Data science has a large impact on several industries and fields including the finance industry, these impacts range from investment management to fraud detection. In my opinion data science has completely altered the landscape of the financial industry and revolutionized methods for risk analytics, fraud detection and investment management which have become the backbone of today's financial industries.

In 2009 over 70 percent of the markets daily trading volume was executed by computers, these numbers have increased since and continue to increase as data science and related fields such as machine learning and artificial intelligence become a more viable solution for financial problems.

Data science has greatly influenced many industries including the medical industry. In the past few years data science has revolutionized several aspects of medicine, specifically data science has aided pharmaceutical companies in the development of new pharmaceutical drugs by designing more efficient and safe clinical trials and using data driven techniques for drug discovery.

One of the ways in which data science transformed the pharmaceutical industry was through predictive modeling in drug discovery. In the past, the standard approach to finding compounds and their effects was done by using an iterative approach. Scientists would test thousands of compounds a day with a hit rate of less than 1%. Data science techniques gave scientists the ability to use big data resources such as the structures of several small molecules to create molecular models to identify/predict intermolecular activity, this model is known as the Quantitative structure-activity relationship (QSAR). Scientists use this model in conjunction with a variety of data science techniques, as the QSAR model is computationally intense, to find new combinations of molecules to use as pharmaceuticals. One such technique is the random forest technique, when applied to QSAR it helps researchers find viable drugs. Including this deep learning is becoming more popular as it has a higher predictive capability and can extract useful information directly from the raw data, the only drawback is that it does not display the inner workings of why it chose a specific molecular model due to its “black box” characteristics. Data science has increased pharmaceutical companies possibilities by decreasing labour and research cost making them more efficient and increasing the industry innovational standard.

Data science is also used in the designing of more efficient and effective clinical trials and the risk/harm reduction of a pharmaceutical drug. Scientists have started to use machine learning models and big data resources to identify key attributes in their clinical trials. Including this there has been research going into using data science techniques to predict the outcome of a specific trials given the metrics provided. Researchers at MIT have developed one such model using over 140 features of the trials design to identify the outcome of these trials. One key aspect of pharmaceutical trials and drugs is the risk aspect, there are several ways to mitigate the risk of toxicity to humans and other adverse reactions and affects. As data becomes more readily available one such model that proves to be relevant is Physiologically based pharmacokinetic modelling which models the human body and with the help of data science techniques can identify the toxicity and effects of certain drugs on a human's body.

<https://www.toptal.com/insights/innovation/pharmaceutical-r-and-d-big-data>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6613936/>

<https://www.ddw-online.com/informatics/p322394-the-data-driven-transformation-in-drug-discovery.html>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5583160/>

<https://mitsloan.mit.edu/press/using-data-science-to-forecast-clinical-trial-outcomes-may-help-biomedical-stakeholders-de-risk-their-portfolios>

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Data science has greatly influence several industries especially the marketing and advertising industry