

XTREME-DNA Case Study

Ultra High-speed Analysis of Drone Imaging Ushers in an Agricultural Revolution



CEO Kiichirou Katsumata (left) and Chairman Hisanori Sunohara (right).

“The speed of the XTREME-DNA service enables us to provide critical information about harvesting homogeneous agricultural crops promptly to farmers.

— Kiichirou Katsumata
CEO, Drone Japan

Accelerated Vegetation Analysis Allows for Precision Farming

In the U.S., drones are used as farming aids, utilizing automated sensing tools to analyze the amount of fertilizer required, diagnose disease, appropriately apply pesticide, and lessen maintenance costs such as irrigation. Drone Japan has duplicated this practice in Japan, utilizing the world's first supercomputer solution that uses agricultural remote sensing.

Drone Japan is also Japan's first drone school, focused on drone software development and educating open source software developers in social business innovation using drones. The company teaches all ages — from children to graduate students — how technology can inform project planning for human resources endeavors, utilizing AI analysis of data captured via IoT sensors. Drone Japan has a goal of being first in both “Agriculture × IoT” and “Education × IoT.”



Drone Japan offers a data analytics service for agricultural solutions. The company uses drones outfitted with multispectral cameras to provide remote sensing of vegetation growth.

>>> Challenges

- Upload speed of large volumes of data being transmitted
- Time it takes to perform analysis in the cloud

>>> Solution

- Jointly developing solutions with XTREME-D to speed upload and image comparison
- Quick uploads to cloud storage of image data
- Instantaneous time series analysis and other field comparison analysis

>>> Outcome

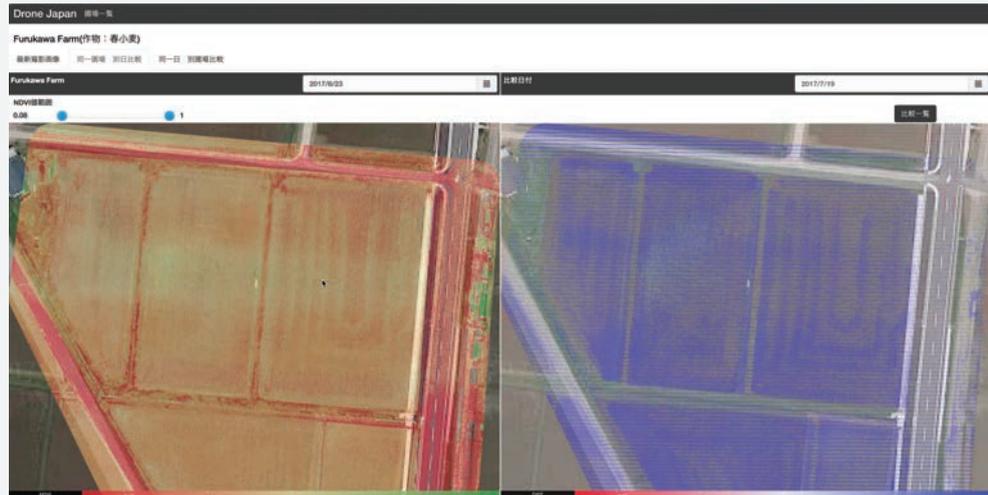
Provide new opportunities for the agricultural industry by utilizing the world's first supercomputer solution that uses agricultural remote sensing.

The Technology Behind Image Collection and Analysis

Drone Japan launched a Data Analytics Service for Agricultural Solutions (DJ AgriService 2018) in April of 2018. The service uses drones outfitted with multispectral cameras to provide remote sensing of vegetation growth, for study and analysis. The drones are on autopilot navigation, and collect data and images from many different kinds of sensors. Images of vegetation are analyzed from various perspectives and viewpoints using artificial intelligence, in order to advance yield increase and reduce pesticide usage.

Before working with XTREME-D, Drone Japan was struggling with the upload speed of large volume-sensing data and the time it takes to perform analysis in the cloud and generate cultivation reports.

But the company chose to use XTREME-DNA due to its innovative technology and high reliability, and now analysis that used to take 8 to 10 hours on a standard PC can take place more than 10 times faster.



Images produced from drones outfitted with multispectral cameras.

XTREME-DNA provides quick uploads of the image data acquired by the drones to cloud storage, rapid image data analysis, and instantaneous time-series analysis and other field comparison analysis. Drone Japan can now provide time-series comparison and other comparative data from the field much more quickly.

What's Next for DRONE JAPAN?



The Drone Japan AgriDrone.

Drone Japan is jointly developing solutions with XTREME-D to further speed upload and image comparison. As XTREME-D brings additional XTREME-DNA features online, more and more opportunities to improve data analysis are possible, including an increase in the number of users, more precise analytical algorithms, and improved accuracy of analysis results.

Working with XTREME-D has allowed Drone Japan to provide cost-effective reporting services so that farmers can easily understand important analysis results and improve the quality of their farmland. The company's next challenge is to find 100 customers in the first year of its DJ AgriService 2018. That shouldn't be hard to do, as Drone Japan's work highlights new opportunities for the Japanese agricultural industry.

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