Vishnu Penubarthi

Group P

August 21, 2017

STEW Article Response

Summary of Scientific American Article

As the technology that humans have to obtain information about climate and weather increases, it is imperative the capability to analyze that data is developed as well. For example, one run of a climate model simulation produces one petabyte (1*10^6 bytes) of data and the amount of climate data held by Britain's national weather service increases 0.085 petabytes a day. With an input of data which would also include images and other languages, it is almost impossible for humans to analyze all the information on their own, which is why climate scientists have turned to machine learning. The specialty of machine learning is that while conventional programs are restricted in their searches of useful information by the rules written by the coders, machine learning enables programs to develop their own set of search rules. Furthermore, the programs can adjust themselves for greater accuracy as they get more information. Machine learning can even be developed to a point where it can be used to predict storms and hurricanes as well based on previously compiled and analyzed data. Other than the field of weather analysis, one of the biggest advantages of utilizing machine learning for climate science is that it can use different climate models around the world to come up with an accurate representation of the Earth's climate, weighting each model based on its strengths and weaknesses. While there are many advantages to using machine learning, not all scientists are comfortable with it. The main reason for this is that while machine learning can produce an answer, it cannot explain how it got to that answer. This could mean that humans would not be able to check the program's work to make sure that it is accurate; they would have to completely trust the system. Overall, compared to the benefits of

machine learning such as predicting weather patterns, analyzing weather data, and creating comprehensive climate models, the weakness of not knowing the process to get the answer is miniscule.