

## How does Data Science and humanities inform each other?

*“STEM does not happen in a vacuum . It’s effects and it is effected by philosophy and other parts aspect of humanities”*

- *unknown (emphasis my own)*

The neglect of humanities is rooted in the concept of technology itself; it shifts the focus from people to things. By focusing on things- machines, computers, algorithms- we forget the fact that our tools and devices are products of humans, to be used by other humans. Unknown to most, things we now call “technology” were linked to ancient concepts of art: the Greek word, “*techne*”, and the Latin, “*ars*” , being the ancient translation to the English word art. This divorce of technology and humanities has caused humans to fear machines rather than our own impulses. The Ancient Greeks, especially, had a much broader concept of art than we have today. Art was: arithmetic, medicine, carpentry, navigation, metal working and at times, rhetoric were all classified as arts along with scripture, painting and architecture. As a result of this separation between the “mechanical arts” (referred to so by medieval theologians) and the arts and humanities, we have often felt powerless to prevent the worst harms of technology, harms that we have the ability to correct.

Data science is simply attributed as an engineering field which is frequently folding into computer science and engineering departments in universities and companies. While all aspects of STEM is a major part of data science, it erases many of the fundamental and essential parts. Data science is a rudimentary tool in artificial intelligence and machine learning. The implementation and enabling of AI and machine learning algorithms and the making sure such algorithms are running effectively and efficiently is certainly a discipline of technology and engineering and one that cannot be achieved without skilled engineers and data scientists. However, ultimately, such data must have originated from somewhere and the analysis and basal workings of the algorithms

must be based on some type of premise, which should be usually around or in some aspect of humanities- although this is rarely accounted for. It can be said that the quality of the data set is more important than the quantity of the set. The saying, “garbage in, garbage out” is one that is heavily prominent here. The notion that faulty or erroneously data sets or a fallacious analytical algorithm will yield nonsensical results, and no amount of genius programming can avert this.

Obtaining these data sets and deciding how it should be analysed is not a quantitative problem, like the implementation and upkeep of such algorithms, but rather a qualitative endeavour. Rather than being a focus solely within the STEM field, the humanities also have some hand within the domain. It involves an understanding, in descriptive rather than quantitative terms and one that cannot be easily solved or found through formulas or continuous empirical research, data and evidence, of data set’s characteristics. If the data is of humans, it involves an understanding of humans and humanity as a philosophical and societal concept. “Humanities” is the academic study of human society and culture. A realm of academia that no amount of STEM research would ever reveal or relent any information that would fix the issues that have already been acknowledged in machine learning and AI algorithms.

Without humanities in data science, there would be no understanding or application of algorithms in a useful manner. Data algorithms are amazing at analysing data and can do it at incredible speeds very accurately however it takes a human to truly understand what it has done and not only convert it into text (give it elements of signification) and hence make it applicable to the wider, more general population but also account for the legal, ethical and societal purposes and consequences that may arise as a result, a huge problem that is now being seen within many AI and machine learning algorithms- the use of certain algorithms that have been found out later to either hold certain biases or hold certain characteristics that have affected countless individuals negatively. Algorithms and technology cannot describe itself without human input, and it’s through that input that it derives its purpose and usefulness.

With technology and data science, there are always going to be endless questions about what is right, what is fair and what is best for the human race as a whole. These are questions that are getting lost in the thrill and rush of rapid technological advancements and innovations, that STEM would simply not be able to answer or even presumably consider due to a greater want towards the pursuit of knowledge and invention. With the rapid development of artificial intelligence, humanities is needed more than ever to guide and assist such research. AI is not yet at the point to carefully and thoughtfully determine its own ethics and morals- ie self driving cars have yet to demonstrate how they value one life over another. Humanities creates systems and structures for how we can address ethical problems that seem to be emerging everywhere. It can analyse how AI and other data-based algorithms and systems can be used for the benefit or detriment of all. At the end of the day, technologies true purpose is to aid and sustain humanity.

It seems to be of the consensus that STEM, more specifically data science, does not need humanities and visa versa. However, by combining data science and humanities, it not only better helps us understand our world but gives us new paths for creation and innovation. The collaboration across different fields of study may occasionally be difficult to navigate at times, but it allows for us to expand our understanding of the world around us and to create algorithms and technology that is truly beneficial to humans. Through the guidance of humanities, the humanisations of algorithms and technology enables normal people to connect with it, to understand it. The understandable fear of artificial intelligence and technology was likely caused by the believed divide between technology and humans- a fear of AI caused by the drive and overwhelming want to create the perfect super intelligent algorithm and the neglect to contemplate the consequences or even think about the legal, ethical or societal implications that achieving such a goal would have on the wider world. To refer back to the quote at the begin of this essay. “STEM does not happen in a vacuum . It’s effects and it is effected by philosophy and other parts aspect of humanities”. If data science were to be completely separate from people, for it to be in a vacuum,

then there would likely be no need for humanities as there would be no human elements to consider however with this world becoming more technologically connected, for data science to not be informed by humanities, is to further the problems that technology had already caused. It is through the fight between Mr Incredible and the omnidroid in *The Incredibles* that perfectly illustrate why technology should be balanced by humanities. It shows that technology and algorithms are yet to have a conscious of its own, they have no sense of the beauty or the wonderful. Technology and data science alone does not inform us of love, companionship, faith and fascination, about humanity. It provides tools. It shows we need the humanities to hold in check the inevitable soulless abuses of relentless progress. Without humanities, we do not comprehend that the algorithm is our friend and not our foe.

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