

Data Science: Expanding the usage of Drone Technology

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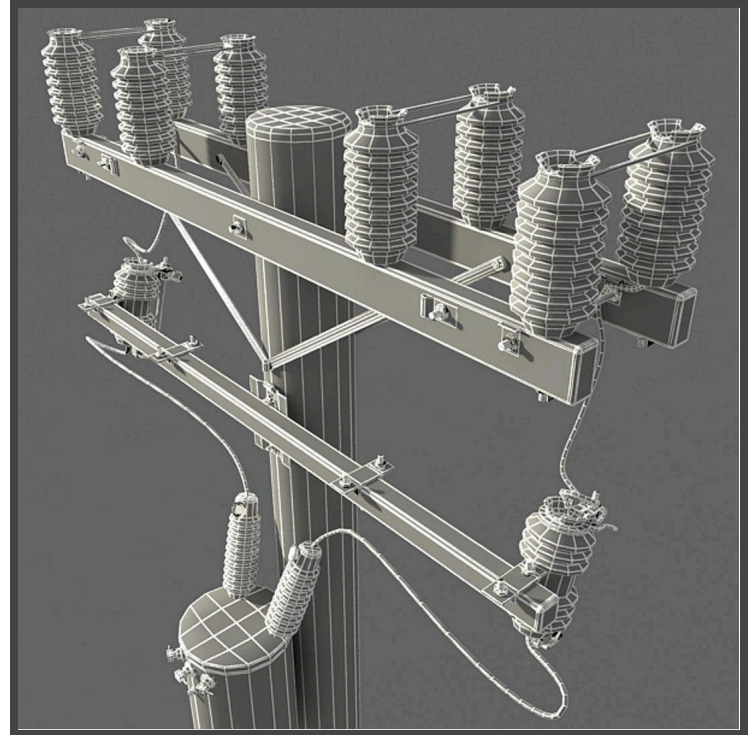
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With the sharp increase in drone usage, a new sector of data analytics has emerged: drone data analytics. Sensors on drones are the key to collecting large amounts of data and transferring it to base controlling stations. Drones also allow data to be collected in many forms: high-resolution aerial videos, image content, thermal pressure graphs, and more.

Through an interview with the Principal of Technical and Quality National RAN Construction and Capital at AT&T, Clint T. Vincent, I learned that

drones are being used to streamline data analysis for the company. Their drones are flown out to remote sites and used to analyze telephone poles that are essential to maintaining high speed connections for their customers. The drones then render 3D images of telephone poles in Autodesk using CAD software and provide the specifics about the individual parts used in construction. Data scientists and engineers can access these Autodesk files at any time to see exactly what parts are being used and identify underlying issues to improve connectivity. The drones save AT&T time



and money, providing them with more accurate readings of sites that they can easily access at any time.

Furthermore, all of the company's drones are programmed by data scientists to maneuver through differing conditions and structures. After the drone collects the data, these scientists can process the data to make predictions and maximize their efficiency. There are endless possibilities for AT&T to utilize drones, including a National Drone Team they have already begun implementing. This program sends drones into disaster sites to quickly fix and reestablish connections in the affected area. Vincent also added that, in the future, the company hopes to use "box drones" that could be posted on top of sites and be remotely commanded to analyze areas as needed. These programs are all autonomously coded, a first in this industry. We selected the company for this exact reason: the cutting-edge technology they are

implementing to enhance their networks and customer experience is the key to advancing the field of data science.



Similarly, advanced Python coding used in the Aerial Drone competition builds the foundation needed to succeed in drone data analytics. Coding the drone for competitions is a complex task that requires considering many external factors, such as air resistance and physics. Knowing how to trim your code to adjust to these factors is extremely important when later coding drones to gather information in varying weather conditions. Furthermore, the team communication and partner coding learned in the Aerial Drone Competitions is key to developing soft skills for future careers. For example, due to the 5-minute time constraint to adjust and run our program as many times as possible in competitions, we must use quick problem solving skills and communicate solutions to our fellow coders in order to succeed. In drone data analytics, working with teams is the most effective way to solve issues because having new perspectives allows for a wide variety of solutions to be shared. Learning how to collaborate with fellow coders and pilots is essential for a job in data science. Therefore, the skills we learn

throughout this competition will be vital to a future in the dynamic field of data science.