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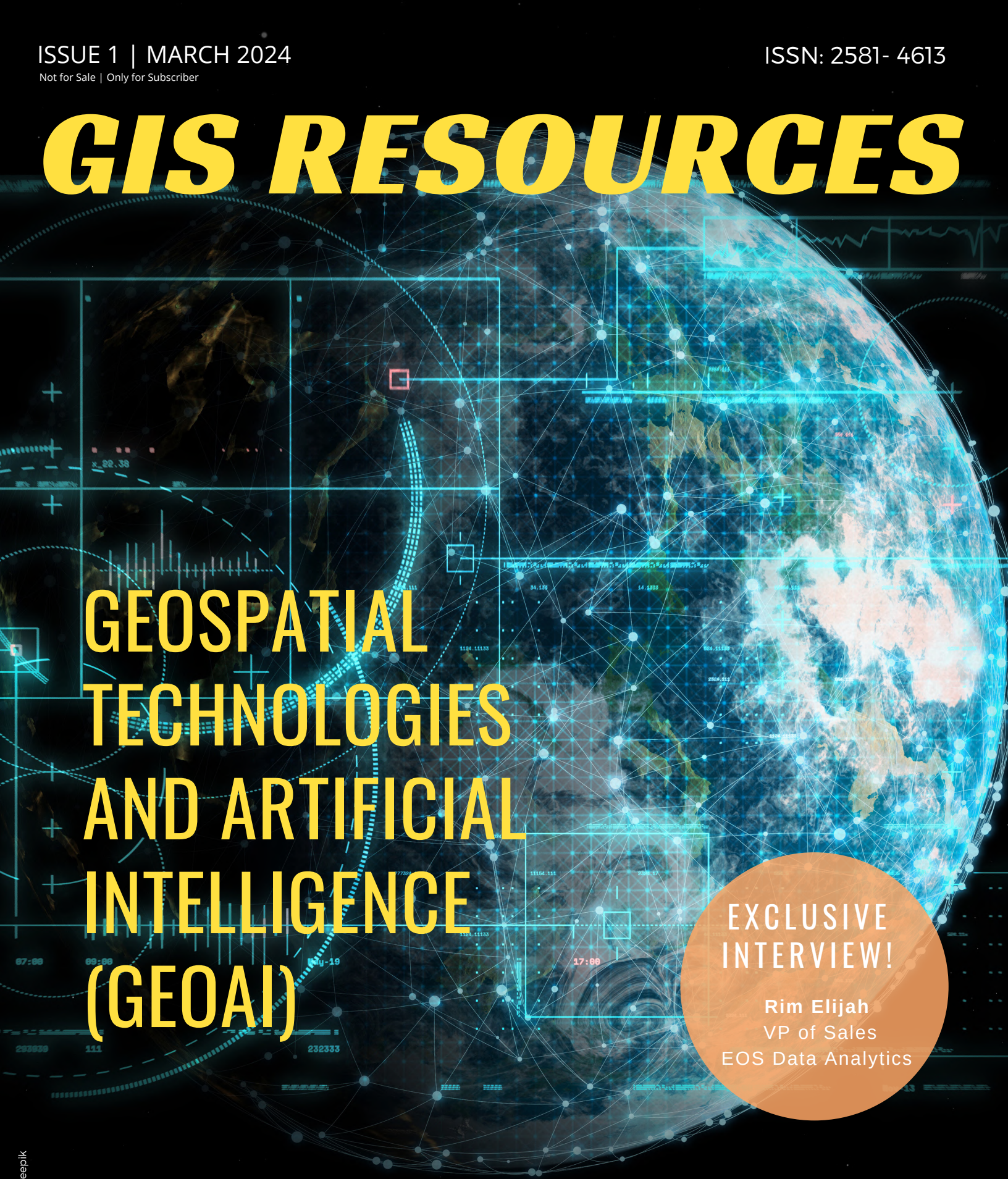

GEOSPATIAL TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE (GEOAI)

EXCLUSIVE INTERVIEW!

Rim Elijah
VP of Sales
EOS Data Analytics

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Deforestation Crisis Of The Amazon Forest

Putting AI and Next-Gen Geospatial to Work for Mitigating Climate-Related Risk

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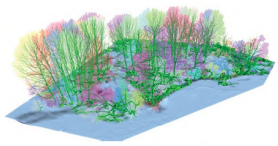

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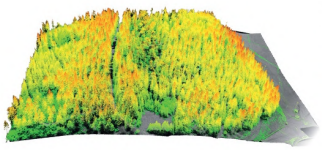

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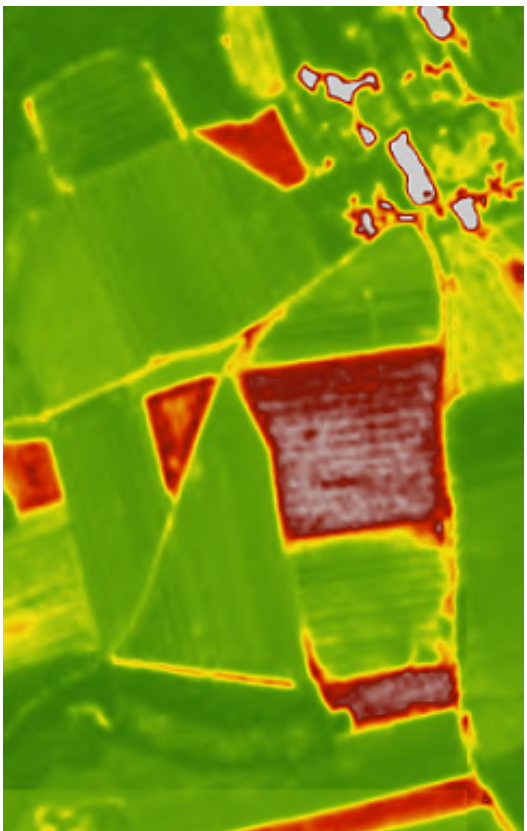

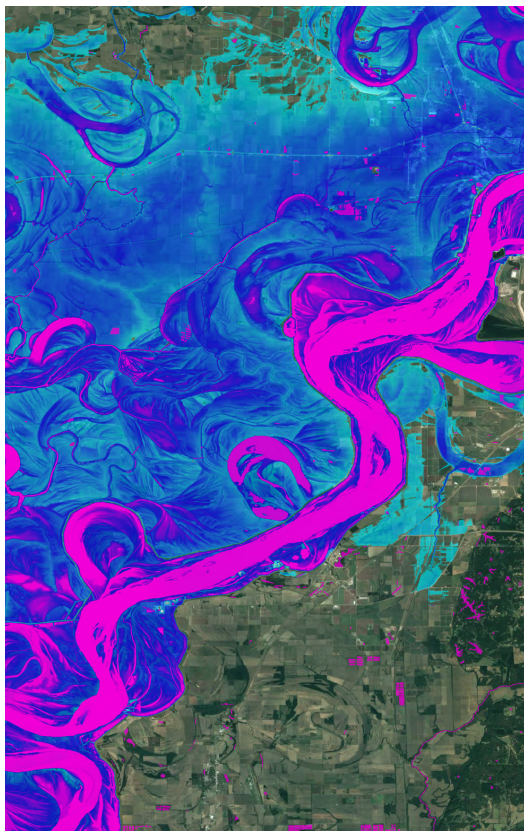

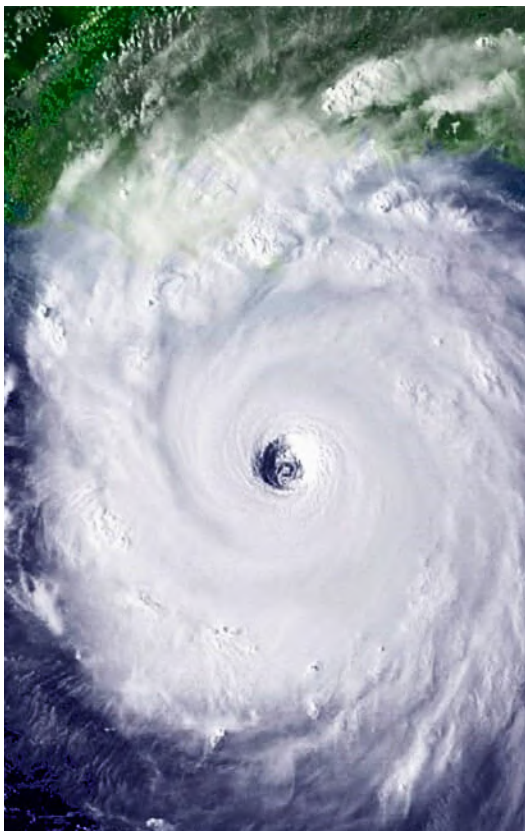

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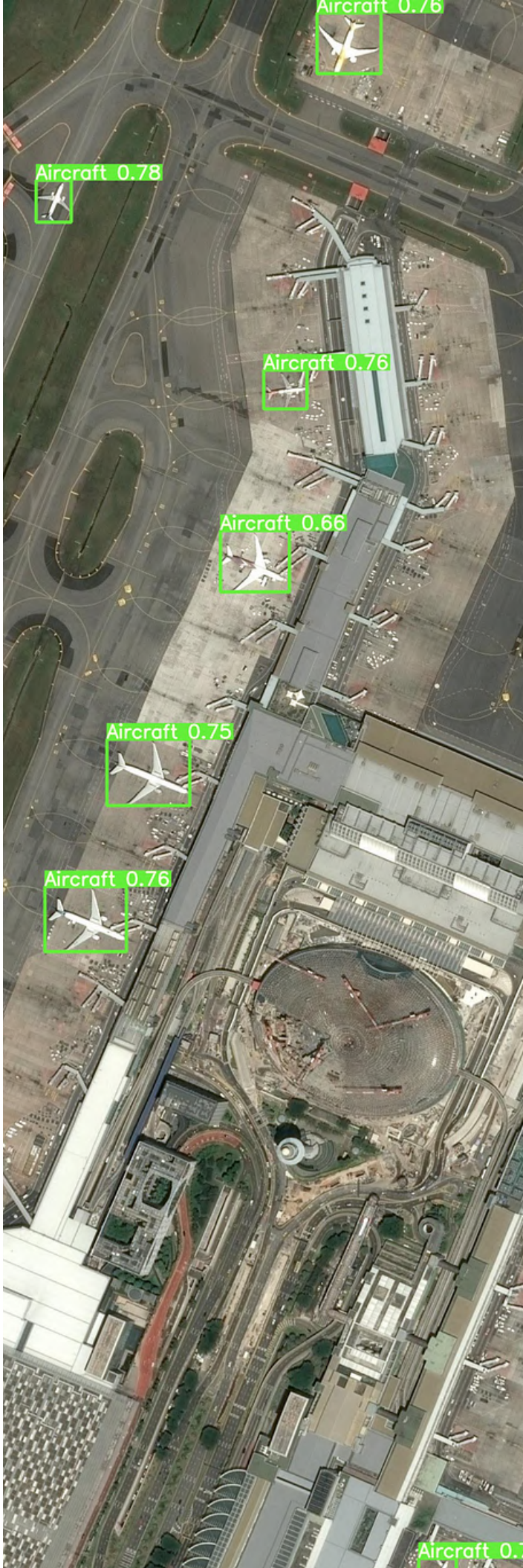

Editor's Note

The convergence of geospatial technologies and artificial intelligence, ushering in the era of GeoAI – a powerful union that promises to revolutionize our understanding and interaction with the planet.

