attempting to surpass what we believed we could do. At the current rate of technological advancement it is easy to say that there will soon be computers that are able to replace human editor in accuracy and power.

The central goal of statistical language model languaging is to learn the joint probability of sequences of words in a language (Yoshua Bengio, Holger Schwenk, 2006). Technology is constantly evolving and improving, which can be shown through Moore's Law; An observation made in 1965 by Gordon Moore, co-founder of Intel, which states “Complexity of integrated circuits has approximately doubled every year since their introduction” (Moore, G. E, 1975). The modern implication of this law means every year, computers will double in speed and power; by extension the smartest Artificial Intelligence that is theoretically possible will double in mental capacity every year. For the sake of this argument we will assume that Moore’s law does not have a limit for how

many transistors can fit on an integrated circuit since there has been no proof to state that this is the case.

The understanding of natural language belongs primarily to human beings; however programmers around the world are currently working on a solution so that computers will be able to understand language as it is spoken by humans. A perfect AI could perform tasks such as understanding natural language; however in order to confirm we have a program that can be called “perfect” we must define what this program would have to complete. A theoretical editing problem would have to take natural language as an input and output the most grammatically, contextually, and emotionally proper correction of the input. This editing program would have to be able to perform the ability of selecting the best possible combination of words, this is not a challenge for a computer to solve; however understanding context would be the challenging part of an editing program. In order for a program to understand context and edit like a human, that program must be able to pass a Turing Test and be capable of understanding emotion.

In order for an editing program to make the most informed decision on the best arrangement of words we must be able to turn words into quantifiable information for a neural network to understand. This provides a problem because every word must have

to be stored with a value for its context in relative to other words and a literal definition which is a lot of data to store. The program would have to be able to calculate which combination of words would make the most sense to a human. Our program could formulate these sentences by making use of a markov chain, an algorithm that joins variables together using the best possible route in an evolving and ever improving manner. By using this evolving algorithm we can state that the current product is always better than the last one and given enough time we could create a perfect solution.

An editing program would need a way of learning the exact definition of every word that it sees and the context that it belongs in. The current method for training is to pass input data and allow the program to adjust itself by comparing the outputs the program gives up with real known output values. Therefore we would need to have a large collection of un-edited and edited papers of which we can give to the software and have our program learn based on these papers.

Artificial Intelligence systems started appearing in the 1970s and were proliferated in the 1980s and were among the first truly successful forms of AI. An artificial intelligence expert system is a piece of software that make expert decisions on fields of study that would otherwise require a human expert. An artificial intelligence expert system would have to be able to be capable of performing as well as a human. In

particular we must be able to say that our artificial intelligence truly has the thought process of a human and not just the ability to imitate human decisions. An artificial intelligence system makes decisions based on decision trees that use “if-then” rules to decide the best course of action given its potential options.

An expert system would have to be capable of learning large amounts of rapidly changing language data. Currently this is achieved through crowdsourcing the internet for data, using what people are writing every day as training data. Currently google trains their Artificial Intelligence natural language software “Google Now” by using books and by using the data that the software gathers during its use by the hundreds of thousands that use it daily. One interesting issue that “Google Now” brings to light is the issue of language barriers; an expert system would have to be capable of performing the same task regardless of language. An expert system would have to either be programmed to separate language or given a framework for learning multiple languages and knowing the exact grammar and syntax of these languages.

The speed at which technology is evolving today is at a level we have never seen before. The exponential growth of technology is leading to inventions we would have never assumed possible. In the near future when Moore’s law allows us to create

computers smart enough to natively process natural language; humans will be able to create a piece of software powerful enough to replace the job of an editor.

A piece of editing software would never be perfect due to the fact that computers are not human there will always be flaws and glitches, even in a seemingly perfect machine there will always be a margin of error. Our piece of software would not be able to behave the same way as a human because no matter how much it learns emotion and context, it is only learning what people tell it represent emotion. A piece of software would never know how to internalize its own feelings, only reproduce feelings that humans have expressed to it. The same concept can also be applied to learning a language, the software will only be able to learn what people say and not the process they took to make that informed decision. Our software would only be able to edit papers based on statistic; it would be able to fake emotions but never be able to actually feel them.

This summarizes that through the rapid expansion of technology today there will one day be a computer with the potential to replace a human editor; however since we do not possess the technology today we can not say how well of a product this will be or if this product will have any major flaws. Since we are theoretically able to turn words into quantifiable information it is very possible that one day we will be able to create a

piece of software that can use an algorithm to edit papers. The one question we must ask ourselves is how close to a true human is morally correct and is it the right thing to put millions of people out of jobs just for the sale of increasing potential net profits? Luckily people are realizing this and starting to act based on the future of AI. In an open letter to the world, many of the top innovators have stated that “we could one day lose control of AI systems via the rise of superintelligences that do not act in accordance with human wishes?” (Eric Horvitz, 2015).

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