How Big Data and Machine Learning Are Reshaping the Future of Drones.

Ref: - <http://www.forbes.com/sites/bernardmarr/2016/10/06/how-ai-drones-and-big-data-are-reshaping-the-future-of-warfare/#23eecf785bfe>

https://www.newscientist.com/article/mg23130842-600-how-drones-are-learning-to-find-their-own-way-in-the-world/

Summary: -

This article is about how Drones, AI and the Bigdata is reshaping the future of Drone technology and warfare. Article discuss about the stealth drones which are produced by BAE systems named as Taranis changes the way traditional wars were fought. Taranis can fly in the unprecedented areas which can be programed previously, so the flight path, identifying the target, threat to the target, and alert human operator to attack and after the approval of the attack, attack to the selected target, destroys the target, confirmation of the target gets destroyed and move back to the base with the path that is predefined. Drones technology is very new to the World several developing countries and under developed countries are still working on the technology. Drones are not only used for the attack purposes but also for the surveillance, provide humanitarian aid to the places where convoys cannot go, can also be used to spot mines. Possibility to spot a drone is very less as they are very small and they also emit very less infrared signatures.

Big Data is not only used by United States in field of Wars but also to predict the goals and anticipate the “Political crises, disease outbreaks, economic instability, resource shortage and natural disasters. As various programs used vast amount of the Data to anticipate, majorly the program uses vast qualities of unstructured data from media posts, blog posts, social media posts and try more to anticipate events, plan interventions and assess that what has worked and what didn’t.

Some of the Statistical Data that has been collected by the Drones: The Airforce surveillance and Reconnaissance (ISR) collects about 1600 hours of video per day which generates about 70 terabytes of data. The major challenges are to store such a huge amount of Data and generate the valuable information from the Data collected.

Analysis: -

Drones Technology is very new to the World, Drone is an aerial fighter or a strategic surveillance unit which records the videos also stream live to various channels also in the single drone it consists of the several sensors which collects the various information like fuel, aerodynamics, airflow, temperature, and various other factors to the operator. Drones technology uses the machine learning algorithms for the flight operation, collision detection and prevention, airflow adjustment, prevent turbulence and various other factors. As the various flight been taken place machine learning algorithms update the systems simultaneously and make the flight more secure and sound.

Drones could become more autonomous with the help of machine learning. The First key area in the development of the drones is the smart navigation systems. At the altitude of 10000 feet with 60kms/per it is very hard to detect what is going on. But thanks to machine learning algorithms it can create 3D maps as they fly, this could be the human free navigation system. This is also very good for the surveillance and fly a drone along at 30 knots and create a map as we go. It is basically done by the GPU unit which is previously created to the game play.  Higher resolutions – up to 2.5 cm per pixel – can be generated at slower speeds and low altitudes. Even greater detail may be possible. New developments are currently in research phase.

Super Brainpower is another key feature for the advanced drones. “Image recognition is used in one app that lets you instruct the drone to follow a specific person “. Layers of [artificial neural networks](https://www.newscientist.com/article-topic/artificial-intelligence/) handle different tasks, such as interpreting what the camera sees or choosing where the drone will go next. As the image recognition is another feature which includes machine learning concept and helping the new industries to develop such advanced drones having the feature of the image recognition. Over the time, it has also developed the feature like anti-collision systems which will reduce the chance to get hit by an object while following the specific target. When any obstacle come in between it helps with the help of machine learning that which is the best way to tackle such incident. For such huge amount of the data Big Data Is helping the industry to keep up the stack and there are supercomputers to analyze and process the Information collected by various drones.

At the same time when the data is getting processed it is also important to maintain the uplinks through various satellites and incase of any hardware failure what are the key steps that needs to follow, how to generate the new flight plan, how to return to the base with safety. Big Data is enabling improvements across all stages of the product lifecycle, from very early conceptualization, to design, production, after-market support as well as in-flight operations

As [drone](https://www.asme.org/engineering-topics/media/aerospace-defense/podcast-innovation-the-aerospace-industry) industry becomes more automated and smart, we need to harness Big Data and apply the machine learning algorithms to perform the activities more efficiently and more of it in real time. Also, it explores the various new application of the drones apart from surveillance and warfare. Recently amazon has delivered its first product with the help of drone which is indicating the various application in that the drones can be used effectively and efficiently.