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EARTH



August 2023

- How Solar Powered Drones are Transforming Agriculture
- Use of AI in Nat Cat Loss Assessment and Claim Settlement

Read on to learn more.



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How Solar Powered Drones are Transforming Agriculture

In recent years, the agricultural industry has been undergoing a technological revolution. From self-driving tractors to precision irrigation systems, farmers are embracing cutting-edge innovations to improve efficiency and productivity. One of the most promising advancements in this field is the use of solar-powered drones, which are poised to transform agriculture in a multitude of ways.



Solar-powered drones, also known as unmanned aerial vehicles (UAVs), are equipped with solar panels that enable them to harness the sun's energy and stay airborne for extended periods. This renewable energy source allows these drones to operate more sustainably and cost-effectively than their fossil fuel-powered counterparts. Moreover, the use of solar power enables these drones to fly for longer durations, which is particularly beneficial for agricultural applications.

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One of the primary ways in which solar-powered drones are revolutionizing agriculture is through their ability to collect high-resolution aerial imagery. Equipped with advanced cameras and sensors, these drones can capture detailed images of crops, allowing farmers to monitor their fields' health and growth more effectively. This real-time data can be used to identify issues such as pest infestations, nutrient deficiencies, and irrigation problems, enabling farmers to address these concerns promptly and minimize crop loss. In addition to providing valuable insights into crop health, solar-powered drones can also be used to optimize irrigation practices. By analyzing the aerial imagery captured by these UAVs, farmers can determine which areas of their fields require more or less water, allowing them to adjust their irrigation systems accordingly. This targeted approach to irrigation not only conserves water resources but also helps to maximize crop yields.



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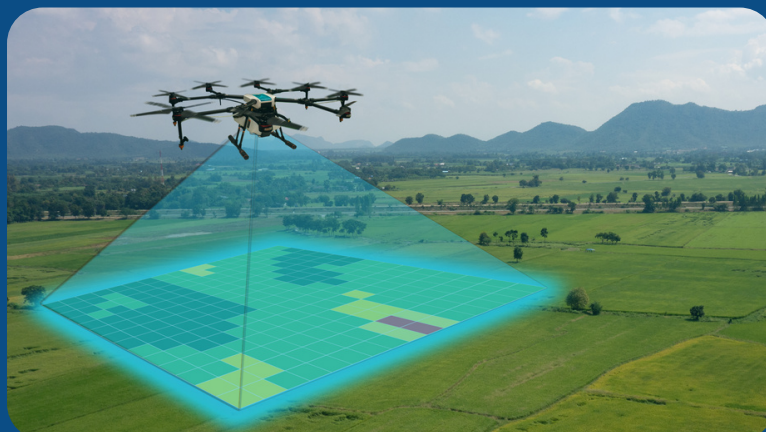
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Another significant advantage of solar-powered drones in agriculture is their ability to assist with crop scouting. Traditionally, farmers have had to rely on manual methods to assess the health and progress of their crops, which can be both time-consuming and labor-intensive. However, with the advent of solar-powered drones, farmers can now cover vast areas of land in a fraction of the time, enabling them to make more informed decisions about their crops and reduce the need for manual labor. Furthermore, solar-powered drones are also being utilized for precision agriculture, a farming management concept that involves the use of technology to optimize inputs and maximize crop yields. By analyzing the data collected by these drones, farmers can determine the optimal number of fertilizers, pesticides, and other inputs required for their crops. This targeted approach not only minimizes waste but also helps to reduce the environmental impact of agricultural practices. In addition to their numerous agricultural applications, solar-powered drones also hold significant potential for environmental monitoring and conservation efforts. For instance, these UAVs can be used to track wildlife populations, monitor deforestation, and assess the impacts of climate change on ecosystems. By providing valuable data on these critical issues, solar-powered drones can play a vital role in informing and shaping environmental policies and conservation strategies.

In conclusion, solar-powered drones are transforming agriculture by providing farmers with unprecedented access to real-time data and insights into their crops' health and growth. From optimizing irrigation practices to reducing the need for manual labor, these innovative UAVs are helping to improve efficiency and productivity in the agricultural sector. Moreover, their potential applications extend beyond agriculture, with significant implications for environmental monitoring and conservation efforts. As solar-powered drone technology continues to advance, it is poised to play an increasingly important role in shaping the future of agriculture and environmental stewardship.