GeoAI essentially leverages AI's analytical prowess to extract hidden patterns and knowledge from geospatial data such as satellite imagery, maps, and surveys. By applying sophisticated AI techniques like machine learning, deep learning, and computer vision, this data is transformed into actionable insights with unprecedented speed and accuracy.

The implications of GeoAI extend across numerous domains. GeoAI facilitates proactive risk assessment, early warning systems, and efficient response strategies. By analyzing geographical data in real-time, AI algorithms can predict disaster hotspots, assess infrastructure vulnerabilities, and coordinate rescue efforts, saving lives and minimizing damages.

The scope of applications transcends environmental considerations. GeoAI is empowering precision agriculture, enabling farmers to enhance crop yields by meticulously analyzing soil conditions, weather fluctuations, and plant vitality. Predictive maintenance in utilities is materializing, as AI scrutinizes sensor data to forecast equipment breakdowns and avert service interruptions. Self-driving cars exemplify GeoAI's functionality, relying on this innovation to navigate environments and uphold passenger safety.

Moreover, even crime prevention endeavours can leverage AI's adeptness in detecting patterns and foreseeing unlawful activities in areas prone to heightened risks.

However, as GeoAI continues to proliferate, ethical considerations regarding data privacy, bias, and equitable access must be addressed.

GeoAI holds immense promise in addressing complex societal challenges and driving sustainable development. By harnessing the synergies of GeoAI, we can unlock new frontiers of innovation and pave the way towards a more resilient and interconnected world.

High Resolution Image, Deforestation patches in the Amazon Forest in 2023

Deforestation Crisis Of The Amazon Forest

By Lucila G. Taddei
Communications Officer
GEOSAT

GEOSAT's Satellite Data: A Vital Tool for Monitoring and Combating Deforestation in the Amazon Rainforest.

In a world where the Amazon Rainforest is crucial for biodiversity and climate regulation, a growing crisis looms. Deforestation driven by agriculture, logging, and urban expansion threatens this vital ecosystem. With climate change exacerbating the issue, there's an urgent need to act. Enter GEOSAT's satellite data, a potent tool for monitoring and battling deforestation. Through techniques like image analysis, Artificial Intelligence (AI), and real-time monitoring, it's helping track forest changes and informing responsive policies. The impact is clear: improved forest management, conservation efforts, and heightened public awareness. As Amazon's guardians, we must leverage technology and resolve to protect this invaluable treasure.

Monitoring Deforestation in the Amazon Rainforest

The Amazon Rainforest is one of the world's most vital ecosystems, home to countless species of plants and animals, and plays a crucial role in regulating the Earth's climate. However, it has been facing significant deforestation due to agricultural expansion, logging, and other human activities. In addition, expanding urbanization and climate change are also contributing factors to deforestation.

Forest clearance has serious effects on the environment,

including the loss of natural habitats for wildlife, soil erosion, and decreased air quality.

Satellite Data, a Powerful Tool to Battle Deforestation

To monitor and combat deforestation in the Amazon Rainforest, GEOSAT's satellite data has been instrumental in providing accurate and up-to-date information on forest cover changes involving collecting, analyzing, and utilizing data from its Earth-observing satellites.

- **Image Analysis/Change Detection**: GEOSAT's remote sensing experts use specialized software and algorithms to compare recent satellite images with historical ones. This process identifies changes in vegetation cover, allowing for the detection of deforestation.
- **Machine Learning and AI**: These techniques are employed to classify land cover types, including forested areas, cleared land, and agricultural fields, based on spectral and spatial information in satellite images.
- **Real-time Monitoring**: By analyzing satellite data regularly, environmental organizations and governments can track deforestation in near-real time. This enables them to respond swiftly to illegal logging and land clearance activities.
- **Data Fusion**: Satellite data are combined with other sources of information, such as ground-based sensors and climate data, to gain a more comprehensive understanding of the factors contributing to deforestation.

The use of GEOSAT's satellite data has provided valuable insights into the rate and extent of deforestation in the Amazon Rainforest. It has helped environmental organizations and governments identify areas where illegal logging and land clearance are occurring. By integrating satellite data with other sources of information, researchers have been able to understand the complex interplay of factors driving deforestation, including climate change and socioeconomic factors.

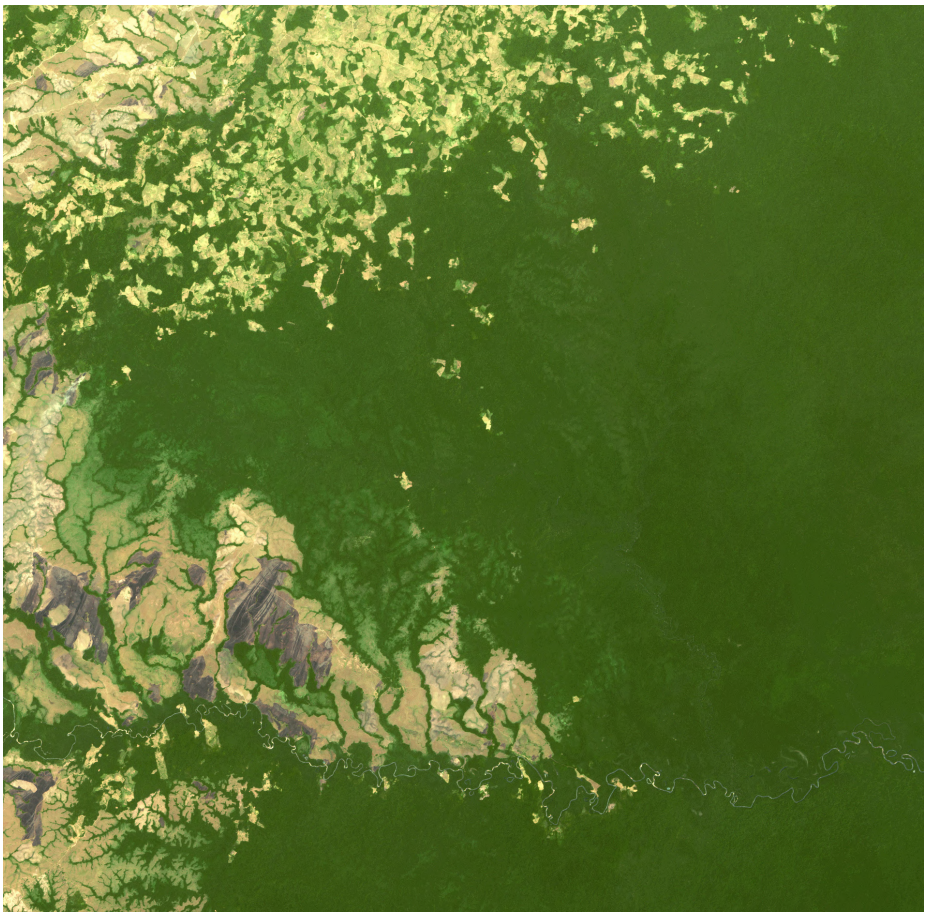

Figure 1: High Resolution Image, Deforestation patches in the Amazon Forest in 2013.

Figure 2: Very High Resolution Image, Amazon Forest.

Impact of the Use of GEOSAT's Satellite Data

- **Improved Forest Management**: Satellite data enable more effective monitoring and protection of the Amazon Rainforest, leading to better forest management practices.
- **Policy Development**: The data can be used to inform policies aimed at curbing deforestation, such as creating protected areas and incentivizing sustainable land use.

- **Public Awareness**: Visualizations and reports based on satellite data will raise public awareness about the importance of preserving the Amazon Rainforest.

The use of satellite data for monitoring deforestation will continue to evolve with advancements in technology, enabling even more timely and accurate data. GEOSAT's satellite monitoring system can be applied to other critical ecosystems around the world to address deforestation and other environmental problems. This system also demonstrates how satellite data are crucial in monitoring and addressing deforestation in the Amazon Rainforest, highlighting the potential of remote sensing technologies to address critical environmental issues on a global scale.

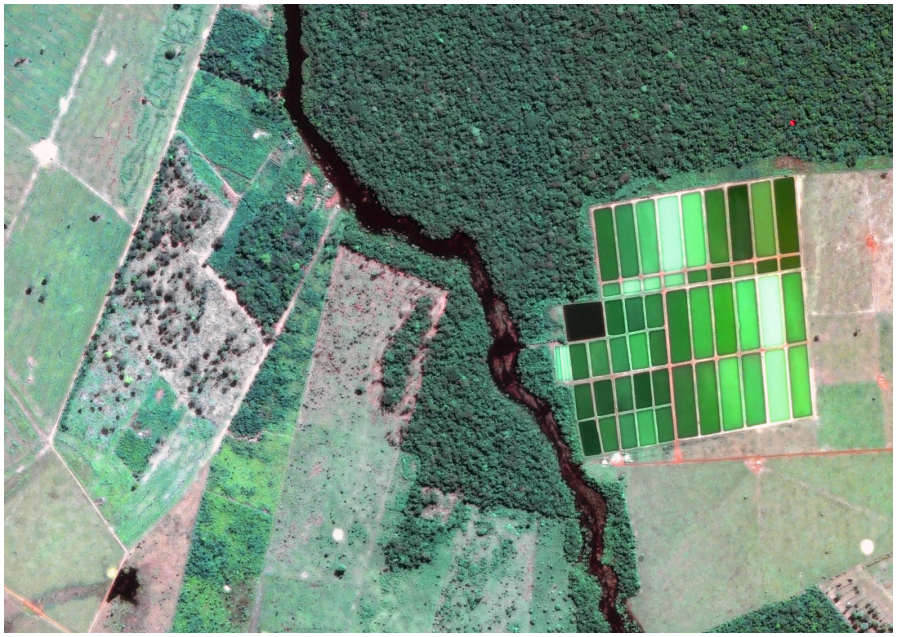

Figure 3: Very High Resolution Image, Amazon Forest.

