Decentralized Mapping: Revolutionizing Geospatial Data with Blockchain

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Crypto is not only Bitcoin or scams.

The blockchain technology, on which cryptocurrencies (also known as crypto) are created and traded, offers decentralization, which means distributing control and decision-making across a network rather than relying on a central authority. Often, the term Web3 is used to mean a decentralized internet built with the blockchain technology, contrasting with the Web2 definition of a centralized internet dominated by large tech companies such as Google, Amazon, Meta, Apple and Microsoft. What does crypto have to do with remote sensing and geoinformation technologies? I will get to that very shortly.

The blockchain technology has several advantages relevant to geodata collection and processing, such as:

1. **Data Collection:** Decentralized platforms allow for more diverse and widespread data collection, engaging a broader community in the process.
2. **Data Storage:** Blockchain provides secure, immutable, and transparent data storage, ensuring data integrity and reliability.
3. **Traceability:** Every data transaction is recorded on the blockchain, making it easy to trace the origin and modifications of data.
4. **Community Rewards:** Contributors can be fairly compensated with tokens or other rewards, incentivizing participation and data sharing.
5. **Governance:** Decentralized systems can implement community-driven governance models, allowing stakeholders to have a say in decision-making processes.

These advantages have led to the emergence of decentralized mapping and Decentralised Physical Infrastructure Networks (DePINs). While scientists are familiar with the concept of citizen science and participatory mapping, many may find these Web3 concepts to be entirely new and seemingly unrelated to geoinformation and remote sensing. However, the reality is that these concepts are closer than you might think. There are incredible pioneers and entrepreneurs revolutionizing how geodata is acquired, used, valued, monetised, traded, and perceived.

This is why I decided to focus this newsletter on this topic and selected some of the most exciting projects from the decentralized mapping world that I believe you will love. These projects leverage and reward geo-community efforts in innovative ways:

- **Hivemapper:** Encourages drivers to capture high-quality street view images, competing with Google Maps Street View.
- **DIMO:** Collects extensive car data, including engine telemetry, GPS logs, and entertainment console preferences.
- **Onocoy:** Uses GPS users to create a global decentralized network of RTK corrections.
- **GeoBlockchain:** Trustless information system to leverage geospatial information systems particularly in land ownership management and supply chain analysis.

Other relevant projects that we did not feature are **WeatherXM**, which builds a global weather forecast system with people installing weather stations on their rooftops, **Silencio**, which engages walkers to collect global data on street and building noise levels or the OG (pioneer) of DePIN, **Helium**, which has developed the first community-owned telecom company through a network of special WiFi repeaters.

Thank you so much to all the contributors of this ISPRS SC SpecTrum issue. I am confident that you, the reader, will discover many new and exciting insights today and hopefully, you will see the other side of crypto, the one made of builders and innovative thinkers.

Enjoy!

DR. NICOLAS PUCINO
Vice President, ISPRS SC

Figure 1. The group photo of ISPRS 2024 Summer School on Smart Cities.

Report about ISPRS SC 2024 Summer School on Smart Cities

by GUO Xian, Co-Chair of ISPRS WG V/2, and
Laxmi Thapa, President of ISPRS Student Consortium

The ISPRS SC 2024 Summer School on Smart Cities was held during July 14-22, 2024, in Beijing, China in the premise of Beijing University of Civil Engineering and Architecture (BUCEA). It was jointly organized by the ISPRS Student Consortium (ISPRS SC), ISPRS Working Group V/2, Beijing University of Civil Engineering and Architecture (BUCEA), and the Belt and Road Architectural University International Consortium (BRAUIC), aiming to provide students and young professionals with methods and technologies on smart city. Since 2018, ISPRS and BUCEA have been jointly organizing summer schools annually. This year, it saw a recorded number of 150 participants, including 82 international attendees from 12 universities and institutions across eight countries and regions: China, Russia, Spain, Malaysia, Kazakhstan, Kyrgyzstan, Nepal, Indonesia, and Macau (China). In addition to the excellent pool of lecturers having expertise on different dimensions of smart cities throughout the summer school, Secretary General of ISPRS, Prof Jiang Jie gave a welcome address on behalf of ISPRS in the opening ceremony. Likewise, President of ISPRS SC Ms Laxmi Thapa gave a lecture on the impact of ISPRS SC in capacity building and professional networking. She also issued the certificates of attendance in the closing ceremony along with Prof Yang Jianwei, the Vice Dean of BUCEA. As the local organizer, BUCEA, in addition to initiating the concept of organizing and hosting the summer school, has been continuously providing strong support for the event. Every international student from abroad was funded a scholarship of about 300 Euros, and several lecturers were supported for international travel costs and local accommodations.

