

Nicholas Harrison

COP 1500

27 Mar. 2019

Professor Vanselow

### Fields Report

Though often referred to interchangeably, the fields of software engineering, information technology, and computer science are all quite distinct and in reality, differ greatly from each other. Software engineering generally refers to the field that is concerned with the application of general engineering principles to the development, or engineering, and use of software (Bureau of Labor Statistics). Information technology, on the other hand, is concerned solely with storing, manipulating, processing, transmitted, and otherwise acting upon data or information through technology (specifically computers) (Bureau of Labor Statistics). Finally, computer science is a field that is generally considered a branch of science, though sometimes considered an engineering discipline, concentrated on computers and their interaction with data (Bureau of Labor Statistics). Computer science can be broken down further though into two different disciplines, much like mathematics: theoretical and applied. Theoretical computer science is focused on topics such as algorithms and development of new languages whereas applied computer science is focused on topics such as programming.

Categorized inside of those two disciplines of computer science are many, many different fields. One of these fields that has started booming more recently is machine learning, generally considered a subfield of artificial intelligence development. Machine learning is a field concentrated on the development of computer systems that can perform tasks without the specific instructions required by a normal system (Bishop). To that end, algorithms are

developed that allow such a system to “learn” from sets of data called “training data” and make decisions based upon those sample sets (Bishop). Machine learning incorporates computer science in its purest form: the interaction of computers with data. A field that is perhaps not booming in quite the same way as machine learning but is almost certainly depended on more so than machine learning, is cryptography. Cryptography is the study of the principles of secure communication and, more specifically, encryption and decryption (Rivest). Modern encryption and decryption rely tremendously on computer science because without the complexity that is able to be provided by algorithms and mathematical phenomena like prime numbers, there would be a sort of upper limit on how complex an encryption could truly be (Rivest). The purest field of computer science though, is, of course, theoretical computer science in and of itself. The overarching field of theoretical computer science deals primarily with the true “science” of computer science, with regard to testing the efficiency and limits of computational machines (Leeuwen).

Out of all the fields of computer science though, the one that truly piques my interest the most is unquestionably artificial intelligence (AI). To me, AI is potentially the greatest of humanity’s achievements so far and, like many of our greatest achievements, it has the capacity to destroy us as much as help us. Artificial intelligence could be a tremendous boon that would allow us to colonize other planets, make more intelligent decisions, and more easily access tremendous amounts of data. Just the same, a more devious person or organization could use AI to skyrocket toward their goals.

## Report Report

Before I even created a Word document, I did research. I felt I needed sufficient context about the different fields I was going to describe before I could realistically start writing. I already had a good bit of knowledge on the various fields of computer science and computer science as a whole, so I was mostly looking to find scholarly sources to pair with and enhance my existing knowledge bank. When researching, I always applied the “CRAP Test” to verify the quality of a source, as I learned to do in Composition II. After I had assembled what I felt to be a good list of sources I created an outline and started writing. One tip I was given in my senior year of high school is the importance of putting aside a piece of writing for a few days before reviewing it. So, I finished the bulk of the essay a few days ahead of time and then reviewed it a couple of days subsequently. With regard to the critical thinking aspect of my writing process, this came primarily in the form of trying to find the most credible definitions of computer science, information technology, and software engineering. Trying to decipher this was not particularly simple, as CSAB’s definition, which includes software engineering as a field of computer science, seemed to disagree with various educational institutions’ definitions.

## Works Cited

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