Learn More About GEOSAT

GEOSAT is a global Earth Observation company delivering very high resolution and wide-swath imagery complemented with analytics targeted at specific vertical markets in a great variety of fields and applications. GEOSAT specialises in the operation and commercial exploitation of Earth Observation systems, as well as in the development, generation and delivery of remote sensing products and services, and is currently leading the development of its future constellation of High- Resolution (HR) & Very High-Resolution (VHR) satellites, targeted at frequent revisit and increased resolution.

Figure 4: Very High Resolution Image, Amazon Forest.

GEOSAT's technical expertise includes:

- 24/7/365 operations for real-time services
- Super Resolution enhanced pan-sharpened imagery at 40cm for detailed assessments and change detection
- 1,6m scientific level enhanced resolution on each MS band
- 650km wide coverages in one pass
- High-frequency, multi-resolution monitoring and Federated Missions imagery (MR, HR and VHR)

Among others, GEOSAT's products have been contributing to the ESA/UE Copernicus program and crop monitoring projects over the USA and Europe for more than 8 years. The 24/7 Customer Service is available for any type of emergency or dedicated customer requirements.

We bring the potential of EO to people, businesses & institutions around the world. Our capabilities and experience, combined with our flexibility to adapt to customer needs, allow us to maximize value, helping to address global challenges from Space.

Thanks to our own satellites, together with our partners, we deliver high-quality imagery and analytics for high-impact insights which result in improved decision-making.

For more information, please visit GEOSAT - Earth Observation HD Imagery and /or follow us on social networks: LinkedIn Twitter Instagram

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GeoAI In Precision Agriculture

By Ram Pratap Narendran
Senior Business Manager
Farmonaut

Geospatial technology is one of the vital unfoldments of human desire, in the pursuit of perceiving the actual science of relativity, between the earth and the cosmos. The current-day advancements in geospatial technology are the fruit of the relentless perseverance of the space agencies in rocket science.

Artificial intelligence is an acquired human IQ transfer, as informed decisions in deep learning machines, which in a nutshell adds the wisdom of “what to do”, “when to do” and “how to do” by given set of algorithms.

Fusion of GIS-AIs

In the dynamic era of technological evolution, Farmonaut stands at the vanguard, embodying a profound functional synthesis of Geographical Information Systems (GIS) and Artificial Intelligence (AI) - a marvel we refer to as GeoAI. This revolutionary integration is not just about the technological interface but rather a dynamic interplay that enables real-time acquisition, analysis, and interpretation of a plethora of environmental indicators. From satellite imagery to atmospheric data, the scope of this analysis is both expansive and revealing. At the heart of Farmonaut's innovative approach lies the power of AI algorithms, which dive deep into vast oceans of environmental data, surfacing with insights that were previously inconceivable. By identifying patterns, trends, and anomalies, these

algorithms unlock a deeper understanding of the complex processes governing our environment.

Addressing one of the most pressing global challenges - climate change - Farmonaut's GeoAI platform serves as a beacon of hope. Leveraging real-time environmental data, it enriches our comprehension of climate impacts and lays the groundwork for informed decision-making and effective strategy development. Its capabilities extend to predicting future climate scenarios with startling precision, offering a glimpse into potential futures and empowering stakeholders to take proactive steps. Moreover, the platform excels in identifying regions with high levels of carbon emissions, facilitating targeted action plans that can significantly mitigate environmental impacts.

The agricultural sector, a vital cornerstone for global food security, also stands to gain immensely from Farmonaut's technological prowess. Through environmental data analysis, the platform recommends optimal farming practices that not only maximize yield but also minimize environmental harm. This encompasses precision agriculture, resource-efficient crop management, and sustainable farming techniques, directly contributing to the resilience of food systems against climatic aberrations.

In essence, Farmonaut represents more than just a technological advancement; it heralds a paradigm shift in how we perceive and interact with our environment. The holistic fusion of GIS and AI offers an unprecedented level of environmental insight, promising a sustainable and resilient future for generations to come. As we stand on the brink of an era where our omnipresence and omniscient capabilities transcend earthly bounds, Farmonaut is not merely exploring new horizons but creating them.

Precision Agriculture

Precision agriculture emerges as a crucial innovation to meet the needs of the rapidly growing human population. By integrating Geographic Information Systems (GIS) and Artificial Intelligence (AI), precision farming taps into both the practical and potential opportunities to revolutionize agriculture. Traditional farming methods involve the application of agricultural inputs and irrigation based on general recommendations, leaving the evaluation of farming practices' effectiveness until harvest day. This approach gives farmers limited control over understanding their farm's parameters, making any positive productivity outcome more a matter of luck than informed decision-making.

To address the inefficiency of conventional farming practices, the digitization of farms represents a vital step towards precision agriculture. This transformation involves the use of advanced technologies to collect, analyze, and interpret data about the farm's conditions, enabling farmers to make precise, informed decisions about the application of inputs and irrigation. The shift from a one-size-fits-all strategy to a more targeted approach in farm management not only optimizes resource usage but also enhances crop yields, reduces environmental impact, and increases profitability. Through the lens of Farmonaut, the integration of GIS and AI technologies in agriculture paves the way for a future where farming is more scientific, sustainable, and suited to meeting the global demands for food security and environmental sustainability.

Farm Digitization

In GeoAI guided precision farming, the holistic farm parameters are collected by satellite imagery and analyzed to generate the farm indices like NDVI, EVI, SAVI, NDRE, VARI, SIPI, Leaf chlorophyll index. From these reports the merits and the health of the crop and soil can be measured at an early phase of the crop cycle and almost every week.

Farmonaut in Farm Digitization

Farmonaut is a satellite-based crop intelligence and traceability startup that helps farmers improve their yields and profitability. Using high-resolution satellite imagery, Farmonaut provides farmers with real-time data on their crop health, including indicators such as vegetation water content, nutrient levels, and pest and disease infestation. This information allows farmers to make informed decisions about irrigation, fertilization, and pest control, which can lead to significant savings in time, money, and resources. Farmonaut currently support over 200,000 farmers in 14 countries worldwide.

Farmonaut is an advanced agricultural platform that uses satellite imagery and data analysis to help farmers and agronomists make informed decisions. It offers tools for monitoring crop health, detecting issues like pests and diseases, and assessing field conditions. The platform also provides weather forecasts, soil health monitoring, and crop yield estimation features.

Farmonaut aims to improve crop management practices, increase productivity, and promote sustainable farming methods by providing users with accurate and actionable information.

On the practical grounds when instituting farm digitization, Farmonaut faced certain impedances. In the regions where the nuclear and marginal farmers are proportionally high, it needed the cooperation of n-numbers of farmers is achieve digitization.

Understanding the challenges Farmonaut extended its grass-root level activities make the farmers competent enough in technological literacy and its usability, before giving the taste of it. Consequently, the faith in the technology started budding in the farmers. Though it's a laborious process, Farmonaut tirelessly marching forward in its efforts not just to promote the brand but to gravitate farming community inclusive of the tech platform.

WhatsApp-based Satellite Advisory System

Farmonaut has devised a simple method to link farmers to the vast expanses of satellite technology through a unique, WhatsApp-based satellite advisory system. This ground-breaking service is engineered using Farmonaut's exclusive AI-based farm boundary detection system.

With this technology geo-tagging of farms and establishing a connection with satellites only in two minutes. The system has been developed with the intent to make cutting-edge technology easily accessible for farmers creating a new paradigm for modern farming.

Farmonaut sends the field reports to the farmer twice a week. With these reports, farmers can monitor every stage of the crop cycle on their mobile phones apply the needful remedial action of the crop and can see the improvements in successive cycles.

Here, the technology enables the feasibility of farm digitization that allows predictive farming to help farmers target their farm inputs to specific areas of the field that need them the most. This targeted approach can help farmers to save on inputs, as well as increase crop yield and quality. This is how the GeoAI-based field monitoring can be a potential boon to the farming and the farmers.

Case Studies

In an age where data decisively influences strategic decision-making, obtaining accurate and reliable agricultural information is crucial for formulating policies, appropriating resources effectively, and catalyzing sector-wide growth. Within this context, Farmonaut® emerges as a trailblazer, harnessing the power of technology to offer innovative solutions for precise crop area estimation, a critical parameter for agricultural planning and management.

This section delves into the quintessence of Farmonaut®'s technological prowess through an in-depth case study focused on wheat area estimations in Egypt.

Highlighting Farmonaut®'s remarkable achievement, the study illustrates an alignment with governmental assessments, achieving an impressive accuracy rate of 94%. This not only solidifies Farmonaut®'s standing as a reliable source of agricultural data but also spotlights the technological robustness and precision of their platform.

The narrative of agricultural innovation is further enriched through the announcement of an exclusive partnership between the RADER group and Farmonaut® within the ambit of the Africa Green Impact (AGI) Program, with a geographic focus spanning Central Africa and Nigeria. This collaboration is poised to make substantive contributions in the following key areas: Elevating productivity and enhancing traceability within agro-pastoral value chains through the seamless integration of cutting-edge technology.

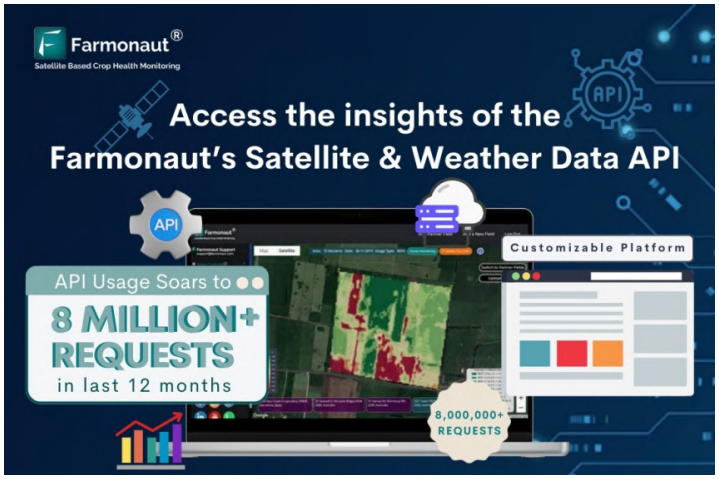
By intertwining Farmonaut®'s technological mission with the objectives of RADER's AGI Program, which centres on productivity, carbon sequestration, and bolstering food security, a holistic approach to tackling agricultural challenges is conceived. This approach synergizes advanced technology with regenerative agricultural practices, aiming at offering comprehensive solutions to contemporary agricultural hurdles.

Over the recent year, the usage of Farmonaut®'s Satellite & Weather Data API has witnessed an unprecedented surge, recording over 8 million requests from the agricultural sector. This marked increase is indicative of the sector's growing dependence on Farmonaut®'s technological solutions, with renowned entities like Godrej Agrovet, Kisanwala, Mera Farmhouse, and Troforte Australia amongst others, leveraging this data to facilitate informed agricultural decision-making.