The nine-day summer school featured a comprehensive program, including ten academic lectures, five architectural experiences, and a variety of practical activities. These sessions covered a wide range of topics such as urban planning, remote sensing, environmental engineering, digital technology, and architectural heritage conservation.

The summer school commenced with a profound lecture on the history of Beijing City by Prof. Zhang Baoxiu from Beijing Union University. Prof. Han Qunli, Executive Director of the UN Integrated Disaster Risk Research (IRDR) under International Council for Science (ISC) and the United Nations Office for Disaster Risk Reduction (UNDRR), provided valuable insights into the global disaster risk reduction agenda, underscoring the integration of

Figure 2. The lectures by Prof. ZHANG Baoxiu (left) and Prof. HAN Qunli (right).
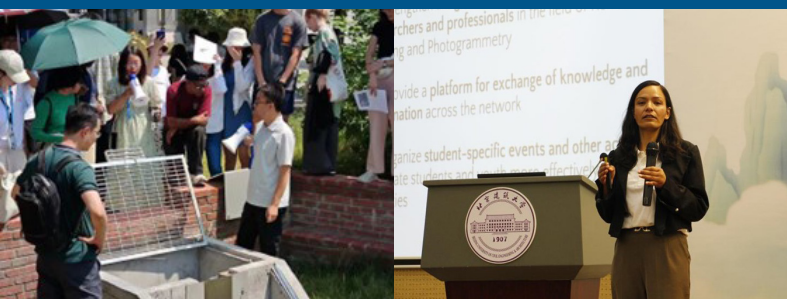
Figure 3. The lectures by Dr. ZHANG Zhiming (left) and Laxmi Thapa (right).

Figure 5. Diverse cultural and practical activities.

risk science with sustainable development. Likewise, Mr. David Picazo from Picazo Architects, Spain, envisioned the future urban landscapes, while Dr. Tan Kok Hong from University Tunku Abdul Rahman, Malaysia, emphasized the significance of learning through experience. Moreover, Prof. Zhao Xigang from BUCEA introduced innovative approaches in paper cutting art. Ms. Shapchenko Mariia (from St. Petersburg University of Architecture and Civil Engineering, Russia) and Ms. Mariia Ogneva (from Industrial University of Tyumen, Russia) jointly introduced international talent training practices from Russia. Additionally, Dr. Zhang Zhiming from BUCEA focused on adapting urban rainwater systems to climate change, and Dr. An Huajuan from Ningbo University, China, discussed environmentally adaptive facade design. Laxmi Thapa, President of the ISPRS SC, highlighted the critical role of youth-affiliated professional organizations like ISPRS SC to provide a platform of capacity building, knowledge exchange, international collaboration and networking

among the students and young professionals for the advancements of our area of interests, including the fields of spatial information science, remote sensing, and photogrammetry.

The enthusiasm of the students was observed throughout the summer school, with many eagerly engaging in active discussions and inquiries after each lecture. Their questions were incisive and reflected a deep interest in the topics presented. This interactive atmosphere not only enriched the learning experience but also fostered a dynamic exchange of ideas among the participants, further igniting their passion for the field and their commitment to contributing to future innovations in smart city technologies.

In addition to the academic sessions, five cultural and practical activities were arranged. These activities promoted multi-cultural, multi-disciplinary, and multi-level communication among students from different countries and regions, fostering a deeper understanding and appreciation of diverse perspectives. Most of the undergraduate and post graduate students at BUCEA volunteered for this event and obtained wonderful learning experience in organizing international summer school.

Figure 3. The lectures by Dr. ZHANG Zhiming (left) and Laxmi Thapa (right).

During the closing ceremony, six groups of participants shared their outcomes and experiences after curriculum. They all expressed their gratitude to the organizers for a meticulous and efficient organization with warm hospitality. They also mentioned that the summer school provided an excellent learning platform in well-equipped physical settings with comprehensive facilities. The event fostered interdisciplinary exchanges, helped forge deep friendships among participants from all around the world, and allowed them to experience cultural collisions and integration. Certificates of participation were awarded to the participants, marking the successful completion of this enriching experience.

