Quickly paraphrasing the Wikipedia article, artificial intelligence (AI), otherwise known as machine intelligence, is the intelligence shown by machines. AI is defined as any device that can take in it is environment and make decisions with that information to increase its chance of completing any tasks given to it.

In terms of what is and is not considered AI, there is a joke in Tesler’s Theorem saying that “AI is whatever hasn’t been done yet.” This joke references what is known as the AI effect, a phenomenon whereas machines get more and more capable of doing things, tasks that are thought to need intelligence are not considered to be AI anymore. For example, a process known as optical character recognition, the conversion of any type of physical text to machine-encoded text, is not considered to be AI anymore as the technology is used a lot. Modern AI is considered to be comprehending human speech, operating vehicles, routing for delivery and military purposes, and performing in high level strategy games.

AI has applications in many different areas. According to a journal by Thomas Davenport and Ravi Kalakota (2019), in the healthcare sector, that the most common application of traditional machine learning, or artificial intelligence, is precision medicine. Precision medicine is the prediction of what treatments are the most likely to succeed on the patient, based on different characteristics of the patient and the context.

A more complex application is the neural network. The neural network has been used in the healthcare sector for a few decades. It has been used to do things like figuring out whether a particular patient will come down with a disease or not. The neural network looks at things as inputs, outputs, the weights of variables that link inputs with outputs. The neural network has been compared to how the brain works, but the comparison is not great.

There is another, more complex use of AI in healthcare called deep learning. Deep learning is a neural network with a lot more levels of variables to predict outcomes. One of the most common uses of deep learning is identifying possibly cancerous areas in radiology photos. Another use is for radiomics, which is the finding of important features in image data that cannot be found by the human eye.

Despite the useful AI mentioned above, there is still an “inconvenient truth” about AI in healthcare that Trishan Panch, Heather Mattie, and Leo Anthony Celi (2019) talk about. AI in healthcare has shown the possibility that healthcare data, aggregated from interactions with patients, can be used to make models that can automatically diagnose patients with no interactions with a doctor, saving time, money, and the doctor from potential risk. The “inconvenient truth” they talk about is the fact that the algorithms that are talked about that could provide this kind of service are not usable on the frontlines in the healthcare sector. They say this for two reasons. One is that AI does not change the reasons for why hospitals and the like work the way they do. There are political and economic reasons as to why doctors work the way they do, along with medical norms. Adding AI would not create any sustainable change according to the article. The second reason is that most hospitals, or healthcare organisations in general, do not have the data infrastructure needed to get the data required to properly train the algorithms to suit the local population or to test the algorithms for bias, meaning that the algorithm could potentially make preventable mistakes. The example given in the article is that an algorithm trained on primarily Caucasian patients would not have the same accuracy when used on a patient in the minorities. An extra point against this again is that, even if they could afford to check for this bias, it would need to be checked over and over again to make sure it’s usable, as medical practices and the patients being tested always change overtime.

This article finishes off by saying that to realise the potential of AI in healthcare, some issues have to be addressed, namely: who owns health data, who is responsible for is, and who can use it? They also say that there is a choice is health systems: either reduce the enthusiasm surrounding the potential of AI in healthcare, or to resolve the issues of data ownership, so the potential of AI can be realised.

A use for AI in the military is AI-based tools to help decision making. In an article by Robert Rasch, Alexander Kott, and Kenneth D. Forbus (2003), they talk about how they had given army officers AI based tools, described as “necessarily crude but sufficiently usable”, and put them into controlled experiments. They say that the results gotten helped lift concerns about the negative impacts of the tool, and it showed the potential for saving immense amounts of time.

Proper military planning, be it for peacekeeping or for battle, takes a lot of time, resources, and highly trained professionals. Planning is a manual process, and the amount of time this process takes forces the planners to limit the amount of options they can look into. An AI aid can allow them to look into a wider amount of options, with a larger amount of diversity, or maybe analyse the same options in more depth in the same amount of time.

To go with the benefits of an AI aid in planning, there are also some concerns. They could potentially reduce the speed and dynamics of the command, forcing some reliance on slow processes. They could also impose the need for more training and requirements needed to use them. They could also possibly cause a loss of adaptivity in favour of by the book analysis.

In an article by Lukasz Apiecionek, Dariusz Biernat, Wojciech Makowski, and Miroslaw Lukasik (2015), they talk about how after moving away from older generations of plane, their number of war planes has dropped, but they have new, more modern technology now to make up for it. They wanted to increase the pilot’s access to information, which directly increases the pilot’s success rate and odds of returning safely. To do this, they implemented AI into the planes that can take in information and analyse it for the pilot, updating them on a regular basis, without distracting him.