Entities and developers considering the integration of Farmonaut®'s sophisticated API have at their disposal comprehensive documentation. This resource is designed to unlock the potential of satellite and weather data, thereby empowering stakeholders in the agricultural landscape to make decisions based on robust and granular data insights.

As Farmonaut® continues its journey of technological innovation, its commitment to enhancing the capabilities of farmers and stakeholders within the agricultural sector remains unwavering. The anticipation for forthcoming developments is high, as Farmonaut® stays dedicated to transforming agricultural practices with state-of-the-art technology.

Moreover, the collaboration between Farmonaut® and Reinhart in transforming Telangana's cotton fields showcases a successful integration of advanced technology, resulting in



significant efficiency and growth in cotton production. Precision rates consistently exceeding 90% have endowed Reinhart, and by extension, the cotton industry, with invaluable data-driven insights for strategic planning and development.

Conclusively, Farmonaut®'s groundbreaking partnership with TRST01 in agricultural monitoring and environmental conservation sets a precedent in the industry. By leveraging Farmonaut®'s advanced remote sensing data, TRST01 has augmented its capabilities in detecting essential land cover changes, thereby furnishing unparalleled analytical insights critical for ecological monitoring, sustainable farming, and environmental stewardship.

Conclusion

In a concerted effort to revolutionize the agricultural landscape, Farmonaut®, in collaboration with its partners, stands at the forefront of championing sustainable agricultural practices and environmental conservation. This initiative is driven by a powerful commitment to equipping farmers and businesses around the world with the innovative tools they need to cultivate a more sustainable and environmentally friendly future.

Farmonaut's GeoAi precision farming solutions embody a comprehensive approach to contemporary agriculture, seamlessly integrating advanced technology and data analytics to refine production methods, diminish the ecological footprint, and bolster operational sustainability.

These state-of-the-art solutions empower farmers to not only escalate their productivity and reduce operational expenses but also to significantly elevate the sustainability quotient of their farming practices. This technological advancement in agriculture is not merely about the sophistication of the tools available but hinges fundamentally on the tangible impact it has on the farmers' lives.

The true barometer of success for precision agriculture lies in its capacity to bring a smile to the faces of the farmers—a goal that Farmonaut pursues with unwavering dedication. By melding dedication with cutting-edge technology, Farmonaut is not just about achieving agricultural efficiency; it is about redefining the essence of farming towards a greener, more sustainable ethos.

In this journey towards sustainable agriculture and environmental conservation, Farmonaut, together with its partners and the global farming community, is setting the stage for a future where technology and tradition converge to create a thriving, sustainable planet for generations to come.

COMMERCIAL
UAV EXPO

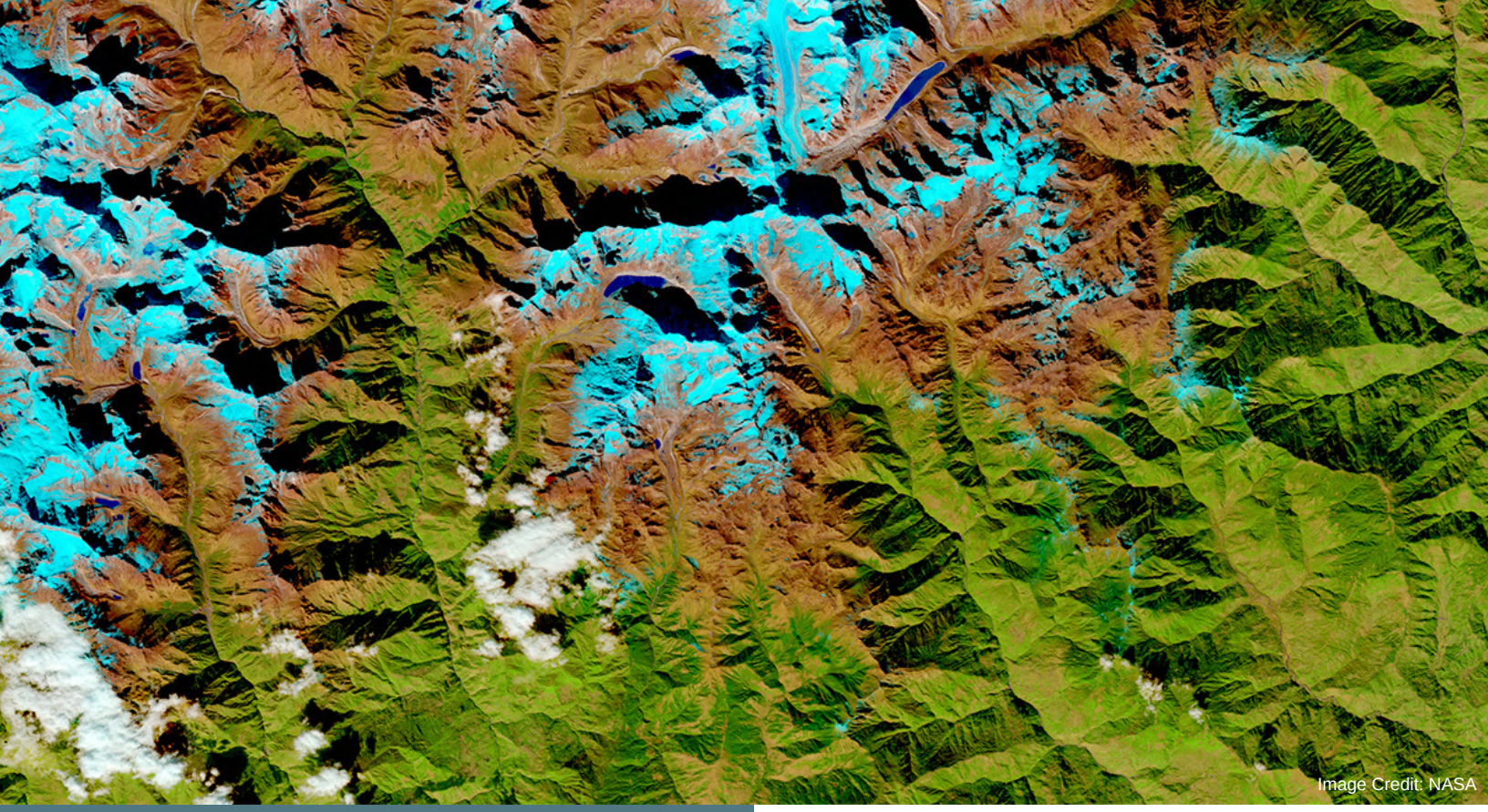


Image Credit: NASA

Putting AI and Next-Gen Geospatial to Work for Mitigating Climate-Related Risk

By Todd Slind
VP of Technology
Locana, a TRC Company

Over the past two decades, geospatial technology has become a mission-critical technology across many industries. Today, it plays a major role in how utilities manage their infrastructure, it has opened the door to new products and services in the retail industry, and it is indispensable for the operations of large federal agencies – just to name a few.

The impact of geospatial is so significant that I refer to it as "location intelligence" to acknowledge how significant a role it plays in organizational decision-making and operations. Location intelligence delivers actionable insights generated by advanced geospatial systems through analysis of the vast amount of location-based data that have access to devices like phones, tablets, sensors, industrial machinery, infrastructure, remote sensing and external sources. This data contains information that can help organizations overcome complex challenges that other technologies have struggled to solve.

When I look at the impact that geospatial technology is already having, it's hard not to see that we are already in a golden age for this technology. But that is just a prelude to the impact geospatial technology is poised to have, driven by the emergence of Artificial Intelligence/Machine Learning (AI/ML) as a complementary technology to location intelligence.

One of the most important ways organizations will be able to put AI/ML and location intelligence to work is for one of the most complex challenges they face: assessing and

mitigating risk, particularly climate-related risks.

Risk analysis is notoriously difficult. But that difficulty increases when assessing risk related to climate change because there are so many variables, so many questions that organizations need to answer, and such high stakes.

The good news is that organizations often have the data they need to conduct effective risk assessments and strategize their mitigation efforts. Those insights are hiding in all of that data, including information from IoT systems, mobile devices, geospatial applications, customer applications, remote sensing vendors, open source databases, government data and much more. Organizations just need the right tools to analyze that disparate data, identify the key insights and perform that at scale. That is exactly what AI and location intelligence can do.

A great example of this in action is risk analysis for wildfires in the utilities industry. This process is complex for utilities because of the sheer size of their territory, and dynamic variables such as vegetation growth and extreme weather events. Climate change and drought conditions have dramatically raised the stakes for this process. In 2021, a tree limb that came in contact with a power line in northern California sparked the Dixie Fire, which wreaked devastation in many towns and counties.

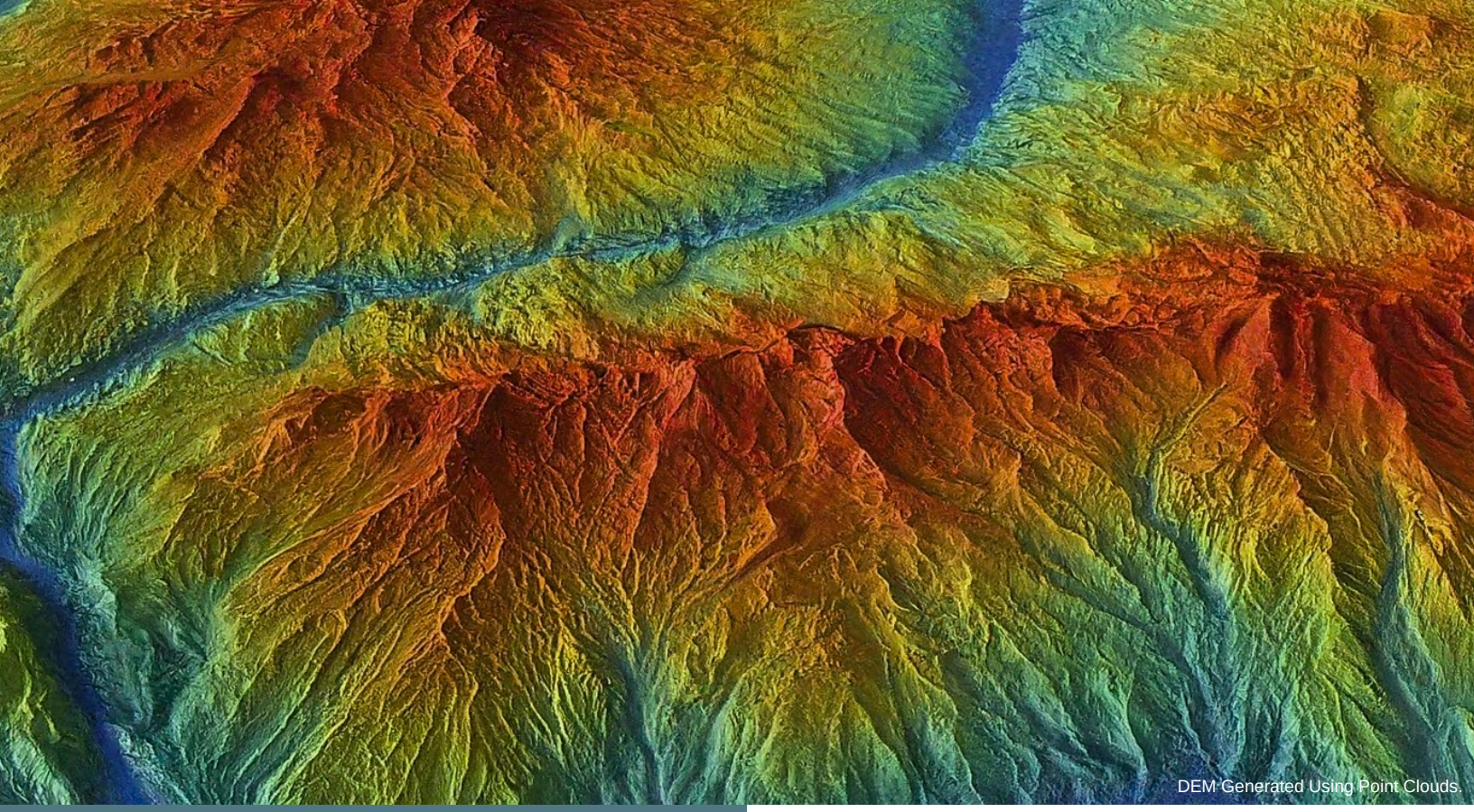
That fire was a warning call to the industry, and the response has been a dramatic increase in labour-intensive methods of vegetation control that have price tags so high they are unsustainable. As an example, a board member of a utility in the Western U.S. told me they have recently spent more than $2 billion on these efforts, but those efforts need to be significantly scaled back because of the price tag.