Source - <https://www.energyportal.eu>





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Use of AI in Nat Cat Loss Assessment and Claim Settlement

John McCarthy defined Artificial Intelligence (AI), "It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable."

No field is spared with the reach of AI. Tasks considered time taking are being done with ease using AI.



In insurance, AI offers the following advantages in underwriting:

- Fairness and Transparency
- Data-driven Insights
- Effective Risk Management
- Fair Pricing and Access
- Enhanced Customer Satisfaction

Some insurers are using AI to identify various features of a risks before insuring it and provide appropriate pricing.

In claim settlement, AI and machine learning (ML) - an application or subset of AI that allows machines to learn from data without being programmed explicitly- algorithms can facilitate and speed up the claims-handling process without human intervention. It can be utilized for various classes of business.

ML can help to determine aspects of claims such as image recognition, data unification, data analysis and predict potential costs. ML algorithms typically analyse images and sensors along with the insurer's historical data, helping to speed up claim settlement.

Reinsurer are utilizing / can utilize power of AI to give more bespoke service and identify risk more efficiently.

In case of Nat Cat, reinsurers face extreme pressure to expedite claim settlement. AI can help them achieve this goal.

As most areas remain inaccessible after a major event, reinsurers can utilize GIS, remote sensing and satellite images and AI to identify risk and settle claim swiftly. This can also help them reduce the BI / ALE losses.



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The AI based Nat Cat claim settlement includes following steps:

- Ex-ante (before event) loss analysis of probable impact of peril using cat models and other analytical tools
- Ex-post (after event) analysis using satellite images and remote sensing to assess damage
- Analysis of individual risk to settle claims

Various tools are in use currently and in future their use will only increase. However, the accuracy of data will be pivotal in ensuring the outcome of these tools.

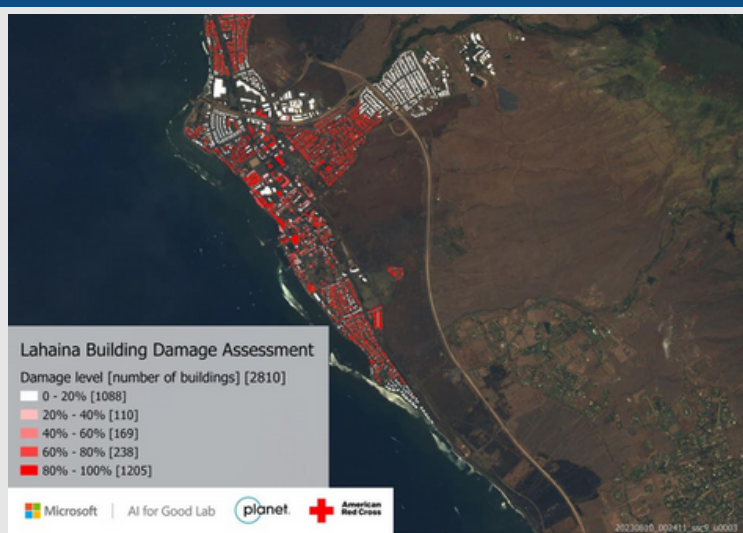
Use of AI in Maui Island (Hawaii) Wildfire in August 2023

The wildfire that started on the night of August 08, 2023, destroyed more than 2,000 buildings in town of Lahaina which included 86% of the residential area. The fire also destroyed various historical sites.

Insured losses could be around US\$ 3.2 Bln according to cat modeler KCC. Bloomberg Intelligence estimates losses could be around US\$ 4.5 Bln.

Planet, a San Francisco based company, which captures satellite images of Earth daily shared identified the wildfire and shared those images with Microsoft. The Microsoft team worked on those images using AI and identified number of buildings damage and prepare map of most affected areas.

Based on these insights, the Red Cross and other humanitarian organizations planned their efforts and rescued people.



AN AI-POWERED MAP SHOWS DAMAGE ASSESSMENT IN LAHAINA, IN THE ISLAND OF MAUI, HAWAII. SOURCE: MICROSOFT AND PLANET

At the moment, the AI tool is handled by engineers in a central office, not by workers in the field. Planet aims to use it for ground level workers to interpret the maps and update them dynamically based on their observations.

References:

- Bloomberg Intelligence ·Forbes ·IBM
- Karen Clark & Company ·Munich Re
- Swiss Re ·Ventiv Technology