Figure 6. six groups of participants shared their outcomes and experiences after curriculum.

With the encouraging feedback received from the attendees, ISPRS SC and BUCEA has already planned the joint 2025 summer school, which will be held in BUCEA next July.

Figure 7. Laxmi Thapa awarded certificates of honor to outstanding volunteers.

Figure 8. Vice Dean of BUCEA Prof. Yang Jianwei presented certificates to representatives of the summer school students.

Figure 9. volunteers reacted promptly on all issues.

BUCEA International Summer School on Smart Cities 2024

14-22 July 2024 - Beijing - China

Part I: Feedback from international participants

Chuikova Valeriia
Moscow State University of Civil Egineering (MGSU)

I'm really grateful I got the chance to participate in such an amazing program and visit so many beautiful places this summer. It was my first time taking part in such an event, so I really enjoyed every part of it: learning new things at the morning lectures, led by outstanding people of different professions, and embracing amazing sights of ancient Chinese architecture.

But, no matter how informative the program was, the main thing I got from this trip is meeting new people from all over the world. It was an amazing experience - spreading the word about my culture and getting to know local culture in return.

I really hope that this tradition and cooperation between our universities will continue in the future and the bond amongst students will only strengthen, maybe even grow into future work relations.

Anyway, thank you, BUCEA, for the organization, and hope to see you all again someday!

Dzhavatkhanov Azamat
Saint Petersburg State University of Architecture and Civil Engineering (SPbGASU)

A program like the 2024 International Summer School on Smart City has intrigued me ever since I first heard about it. I will say that everything that we managed to see, experience, listen to, and see would not have happened without the Chineses themselves. They are friendly but strong people. Cheerful, but strict. They have a high level of patriotism and a clear look into the future. I am glad that I had such an unique opportunity to visit China thanks to the International Smart City Summer School, to gain new knowledge and experience that will help me become a specialist.

Aizirek Turgunbaeva
Kyrgyzstan EDUCATION CENTER "PERSPECTIVE"

It was fun to spend our time in this University and I appreciate the volunteers and teachers. They are so kind and friendly and always help each other in any situation we face. I am happy that I chose this Summer school because I can say I enjoyed and have good memories here and also this university gave us a chance to travel and to know beautiful and historical places in Beijing. Thanks to the Beijing University of Civil Engineering and Architecture team.

Elistratova Viktoriia
Tyumen Industrial University (TYUIU)

I would love to share my thoughts about the International Summer School on Smart Cities! Firstly, it is my first time visiting China and everything differs from my home city Tyumen in Russia.

When I arrived at the university campus, I was enchanted with its lush vegetation, amazing, but still rigid architecture and the fact that everything's made to encourage students to learn and live their lives fully, communicate with each other, etc.

And after the lessons and excursions I feel so much gratitude for all the opportunities given by the BUCEA: to learn something new connected with the architecture, to explore the Chinese culture, to listen to the distinguished scientists and architects and to be able to ask them questions, to make friends, to practice the English language and many many other things.

To crown it all, the Summer School gives a "license to learn and to enjoy life" and it is a great pleasure to be here. It reminds me of the connection provided by the Silk Road, which ran through my hometown. Such bonds kept through the centuries are heartwarming for me.

Caezar Al Fajr Nirwana (Indonesian international student)
Beijing University of Civil Engineering and Architecture (BUCEA)

I have studied and lived in China for 6 years. I am very grateful to China and Beijing University of Civil Engineering and Architecture for its open and inclusive attitude, which welcomes international students from all over the world to study and living here, participating in the social development of China and the world, and I would like to become the bridge of the communicators and promoters of Sino-foreign friendship.

Deng Qingyong
Beijing University of Civil Engineering and Architecture

非常荣幸作为志愿者参加暑期学校，每次活动都让外国友人对北京及中国传统文化的理解更深一步。在这个夏天，我们有幸一起遇见，虽山川异域，但风月同天，虽隔千山万水，但心有灵犀。——北京建筑大学经管学院研究生 邓青勇

It was a great honor to participate in the summer school as a volunteer. Each activity deepened our foreign friends' understanding of Beijing and traditional Chinese culture. This summer, we were fortunate to meet each other. Although we come from different places, we share the same sky and moon. Despite being separated by thousands of miles, our hearts are connected.