AI will give utilities a way to be much more strategic and cost-effective in the way they assess and mitigate these risks. In a few moments, AI and location intelligence can analyze data for a utility's entire geography rather than requiring a small army of utility workers to take months conducting field surveys to identify red flag issues. These analyses can also continue in real time based on new data collected via satellite, aerial imagery, drone-captured video, sensors, cameras and work crews – enabling teams to adapt their decision-making to respond to rapidly changing circumstances.

Risk analysis in the insurance industry is another powerful example of the impact of AI and location intelligence. As climate-related risks increase, it becomes more complex for insurance companies to assess risks to property, particularly in areas where natural disasters like hurricanes are a concern. Recent headlines about insurance companies refusing to continue insuring homeowners in Florida point to how the risk of property damage is rising in the era of climate change.

Assessing risk on a property-by-property basis is complex and time-consuming using the largely labour-intensive processes that underwriters traditionally use. However AI-driven analysis of location-based data and geospatial assets like aerial images can help insurance companies conduct much more granular, accurate risk assessments for individual properties rather than applying a monolithic risk assessment to an entire city, county, or state.

Geospatial technology was already mission-critical for organizations. Combining it with AI/ML will elevate its impact to an even more strategic level: helping organizations respond to the enormous, dynamic challenges caused by climate change.



DEM Generated Using Point Clouds.

Demystifying LiDAR Technology: What You Need to Know

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LiDAR technology is rapidly advancing and has the potential to revolutionize various industries, including transportation and environmental monitoring. This blog post will explore the prospects of LiDAR technology and its potential role in autonomous vehicles and environmental monitoring.

Introduction to LiDAR Technology

LiDAR technology has come a long way since its invention in the 1960s. Now, it's used in a wide array of fields like automotive, aerospace, and construction. It's revolutionizing the way we view and interact with the world around us. It allows objects more precise and detailed maps, helping them better detect obstacles, and making their work and the world a safer place.

LiDAR (Light Detection and Ranging) is a remote sensing technology that uses laser light to measure distances and create detailed 3D maps of the environment. LiDAR has several benefits over other sensing technologies such as radar and ultrasonic sensors. For example, LiDAR can provide more accurate and detailed information about the environment, including objects and surfaces that are difficult to detect with other sensors. Additionally, LiDAR can operate in a wider range of environments, such as rain, fog and dust, which can limit the performance of other sensors.

How Does LiDAR Work?

LiDAR works by sending out laser pulses and then measuring the time it takes those pulses to bounce back

after hitting objects in the environment. Because light moves at a constant and known speed, LiDAR can calculate the distance to any given object based on how long it takes for the pulse to return. By repeating that process millions of times each second, LiDAR can create a highly accurate 3D map of the area surroundings.

Main Components of LiDAR

- **Laser**: The laser emits short pulses of light that are used to measure distances.
- **Scanner**: The scanner directs the laser beam and controls its movement to cover the desired area.
- **Photodetector**: The photodetector measures the intensity of the laser light that is reflected from objects in the environment.
- **GPS Receiver**: The GPS receiver provides accurate positioning information to geolocate the LIDAR data.
- **Inertial Measurement Unit (IMU)**: The IMU measures the orientation and motion of the LIDAR system to compensate for any movement during data collection.

Applications of LiDAR in Emerging Industries and Sectors

LiDAR technology has a wide range of applications across various industries. Here are some of the key areas where LiDAR is being used:

- **Autonomous Vehicles**: LiDAR technology is a crucial component of autonomous vehicles, enabling accurate and real-time 3D mapping of the surrounding environment. It helps vehicles detect and avoid obstacles, navigate complex road conditions, and improve overall safety. In 2021, the first two autonomous vehicles in the world to be approved to operate at Level 3 autonomy: utilized Valeo's first -and second-generation LiDAR sensor systems. The Honda Legend was launched as the first car in the world to be certified for SAE level 3 automated driving, using Valeo LiDAR scanners, two frontal cameras and a Valeo data fusion controller control unit; and The Mercedes-Benz Class S, the second level 3-certified car, also with a laser LiDAR technology, using Valeo SCALA Gen2.
- **Mapping and Surveying**: LiDAR is widely used in mapping and surveying applications to produce detailed and accurate topographic maps, digital elevation models (DEMs) and 3D terrain models. It allows the collection of precise geospatial data for urban planning, infrastructure development, and environmental monitoring. For example, CHC Navigation (CHCNAV) has announced the release of the AlphaAir 10 (AA10), an advanced aerial surveying solution designed for UAV mapping and photogrammetry.
- **Environmental Monitoring**: LiDAR technology has numerous applications for environmental monitoring and conservation. The technology can be used to determine and monitor vegetation canopy height, forest biomass, and density of individual trees. This data can be used to assess climate change impacts on ecosystems or the evolution of coastal areas or wetlands. Outsight brought non-stop real-time LiDAR processing to the industry in June 2021 by introducing the technology to the forestry sector, democratizing instant forest mapping. Outsight remarks that its automated 3D solution "maps a full 360° in real-time without any moving parts and is so fast that it does not miss a single tree.'"
- **Oil And Gas**: Oil and gas mapping professionals utilize LiDAR technology to examine both built and natural environments at a wide range of scales more accurately and precisely. The data from LiDAR can pinpoint dangers like landslides, flooding and earthquake faults. It is also used to monitor the progress of construction projects and identify where the ground may be eroding. In August 2021, a Bozeman, high-tech laser company received a multimillion-dollar contract to scan and map methane emissions for a company overseeing one the nation's largest gas utility service territories, according to a news release from Bridger Photonics. The company signed a $12 million contract with Southern California Gas Company to map gas leaks with LiDAR.
- **Floodplain Mapping**: LiDAR data is used to accurately map floodplains and assess flood risks. This can be used to determine which areas are prone to flooding and how to mitigate that flooding with the construction of new flood control measures. It also makes it easier to better plan for an emergency since you know what areas are likely to flood first.

Market Growth and Potential

The LiDAR technology has seen extensive growth in numerous industries in recent years and is expected to show similar trends over the projected timeframe. According to an analysis by Research Nester, LiDAR Market size is estimated to reach USD 30.88 Billion by the end of 2035 from USD 1.81 Billion in 2022, growing at a CAGR of 24.6% over the forecast period, 2023-2035. The continuous advancement of different major industries and the need for more accurate and reliable sensing solutions, raise the demand for LiDAR systems.

Moreover, governments across the globe recognize the importance of LiDAR technology and have come forth with funding and policies to support the technology. LiDAR Scanning for Railway Infrastructure was used in a research project to help the Ministry of Railways launch at IIT Roorkee, which provides insights into the current railway infrastructure of India and suggests improvements on tracks, signalling stations and terminals. Government initiatives and investments in the research and development of LiDAR

technology is expected to drive market growth. The advancement of LiDAR technology in government applications such as infrastructure and environmental monitoring is expanding the market.

However, LiDAR technology faces competition from alternative sensing technologies, such as radar and camera-based systems. These technologies offer different advantages and trade-offs compared to LiDAR. For example, radar can provide longer-range sensing, while cameras can capture detailed visual information. Companies in the LiDAR market need to differentiate their offerings and demonstrate the unique value proposition of LiDAR technology to stay competitive.

Key Players in the LiDAR Market such as Velodyne are a leading LiDAR technology provider with a wide range of LiDAR sensors. The notable products include Velodyne HDL-64E, Velarray, and Velabit. Quanergy is another company which develops solid-state LiDAR sensors for various applications. The notable products include Quanergy S3, Quanergy M8, Quanergy QORTEX. Innoviz is also a company which Offers high-performance LiDAR solutions for autonomous vehicles. The notable products are InnovizOne, InnovizPro, and InnovizOne Automotive-Grade.

Future Developments in LiDAR Technology

Advancements in Sensor Technology: Future LiDAR sensors are expected to have higher resolution, allowing for more detailed and accurate 3D mapping. At the same time, autonomous vehicles rely on detecting objects at longer distances to safely navigate roads shared with human drivers. Moreover, just as satellites equipped with LiDAR aim to build comprehensive 3D models of our planet, overcoming design limitations proves crucial to integrating miniaturized sensors into an array of innovative devices. However, the widespread adoption of sophisticated solutions hinges on resolving technical obstacles and verifying safety before mass deployment.

Increased Affordability: As technology improves and economies of scale are realized, the cost of LiDAR sensors is expected to decrease, making them more accessible to a wider range of industries and applications. Currently, the price range of LiDAR sensors is quite wide, running from US$ 20,000 to US$ 90,000. With demand for the technology increasing, manufacturers are apt to ramp up production, which should bring down prices and make the devices more affordable.

