The Effects of Data Science on the Transportation Industry

Through efficiency and automation, data science is transforming the paradigm of the transportation industry. Automation has taken the form of self-driving vehicles. While traffic efficiency has improved because of the implementation of data science in smart cities.

Self-driving vehicles produce data from GPS, LIDAR, radar, video, and ultrasonic sensors. All of these sensors produce a massive amount of data and that data needs to be continuously stored somewhere. Only by using cloud computing technologies can self-driving vehicles effectively use all of that data to operate safely. Some scientists have estimated that as much as 1GB of data could be created by a self-driving vehicle per second. This is done by using all of the data that these scanners create from the different sensors. This data is used to train the vehicle how to drive safely in any situation. The self-driving vehicles need to be able to respond to any situation because there are many variables while driving such as traffic flow and weather conditions. Also, these decisions need to be able to be made in real-time by the self-driving vehicles. Erratic behavior from other cars on the road or another outside influence is one of the biggest threats that needs to be tested for driverless cars. Data science has allowed this level of automation to occur by providing ways to store and use the data.

Data science has also provided more information about traffic patterns. Information gleamed from traffic patterns allows for better city planning in the future. Cities can account for what methods of transportation are most utilized and what roads see the most congestion at different times of day. Using information from these two datasets together, a city’s infrastructure can become more efficient for travelers. Cities will also have a better idea where to use their resources for transportation purposes. For example, by seeing the amount of people using the bus system in real time, a smart city will be able to learn when additional buses will be needed to add into operation.

Automation and efficiency will help improve traffic patterns and congestion on the roads. It will never take it away completely, but by using data science, traffic congestion can be minimized.

Bibliography

Mandova, Vani. *Transportation Data Science at Microsoft.* Microsoft Research Blog. July 13th, 2017. <https://www.microsoft.com/en-us/research/blog/transportation-data-science-microsoft/>

Delgado, Rick. *Big Data’s Impact on Public Transportation*. Innovation Enterprise. <https://channels.theinnovationenterprise.com/articles/big-data-s-impact-on-public-transportation>

Augar, Hannah. *How Data Science is Driving the Driverless Car*. Dataconomy. December 21, 2015. <http://dataconomy.com/2015/12/how-data-science-is-driving-the-driverless-car/>