Xie Qianlong
Beijing University of Civil Engineering and Architecture

非常感谢本次暑期学校让我们有机会与各国学生交流学习，结交新朋友。在活动中我收获颇多，从最初接触外籍同学的胆怯，到主动为外籍学生介绍身边的人和事，帮他们解决难题，再到与整个班级学生"打成一片"，不仅提升了英语口语能力，也开拓了国际视野。——北京建筑大学测绘学院研究生 解乾龙

I am very grateful to this summer school for giving us the opportunity to learn and exchange with students from various countries and make new friends. I gained a lot from the activities, transitioning from the initial timidity when interacting with international students to actively introducing them to people and things around us, helping them to solve problems, and eventually blending in with the entire class. Not only did this experience improve my English-speaking skills, but it also broadened my international perspective.

Han Yunrui
Beijing University of Civil Engineering and Architecture

在与国内外同仁交往中，我深刻认识到地域的多样性孕育了各具特点的人群，而这些人群又各自承载着独特的习俗和文化传统。在此，由衷感谢举办本次活动各位老师，让我有了这一段难忘的经历。——北京建筑大学机电学院研究生 韩云瑞

Through my interactions with both domestic and international students, I have gained a profound appreciation for how regional diversity shapes distinct groups of people, each with their own unique customs and cultural traditions. I am deeply grateful to organizers of this event for providing me with such an unforgettable experience.

Liu Yichang
Beijing University of Civil Engineering and Architecture

在本次暑期学校交流活动中，我不仅通过学术报告学习到了各项建筑工程领域中的理论知识，还通过线下实践，深化了对我国中华文化与传统建筑技艺历史的理解。更加难能可贵的是，在学习交流中收获了友谊，开拓了国际视野。——北京建筑大学建筑学院本科生 刘一畅

During this summer school exchange, I not only learned theoretical knowledge in various fields of architectural engineering through academic lectures but also deepened my understanding of Chinese culture and the history of traditional architectural techniques through hands-on practice. What is even more valuable is that I gained friendships during the summer school, broadening my international perspective.

Wang Yilei
Beijing University of Civil Engineering and Architecture

我深感荣幸，能够作为志愿者投身于国际暑期学校的盛事之中。衷心感谢国际暑期学校给予我这份宝贵的经历，让我在北京的夏日里，不仅遇见了风景，更遇见了世界的温暖与多彩。——北京建筑大学土木学院本科生王伊蕾

I feel deeply honored to have volunteered for the grand occasion of the International Summer School. I sincerely thank the International Summer School for offering me this valuable experience. During the summer in Beijing, I not only encountered beautiful scenery but also experienced the warmth and diversity of the world.

Lu Yanyan
Beijing University of Civil Engineering and Architecture

非常幸运以志愿者身份参加暑期国际学校，这对于我来说是一次全新的体验，每天都会迎来不同的挑战，让我得到了锻炼和成长。这次志愿者的经历不仅让我对跨文化交流有了更深刻的理解，也让我认识到了自己的不足和努力的方向。——北京建筑大学经管学院本科生陆妍延

I feel very fortunate to have participated in the International Summer School as a volunteer. This was a completely new experience for me, bringing different challenges each day, which allowed me to grow and improve. This volunteer experience not only gave me a deeper understanding of cross-cultural communication but also made me aware of my shortcomings and the direction in which I need to strive.

From left to right: Haonan Gao (Wuhan University PhD Student), Tang Xinming (ISPRS Commission I President), Jiang Jie (ISPRS Secretary General), Liu Lu (Jiang Jie Assistant), Derek Lichti (Congress Director), Nicolas Pucino (ISPRS SC Vice President), Stewart Walker (ISPRS Treasurer), Lena Halounová (ISPRS President), Nicolas Paparoditis (ISPRS Vice President) and Christian Heipke (ISPRS Past President)

ISPRS TC I Symposium on Intelligent Sensing and Remote Sensing Application in Changsha, China

The ISPRS TC I Symposium on Intelligent Sensing and Remote Sensing Application in Changsha, China, from the 13th to 17th of May 2024, was a great success. Our Vice President Nicolas Pucino (aka Nick) shared the stall with Wuhan University PhD student Haonan Guo (aka Pole, see Fig. 1), who helped Nick throughout the whole conference and beyond, bonding not only academically but also on a personal level, surely creating a lasting good relationship between the Student Consortium and Wuhan University student community.