Integration with Other Technologies: LiDAR technology is leveraging AI algorithms to bring enhanced object detection and recognition capabilities to the table, in addition to taking innovative solutions to the next level in the fields of robotics, agriculture, and urban planning. Automotive vehicles are the key to LiDAR, and the next step in technology will be focused on tailoring LiDAR systems for self-driving cars and trucks, in terms of performance, reliability, and cost-effectiveness. For instance, In January 2024, SiLC Technologies, Inc. (SiLC), announced the Eyeonomix Vision System Mini (Eyeonic Mini). It is a LiDAR technology breakthrough, which integrates a full multi-channel FMCW LiDAR on a single silicon photonics chip and integrated FMCW LiDAR System-on-Chip (SoC).

Conclusion

To summarize, LiDAR technology has greatly impacted several different fields, and it seems likely to continue to do so. Its unique ability to deliver a wealth of reliable, precise information about our surroundings makes it an indispensable tool as we find new ways to do things and explore uncharted territories. It has already brought us to the brink of innovation in an array of fields, from autonomous vehicles to weather prediction and urban planning. The opportunities to do even more with LiDAR seem virtually boundless: If we can pursue it, there's no reason to believe that we won't find a home for it in a tremendous range of applications, from the safe design of our smart cities to tomorrow's extra-smart farms and even in the world of 21st-century healthcare.

Source: https://www.researchnester.com/reports/LiDAR-market/5264

EOS DATA ANALYTICS: SPACE SOLUTIONS FOR EARTH PROBLEMS

A Talk with Rim Elijah, VP of Sales at EOS Data Analytics

EOS Data Analytics (EOSDA) is a global provider of AI-powered satellite imagery analytics on the market, partnering with governmental, commercial, and scientific organizations. It gives you the data you need to make quick decisions that are good for your business and also good for the environment. They have solutions for agriculture and forestry, among many more applied fields upon custom request.

EOSDA creates satellite-driven solutions for agriculture, forestry, and mining, while also actively exploring 22 more industries. The Company sees its mission as helping businesses around the world become more sustainable via innovative precision observation and data analytics tools.

We had a chance to have a small questionnaire with Rim Elijah, VP of Sales at EOSDA. She has shared some interesting insights about the EOSDA journey, vision, unique products and services, GeoAI and plans. We also talk about EOSDA technologies for a more sustainable future.

The questionnaire follows as...

GIS Resources - We're excited to learn more about EOS Data Analytics' incredible journey! Can you tell us a bit about the company's founding story and how it has grown into the successful organization it is today?

Rim - Our story began in 2015 when Dr. Max Polyakov established EOS Data Analytics as part of his vertically integrated space business with a vision for the company to become a global provider of groundbreaking sattech solutions. Two years later, the first product was launched – EOSDA LandViewer. This solution serves as a powerful tool for analyzing satellite imagery. It allows users to seamlessly search, process, and extract valuable insights from satellite data to address real-world business challenges.

By 2018, we realized more potential lies in developing unique AI-powered solutions for smart farming. EOSDA crafted our custom solutions based on our deep-learning program, and in 2019, we launched another product – EOSDA Crop Monitoring. This solution stands as a sophisticated precision farming platform, harnessing the power of satellites to benefit agronomists, farmers, input suppliers, and other players in the

Rim Elijah

Rim Elijah holds a double degree in business administration and political science from Stockholm University. Having joined EOSDA in early 2020, Rim has successfully managed to establish a number of strategic partnerships in Africa and Asia with an emphasis on delivering sustainable solutions to over 5 million farmers.

Rim is responsible for all of the aspects of the company's business development, including:

- Business model development and implementation
- Growth of the company's global coverage
- Scaling up of ongoing projects
- Development and implementation of the sales processes control
- Closing deals and participating in important negotiations

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agricultural domain. A user-friendly interface allows for retrieving data easily. Features within the solution include scouting reports, weather forecasts, zoning capabilities, and even team management tools.

Another proud and most recent milestone in our journey is the launch of EOS SAT-1 in 2023. The low-orbit agri-focused satellite is designed to monitor up to one million square kilometres daily and uses 11 bands to secure high-quality pictures for agricultural field monitoring around the planet. Last year, in mid-August, we conducted thorough ground tests to confirm the validity of its data, and the verification ensured that EOS SAT-1 could be a reliable source for calculating critical plant characteristics such as moisture level and Leaf Area Index.

The essence of our business model is to craft simple and understandable end products tailored for agriculture and forestry. This involves leveraging complex algorithms and data processing models that tap into a range of sources, such as satellite, terrestrial, and other available datasets. **Currently, more than 1.1 million users are utilizing our solutions, the most popular of which are EOSDA Crop Monitoring and EOSDA LandViewer, and acting on the insights our solutions and team produce.**

GIS Resources - We're particularly interested in EOSDA's vision for integrating AI into geospatial technologies. How do you see this transforming the industry and what exciting possibilities do you foresee?

Rim - Foresee is a great word. AI is an important tool for this exciting new age. As AI learns from excessive data sets, it allows for foresight and prediction, which is especially valuable in agriculture, forestry, and any industry interested in Earth observation.

As mentioned, at EOSDA, we already use deep-learning algorithms as a core for our products. It can extract chunks of data and analyze them far faster than any human can, which allows our scientists and data analysts to surf through information more efficiently. The scale of data at hand shows trends, patterns, and potential insights for monitored fields and areas of interest, and artificial intelligence is a great tool to cover that for us and let us focus on more pressing matters, eliminating routine work.

At the same time, foresight is the most promising way of using AI. Recognizing patterns and trends will lead to predicting crop yields or diseases, natural occurrences like droughts or precipitation, wildfires, storms, etc. Thanks to AI and machine learning algorithms, those estimations are done within seconds. Personalization might also be available, empowering clients to act upon location- and AOI-specific analytics instead of relying on soil samples and local weather forecasts.

GIS Resources - Across industries, how does EOSDA empower its clients with its products and solutions? Perhaps you could share an example of a flagship offering and how it benefits a specific sector. Sharing concrete examples of cost and time savings achieved by your clients would be truly insightful.

Rim - We do have a couple of cases I would like to share. **The first one is Gradient Crop Yield Solutions, a branch of the well-known The Morning Star Company, located in California, US**. As the company is focused solely on tomato production, it has steadily grown to take up more than 40% of the national tomato supplies since its establishment in 1970.

Despite having a huge market share, the company faced a couple of climate-related challenges that developed into concrete business imbalance issues. The Morning Star faced plant malnutrition, over-irrigation, and the absence of field imagery, so the Gradient project was born to ensure tomatoes' survival and thriving.

The issues mentioned had the same roots – farmers were watering tomatoes excessively on extremely hot days without understanding their soil's water retention abilities, thus, all the nutrients were washed away. Gradient's in-ground sensors were not enough to paint a comprehensive picture of the crop health, and satellite imagery came to help. The EOSDA Crop Monitoring and Gradient's platform collaboration allowed for remote sensing on a much larger scale than any plane or drone can achieve but at a much cheaper cost. **Our combined forces allowed the company to enhance its clientele from 6,200 to 26,000 acres covered and saved tomato farmers a remarkable 10-15% in irrigation costs**. Gradient's goal is to expand even more, potentially covering 40,000 acres and beyond in several years, and its mission is to reshape the future of farming by empowering farmers, experienced and novice, to produce sustainable agriculture.

Another example is a local agribusiness that managed to grow six times since it started partnering with us in 2021. Agrinova Group provided remote field sensing services in the Czech Republic, Slovakia, Poland, and

Ukraine. It started with a humble goal of 5,000 hectares, and now it covers about 30,000. Agrinova's clients found it challenging to adopt modern agricultural approaches over century-old practices. With the help of EOSDA Crop Monitoring integration, it managed to show how Earth observation of crops helps to achieve concrete results, and that, in turn, established trust between farmers and the company. Cost reduction in monitoring and two-times digit growth of their revenue were the results of this cooperation.

Agrinova Group does not plan to stop. It looks to double its observed hectares size in 2024 and innovate agricultural approaches in its local markets. The focus is on sustainability and cost reduction for the company's clients. This partnership is the one we are very proud of because of the impressive results we managed to achieve together. EOS Data Analytics is looking forward to the next steps together with Agrinova. We derive value from working with other small and medium local businesses to expand their markets and ensure their constant growth. So, that is how we empower our clients with our products.

GIS Resources - What key trends do you see shaping the future of the geospatial industry in the next few years? How is EOSDA positioning itself to adapt and thrive in this evolving landscape?

Rim- As we know, geotagged data surrounds us everywhere we go, in every domain of our lives: from something as basic as our shopping choices to something as complex as our forest locations. This will undoubtedly be a developing trend, with the connection to cloud computing and AI. In this case, GIS can be deciphered as a Global Information System. **This GIS will provide not only geo-specific information for the users but also allow predictions and forecasts, as we talked about earlier**. Cloud-based solutions, both out-of-the-box and custom, permit scalability and rapid growth for businesses, while AI algorithms empower quick analysis and estimations, pinpointing weaknesses and highlighting strengths.

Another prominent trend is more of an ideology and mission than a technical innovation. I am, of course, talking about tackling the climate change issue. **There is no better place to observe our planet and its diversity than from space, and various remote sensors on satellites ensure that the results of climate-protective actions are observed and measured**. Many businesses devote their resources to this noble mission, and EOS Data Analytics is here to help them succeed.

GIS Resources - What makes EOS Data Analytics stand out from the competition? What single factor, in your opinion, would convince a customer to choose EOSDA over another company?

Rim - In EOSDA, **we pride ourselves on a strong team of Ph.D. professors, in-house data scientists, and GIS specialists, all meticulously overseeing the development of each EOSDA solution**. By harnessing satellite data and employing multi-level algorithms, supported by the expertise of our R&D and Science units, EOSDA excels in delivering complex customized solutions. I would say crop classification and yield prediction functionalities stand out as the most sought-after custom solutions among our clients.

We want our clients to succeed with our products. Therefore, we not only listen to their feedback and adjust the product roadmap accordingly; we also have great customer support, various learning materials, and webinars that we conduct. **EOSDA focuses on empowering farmers with satellite analytics and not simply handing them the data**. The analytics solution and efforts are aimed at helping to interpret the satellite data about crop state. And so, the next logical step was to make sure the data we analyzed was even more precise and provided regularly. That is the reason why we launched the EOS SAT-1 satellite for agricultural land monitoring.

GIS Resources - Can you elaborate on specific initiatives and technologies you're deploying to contribute to a more sustainable future? Additionally, we're curious about your outreach programs and how you engage stakeholders on this crucial endeavour.

Rim- Farmers face a lot of challenges daily and yearly, and 2024 will not be an exception. Among the top issues of agriculture are climate change, growing population numbers, volatility, and an increase in farming input costs. One of the most significant issues farmers and food producers have is a lack of accurate analytics for evaluating field productivity, vegetation health, yield prediction, crop threat prevention, and adequate fertilizing. **Due to this, precision agriculture, driven by data, provides a toolkit to enhance farm productivity**. Satellites swiftly collect data over large agricultural areas, and the processed satellite imagery can seamlessly

integrate with other digital tools used on farms.

EOSDA Crop Monitoring, our flagship agritech solution, aids farmers in achieving high yields and adopting sustainable practices. Precise data and analytics of remotely sensed on-land conditions can help in implementing actions such as:

- Watering based on soil moisture levels, reducing water usage.
- Proactive threat awareness to reduce pesticide and fertilizer use.
- Streamlined operations for lower energy consumption and decreased CO2 emissions.
- Up-to-date vegetation and productivity maps to reduce chemical applications, preventing soil degradation and loss of microbial diversity.

These practices represent only a few among many straightforward ways for producers to address the food crisis, navigate climate change, and ultimately develop sustainable agriculture methods aligned with UN goals.

To engage more minds to tackle the above-mentioned issues, we have the EOS Data Analytics Academic Outreach Program. It allows students, independent researchers, non-profit organizations, universities, and scientists to use our tools for special-price offers. We have certain criteria when choosing the participants, meaning that their research topics need to align with our mission to make space tech a global driver of sustainability on Earth. The goal of this program is to help scientific progress and drive research of those organizations and people to make a joint effort to deal with Earth's problems, including climate change.

GIS Resources - Looking ahead, what are EOS Data Analytics' ambitious plans for the future? How do you envision the company evolving and expanding in the coming years, particularly in the promising Indian market? What untapped opportunities for geospatial AI applications do you see in this region, and what potential challenges do you anticipate navigating?

Rim- We continue to develop and refine our products, releasing new features and adapting previous ones to the market needs and sustainability goals of our clients. One of our proud achievements is our *Stories of Impact*, a project that leads us from the Amazonian rivers to rural communities in Chad. Within the project, EOSDA tells a story and tries to answer calls for help and provide satellite imagery and data analytics where necessary to help communities worldwide in their fight for a sustainable future.

We aim to be able to access both the holistic picture of what is happening in their fields and comprehensive analytics of the normal plant development factors and what impacts them. Our focus lies in the ambitious development of the EOSDA Crop Monitoring platform and tailored agricultural services like yield prediction, crop type classification, boundaries detection, and more. The most recent custom solution that we launched is soil organic carbon modelling, which helps farmers detect how much carbon is sequestered on their land.

Furthermore, we see our mission as assisting businesses globally in their journey toward sustainability through innovative precision observation and data analytics tools. Our goal is to deliver agronomists and farmers the products that increase and secure their profitability, all the while staying environmentally friendly in their operations.

Additionally, EOS Data Analytics is looking forward to expanding its partner network. Partners enhance local presence across specific countries and regions by reselling our solutions and, in turn, helping bring space technologies and modern sustainability practices to more farmers.

They also grow their business tremendously and receive our full support in the form of a dedicated account manager to oversee the cooperation development, joint events, and other collaborations.

As for the Indian market, it surely looks like a prospective one. It is expected to grow by almost 5% in the next 5 years, and we are talking billions of dollars of the market size. However, their satellite market is keeping up with the demand. As of now, India has a variety of satellites that form the largest Earth observation constellation in the world. I also know that Cropin and UPL, prominent international players, are already taking market shares. Both provide similar services to ours, so entering that segment would be a challenging task in itself. However, since the audience is ready for innovation, it would be much easier to gain the trust of the farmers. I would say, it's a complex case that requires thoughtful consideration before committing to it. The untapped opportunities here might lie in the domain of carbon sequestration, as there is a lot of potential for Indian farmers to benefit from.

GEO NEWS

January 01 - March 20, 2024

RIEGL Announces the Opening of a New International Office in Munich, Germany

RIEGL – A leading international provider of high-performance technology in the field of airborne, mobile, terrestrial and UAV-based laser scanning solutions for surveying applications – is strengthening its presence in the German market with the establishment of the new *RIEGL* Deutschland (Germany) office. With headquarters located in Austria and the U.S., along with offices worldwide, this is just another logical step to meet the constantly growing demand for LiDAR technologies in applications for surveying, construction, and the infrastructure segment. *RIEGL* Deutschland Vertriebsgesellschaft mbH, based in Gilching near Munich, will focus primarily on terrestrial and UAV-based laser scanning as well as mobile mapping solutions, offering customers comprehensive service and support. With the establishment of the new subsidiary, *RIEGL* can also ensure that all customers in Germany receive even more direct support in all matters relating to *RIEGL* technology.

CLC+ Backbone Raster Product Updates for the Reference Years 2023 and 2025 Awarded

The European Environment Agency (EEA) has awarded an international consortium led by GAF AG with partners GeoVille, e-GEOS and Telespazio Ibérica, with the production of the updates of the CLC+ Backbone Raster Product for the years 2023 and 2025 as part of the Copernicus Land Monitoring Service (CLMS).
A consortium led by GAF AG with partners GeoVille, e-GEOS and Telespazio Ibérica has been awarded by the European Environment Agency (EEA) with the implementation of the upcoming updates of the Copernicus Land Monitoring Service (CLMS) flagship project of the CLC+ Backbone (BB) for the years 2023 and 2025. The CLC+ BB Raster Product is a land cover classification at 10m spatial resolution, produced from Sentinel-2 time series data and covering the area of the EEA38 countries.

TRC Companies, Inc. Acquires Locana, A Global Leader in Enterprise Geospatial Solutions and Services

TRC Companies, Inc. (TRC), an environmentally focused and digitally powered global solutions firm, announced the expansion of its geospatial technology and location intelligence capabilities with the acquisition of Locana (Critigen LLC dba Locana). A global leader in enterprise geospatial technologies, Locana has decades of experience supplying modern location-based solutions that help solve the world's most pressing challenges. By taking a location-first approach to problem solving, Locana builds and implements solutions for a broad base of customers, including utilities, telecommunications, commercial, federal and technology.

Reality Tech Takes on History: Hexagon Builds Digital Twin of Qutub Shahi Tombs

Global leader in reality technology, Hexagon, unveiled a detailed digital replica of the historic Qutub Shahi Tombs to the Telangana government. This "proof-of-concept" demonstrates the potential of Hexagon's "Reality Technology for Prevention of Heritage Monuments and Smart Cities" to preserve valuable heritage sites and inform future data-driven decisions. The ceremony, held on the tombs' very own lawns, saw Paolo Guglielmini, Hexagon's CEO and President, present the data-rich digital twin to Jayesh Ranjan, Principal Secretary for Industries & Commerce and IT Departments. This comprehensive digital replica captures the tombs in intricate detail, using cutting-edge 3D scanning, geospatial mapping, and reality capture techniques. With a staggering 10.7 billion data points, it promises to be an invaluable tool for: Preserving History, Informed Conservation and Enhanced Visitor Experience.

Driving into the Future: What Citizens Need to Know About India's Cutting-Edge GPS-Based Toll Technology

India is set to revolutionize its toll collection mechanism with the introduction of a GPS-based system, marking a significant stride in the country's efforts to modernize transportation infrastructure. The adoption of GPS-based toll collection in India heralds a new era of efficiency, transparency, and user convenience in toll payment systems. As the government continues to invest in modernizing transportation infrastructure, this technology stands as a testament to India's commitment to providing a seamless and technologically advanced experience for both commuters and authorities alike.

John Deere and Leica Geosystems Partner to Bring New Solutions to the Construction Industry

John Deere has announced a strategic partnership with Leica Geosystems, part of Hexagon, to help accelerate the digital transformation of the heavy construction industry. The partnership between John Deere and Leica Geosystems will leverage the

strengths of both companies to bring new technologies and services to construction professionals worldwide. By combining the manufacturing expertise of John Deere with Leica Geosystems' leadership in positioning and sensor technology, the two organizations will work together to develop and deliver solutions that improve productivity, reduce material costs and the number of passes required, which can help improve safety by minimizing traffic on construction sites.

Trimble and Radiodetection Combine Survey-Grade Positioning with Underground Utilities Locating Measurement Workflows

Trimble and Radiodetection has announced a collaboration to improve the technology used in the utility measurement and mapping process. Through the integration of the Trimble® Catalyst™ DA2 GNSS system and Radiodetection's RD Map™+ application and precision locator products, the software and hardware integration streamlines utility-locating workflows to provide high-accuracy measurement capabilities for the creation of underground utilities maps in a single field operation.

Trimble Joins the Alliance for OpenUSD (AOUSD)

Trimble has announced it has joined AOUSD as part of its continued commitment to fostering ecosystems that align with the company's vision of transforming the way the world works. The alliance seeks to standardize the 3D ecosystem by advancing the capabilities of OpenUSD (Universal Scene Description). Created by Pixar Animation Studios, USD is a high-performance extensible software platform for collaboratively constructing animated 3D scenes, designed to meet the needs of large-scale film and visual effects production. By promoting greater interoperability of 3D tools and data, AOUSD will enable designers and engineers to describe, compose, share, and simulate large-scale 3D projects and build an ever-widening range of collaborative 3D-driven products.

Leica Geosystems Partners With RICS to Provide Geospatial Technology as a Tech Partner

Leica Geosystems has partnered with the Royal Institution of Chartered Surveyors (RICS) to provide geospatial technology as a Tech Partner! So, what is the RICS Tech Partner Programme? It's a collaboration between RICS and technology partners that drives innovation and facilitates collaboration between surveying professionals. Tech partners contribute their expertise, technologies, and insights to ensure RICS members stay up-to-date with the latest advancements. The programme involves developing and promoting standards and best practices related to technology adoption in surveying.

Hexagon, RapidSOS Introduce Solution to Speed Fire Response in El Paso

Hexagon's Safety, Infrastructure & Geospatial division and RapidSOS announced a Digital Alerts solution for enabling firefighters to respond to commercial building fires and emergencies faster and with more accurate data. El Paso County 911 District in Texas is the first to deploy the new solution, bringing more efficient and informed emergency response to their community.

Hexagon Partners with AI Specialists to Help Mines Transform Measurement of Blast Movement

Hexagon has announced it is partnering with Western Australia's Augment Technologies to help mines maximise ore yield and optimise operational efficiencies by accurately accounting for blast movement. The partnership will harness a blend of block model data, artificial intelligence, bespoke movement models and measured 3D movement data to create a blast movement solution that enables mines to unlock significant value. Hexagon's industry-leading solutions include Hexagon MinePlan Block Model Manager, which enables users to simultaneously and effectively design, populate, manage and share block models while centrally managing the massive amount of sample points, variables and outputs associated with orebody data. Augment Technologies leverages a physics engine powered by an AI algorithm to create a Muckpile Block Model™ that is continuously improved through a machine-learning process. The process utilises vast amounts of blasting data to ensure that the model's controlling parameters and simulated physics are as accurate as possible, resulting in a bespoke solution for each customer.