Moreover, Ms. Liu Lu, (personal assistant of ISPRS Secretary General Jiang Jie) very kindly supported Nick with his mission of onboarding new students and young researchers into the ISPRS SC as the ISPRS SC shared the stall with ISPRS Toronto Congress: thanks to hers and Pole's help there was minimal language barriers, and many curious students joined the ISPRS SC without hesitations.

Nick also took part in a segment of the Council meeting where ISPRS SC matters were discussed, focusing on the student chapters initiation and got invited by the Wuhan University team to a magnificent dinner on the river with all ISPRS Council.

In terms of logistics, Nick main activities were basically standing in the stall every day from 8.30 to 17.30 informing students and curious people about the activities and opportunities of ISPRS SC, onboarding new students and gaining many new members.

ISPRS SC Participation in TCII Symposium: Activities Summary

From L-R: ISPRS TCII President, Prof Alper Yilmaz; ISPRS Treasurer, Dr Stewart Walker; ISPRS President, Prof Lena Halounová; Congress Director, Prof Derek Lichti; and ISPRS SC Board member, Chukwuma Okolie

The ISPRS Technical Commission II mid-term symposium (June 11-14, 2024, Las Vegas, Nevada) was a successful event. ISPRS SC Board member Chukwuma Okolie arrived at the venue (Flamingo Las Vegas Hotel) on the 10th June and briefly attended one of the tutorial sessions. On 11th June, he arrived at the conference room and set up the ISPRS SC materials and souvenirs in the exhibition room, just beside the ASPRS table. Chukwuma was assisted at the table by Caleb Ogbeta, a PhD Student at Oregon State University. During the symposium, we received several visitors to the ISPRS SC stand, and we were able to share information about the consortium and souvenirs with several attendees. Chukwuma encouraged graduate students to get involved with the consortium and encouraged Professors/lecturers to share the information with their students. Several members of the ISPRS Council also visited our stand,

including Lena Halounová (President), Christian Heipke (Past President), Treasurer (Stewart Walker), and Derek Lichti (Congress Director). During the symposium, Chukwuma also presented two papers (one oral presentation and one poster presentation), which were outcomes of his PhD research at the University of Cape Town. Overall, the participation of ISPRS SC in the TCII symposium was a success. Special thanks to The ISPRS Foundation (TIF) for providing funds for Chukwuma's participation in the TCII symposium.

ISPRS Board member, Chukwuma Okolie; and ISPRS TCII Secretary, Dr Rongjun Qin

Board member, Chukwuma Okolie, represented the ISPRS Student Consortium at the TCII symposium in Las Vegas USA from June 11 – 14, 2024

ISPRS Student Consortium Summer School 2024 in the Philippines: Artificial intelligence (AI) for Geospatial Applications

By Roseanne V. Ramos
Chair of the Local Organizing Committee
University of the Philippines Department of Geodetic Engineering
Quezon City, Philippines

Overview of the Summer School

The Philippines hosted the 2nd Summer School, the first one in 2015 and this Summer School on GeoAI on August 9 to 13, 2024 at the University of the Philippines Diliman Campus in Quezon City, Philippines. The theme of the Summer School 2024 is AI for Geospatial Applications. It was organized by the University of the Philippines Department of Geodetic Engineering (UP DGE), in collaboration with the International Society for Photogrammetry and Remote Sensing (ISPRS) Student Consortium, Philippine Space Agency and the Philippine Geosciences and Remote Sensing Society (PhilGRSS).

This Summer School was attended by a total of 42 participants, all from the Philippines. There were 20female participants and 22 male participants coming from various sectors. Out of the 42 participants, 12 were undergraduate students, 2 researchers and 12 faculty members from various academic institutions. There were 6 participants from

a government agency and 10 from private companies who have interest in GeoAI and are working on geomatics-related applications.

Photos during the first day of the Summer School with Dr. Baek (August 9, 2024)

Summer School Activities

The 5-day Summer School involved technical sessions by 1 international speaker and 3 local geomatics experts with extensive experience in research and technical projects with AI applications (Refer to Appendix A for the background of resource speakers). The technical sessions comprised of lecture presentations and hands-on exercises relevant to the theme. Other activities conducted are Networking Session and Socials Night, Cultural Tour around Manila, industry sessions featuring our partner companies and an ideathon session as a group activity to foster collaboration among the participants of the Summer School.