Esri Releases New Landsat Satellite Data App to View and Analyze Land Changes

Esri has announced the launch of Landsat Explorer, a groundbreaking online app that makes it easier than ever for organizations to access and analyze multispectral imagery from Landsat satellite missions. Remote sensing and earth observation imagery play a crucial role in helping organizations at local, regional, and national government levels make informed decisions about natural resources, man-made landscapes, and

the environment. The new app from Esri's ArcGIS Living Atlas of the World provides unprecedented ease of use and accessibility to Landsat Level-2 multispectral imagery, empowering organizations to make informed decisions about natural resources and the environment. With a deep temporal record, multispectral imagery from the Landsat satellite missions supports a diverse range of land monitoring applications.

Bedrock Analytics and HERE Technologies Partner to Build Digital Twin Technologies for Thailand's Smart City Developments

HERE Technologies has announced that it has signed a memorandum of understanding (MoU) with data and analytics firm Bedrock Analytics, to spearhead the development of digital twin technologies for Yala's ambitious Smart City initiative. A digital twin is a virtual model of a real-world object. Through this partnership, HERE Technologies will provide Bedrock Analytics with map data for Thailand with extensive and detailed attributes, including road infrastructure, 3D building models, points of interest (POIs) and house addresses. This data will serve as the foundation for creating a digital twin replica of the city, enabling city planners, government officials, and policymakers to simulate and analyze real-world scenarios in a virtual environment.

Gabb Leverages HERE Technologies to Launch Kid-safe Gabb Maps for its mobile Phones

Gabb Maps leverages the HERE SDK (Software Development Kit) to develop a customized, in-app map and routing solution with kid digital safety as the top priority. Gabb Maps is customized to provide smart filtering that blocks out business information for age inappropriate businesses (e.g. liquor stores) and blocks kids from "backdoor" access to the internet, through internal web browsers on business pages, or user-uploaded photos and reviews on business listings that could expose children to explicit content. To ensure safety and privacy protection, Gabb Maps does not gather nor sell any child's information. Users can opt-in to send data to HERE, but the child's data is anonymous and is only used to improve the navigation, never for advertising.

Fathom and World Bank Collaborate to Enhance Flood Resilience in 16 Climate Vulnerable Countries with Free Data Access

Global flood risk intelligence leader Fathom will offer its flood data for non-commercial use, free of charge, to 16 countries under a new agreement with the World Bank. These countries are among the most vulnerable to climate change, such as Pakistan, Somalia, and Yemen, which often struggle with limited data resources. This strategic collaboration represents a significant step forward in increasing data accessibility for all countries involved, some of which are in fragile and conflict-affected situations. The data from Fathom's Global Flood Map includes both inland (rainfall and river) and coastal flood risk data for the current climate, in addition to intelligence for a number of climate change scenarios: SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5. To assist with future-proofing, users will be able to analyze the flood risk for each climate change scenario at different time horizons, with forecasting data for the years 2030, 2050 and 2080 also included in the offering. The high-resolution data is underpinned by FABDEM; the most accurate global map of the Earth's terrain.

Bluesky National Tree Map Helps Protect Galway City's Biodiversity

Galway City Council is applying Bluesky International's unique National Tree Map (NTM) data to assist the development of strategic planning policy designed to protect and support wildlife trying to survive in dwindling habitats due to the expansion of urban areas. The NTM data was used in a study by the Vincent Wildlife Trust (VWT) to understand the functional connectivity of landscape features such as hedgerows and treelines. The study considered a number of features to identify key ecological corridors and stepping stones to protect and enhance them in the future. The output map also highlighted barriers to movement which would need to be addressed to support wildlife movement through and around the city.

Genesys Lands Huge Contract to Build Mumbai and Varanasi 3D City Model

Indian mapping leader Genesys International wins a massive ₹155 crore contract to build a 3D city model and map system for Mumbai in collaboration with the Brihanmumbai Municipal Corporation (BMC). Also, Prime Minister Narendra Modi has initiated the advancement of his Lok Sabha constituency, Varanasi, by inaugurating the commencement of the design and development of a 3D urban digital map and database for the sacred city. The PM has set the groundwork for the Rs 7-crore digital twin stack project, aimed at enhancing the city's infrastructure and planning. The urban spatial 3D digital twin will represent geometric representation of Varanasi's.This programme uses a unique combination of manned aerial light detection and ranging (LiDAR) mapping, terrestrial mobile LiDAR, and 360-degree street panoramic imagery to construct a comprehensive and accurate 3D model of the entire city.

PRODUCT LAUNCH

January 01 - March 20, 2024

Trimble Introduces MX90 Mobile Mapping System

Trimble has announced the leading-edge Trimble® MX90 mobile mapping system. With state-of-the-art Trimble GNSS and inertial technology, when combined with Trimble field and office software, the Trimble MX90 provides a complete field-to-finish mobile mapping solution that enables powerful workflows for data capture, processing and analysis. The vehicle- or train-mounted MX90 rapidly captures highly detailed laser scans and imagery - both panoramic and multi-angle. The premium Trimble MX90 mobile mapping system enables new productivity levels and leverages the complete Trimble field-to-finish workflow to efficiently capture, process and extract mobile mapping data.

Wingtra Launches Groundbreaking LIDAR Drone Solution

Wingtra has announced the launch of its innovative LiDAR drone solution, a significant advancement in drone LiDAR technology. The new Wingtra LiDAR payload integrates the efficiency, ease of operation, and high accuracy of the WingtraOne GEN II drones with a state-of-the-art Wingtra-engineered LiDAR sensor, setting a new benchmark in the industry. By integrating a top-tier Hesai scanner, Inertial Labs IMU, and NovAtel GNSS, Wingtra LiDAR dramatically reduces the need for time-consuming post-processing strip alignment, delivering precise terrain information immediately from each flight. Wingtra LiDAR also reduces field time, requiring no calibration and initializing in just one minute. The intuitive Wingtra LiDAR app and automated experience quickly build confidence even for those new to data capture, saving at least an 1 per survey.

Golden Software Unveils Latest Surfer® Mapping and 3D Visualization Package

Golden Software has elevated the capabilities of its Surfer mapping and 3D visualization software, providing users with an enhanced and comprehensive view of subsurface data. The latest version of Surfer comes with expanded visualization tools, facilitating the creation of 3D grid files for the thorough examination and analysis of drill-hole data. Surfer boasts a user base exceeding 100,000 individuals globally, spanning diverse fields such as environmental consulting, water resources, engineering, mining, oil & gas exploration, and geospatial projects. With a remarkable track record of over 40 years, the software has been a reliable tool for users in various disciplines, swiftly transforming complex data into precise 2D and 3D visuals.

Leica Geosystems Unveils Leica TerrainMapper-3, the all-in-one Sensor for Versatile Airborne LiDAR Mapping

Leica Geosystems, part of Hexagon, introduces the Leica TerrainMapper-3 airborne LiDAR sensor, featuring new scan pattern configurability to support the widest variety of applications and requirements in a single system. Building upon Leica Geosystems' legacy of LiDAR efficiency, the TerrainMapper-3 provides three scan patterns for superior productivity and to customise the sensor's performance to specific applications. Circle scan patterns enhance 3D modelling of urban areas or steep terrains, while ellipse scan patterns optimise data capture for more traditional mapping applications. Skew ellipse scan patterns improve point density for infrastructures and corridor mapping applications.

GEO EVENTS

April 29 -30, 2024
IGRSM Conference
Austin, TX, USA
https://conference.igrsm.org/igrsmc2024/

May 2 - 4, 2024
GISTAM 2014
Angers, France
https://gistam.scitevents.org/

May 5 - 8, 2024
GEOINT 2024 Symposium
Kissimmee, FL, USA
https://gistam.scitevents.org/

May 13 -16, 2024
Geospatial World Forum
Rotterdam, The Netherlands
https://geospatialworldforum.org/

June 5 - 6, 2024
GEO Business
London
www.geobusinessshow.com

June 11 -12, 2024
Indo-Pacific Geointelligence Forum
New Delhi, India
https://geointelligence.net/2024/index.html

July 15 -19, 2024
Esri User Conference
San Diego, CA, USA
https://www.esri.com/en-us/about/events/uc/overview

September 3 - 5, 2024
Commercial UAV Expo
Las Vegas, USA
www.expouav.com

December 2 - 5, 2024
GeoSmart India 2024
Hyderabad, India
https://geosmartindia.net/2024/index.html

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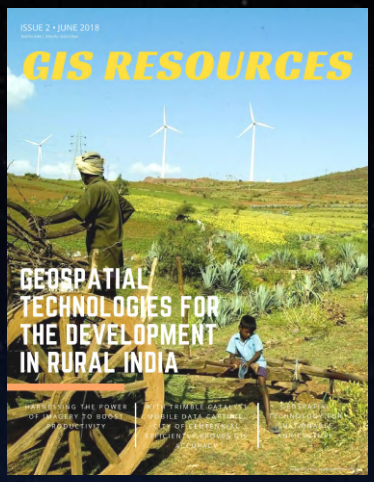

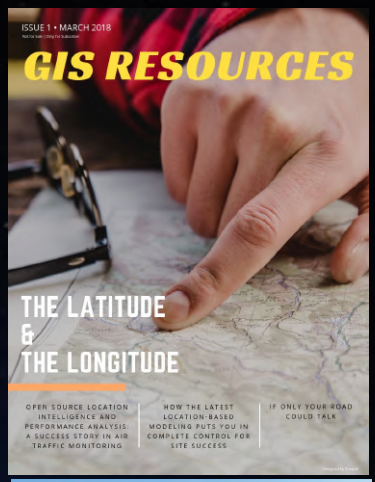

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GISTAM 2024

10th International Conference on Geographical Information Systems Theory, Applications and Management

Angers, France
2 - 4 May, 2024

The International Conference on Geographical Information Systems Theory, Applications and Management aims at creating a meeting point of researchers and practitioners that address new challenges in geo-spatial data sensing, observation, representation, processing, visualization, sharing and managing, in all aspects concerning both information communication and technologies (ICT) as well as management information systems and knowledge-based systems. The conference welcomes original papers of either practical or theoretical nature, presenting research or applications, of specialized or interdisciplinary nature, addressing any aspect of geographic information systems and technologies.

Conference Areas

- Data Acquisition and Processing
- Remote Sensing
- Interaction with Spatial-Temporal Information
- Spatial Data Mining
- Managing Spatial Data
- Modeling, Representation and Visualization
- GIS and Climate Change
- Domain Applications

REGULAR PAPER SUBMISSION: DECEMBER 13, 2023

POSITION PAPER SUBMISSION: JANUARY 25, 2024

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