The participants were welcomed by the ISPRS Student Consortium (ISPRS SC) represented by its President, Laxmi Thapa and the Social Media Director Miguel Luis Lagahit. They shared the work and activities of ISPRS SC as well the objectives of the Summer School. The Chair of the Local Organizing Committee, Roseanne Ramos, presented the specific details of the Summer School and the expectations for the participants. It was emphasized that the learnings of the participants in the technical and industry sessions will be reflected in the ideathon session wherein groups will pitch their ideas addressing the following questions:

- What environmental/societal issue do you want to address using scientific/engineering solutions?
- What GeoAI application or approach do you wish to develop/implement to solve the environmental/societal issue?
- What are the ethical considerations and feasibility criteria for your GeoAI application?

The first technical session "Comprehensive Earth Observation and Interpretation through GeoAI data" was delivered by Dr. Won-Kyung Baek from the Korea Institute of Ocean Science and Technology. Dr. Baek discussed different GeoAI applications and conducted a programming/coding exercise on the topic Geohazard Vulnerability Prediction with GeoAI Data and Python.

Photos during the second day of the Summer School with Mr. Argamosa (August 10, 2024)

For Day 2, the technical sessions conducted by Mr. Argamosa of Accenture were focused on "Machine Learning systems and algorithms" and PyTorch and Semantic Segmentation for Satellite Images". Mr. Argamosa shared basic concepts on satellite image processing using GeoAI and also demonstrated coding exercises with available scripts in a Github repository.

The organizers and participants joined the Cultural Tour around Manila City during the 3rd day. The sitesvisited in the morning were at historical landmarks Fort Santiago, Baluarte de Santiago and Museo deIntramuros. In the afternoon, 3 National Museums (Fine Arts, Anthropology and Natural History) werevisited.

Photos during the Cutural tour on August 11, 2024 (top at National Museum of Anthropology, bottom left at Baluarte de Santiago, and bottom right at Fort Santiago)

The 4th day of the Summer School involved the lecture and technical exercises on "Fundamentals of using Matlab for basic computing applications" delivered by Dr. Rhandley Cajote of the Electrical and Electronics Engineering Institute of UP Diliman. Dr. Cajote shared the basic concepts and coding tips in Matlab and provided sample scripts mathematical computations, image processing and visualizing spatial data. The technical session concluded with a basic exercise on plotting earthquake data with examples from USGS.

The Industry Sessions include presentations from companies and our industry partners in the Philippines. The sessions provided an opportunity to share the current industry practices and services as local companies started to adopt AI and geospatial tools in their workflows.

The last day of the Summer School featured Large Language Models (LLMs) and Natural Language Processing (NLP) discussed by Dr. Reinald Adrian Pugoy from the Faculty of Information and Communication Studies of the UP Open University. He further discussed details on generative AI and applications of NLP in geospatial contexts such as in disaster response and management, location-based sentiment analysis and in tourism/travel recommendations.

The Summer School concluded with an ideathon session in which groups were tasked to come up with a proposal on the use of AI and present the proposed idea's feasibility and ethical considerations. The last part of the program is the awarding of the Certificate of Completion to participants who completed the activities of the Summer School.

Acknowledgements

The Local Organizing Committee members would like to extend their gratitude to the ISPRS Council, the ISPRS Technical Commission V and the ISPRS Student Consortium for their support and funding in this Summer School. ISPRS SC President Laxmi Thapa and Social Media Director Miguel Luis Lagahit have been very generous with their time and support in the event. The organizers and participants of this Summer School on GeoAI were collaborative and productive in the technical sessions as well as in the industry sessions. The Cultural Tour also presented new learnings for everyone about the historical and artistic features of the Philippines. We are happy with all the activities, including the Networking Session and Socials Night, and we hope to organize another Summer School in the future.

Photos during the ideathon session and closing ceremony of the Summer School on August 13, 2024

Appendix A: Background on the Resource Speakers

WON-KYUNG BAEK, PH.D.

SENIOR RESEARCH SCIENTIST
KOREA OCEAN SATELLITE CENTER, KOREA INSTITUTE OF OCEAN SCIENCE & TECHNOLOGY

Won-Kyung Baek received his M.S. and Ph.D. degrees from the University of Seoul, Seoul, Korea, in 2017 and 2022, respectively. He currently serves as a Senior Research Scientist at the Korea Ocean Satellite Center, a division of the Korea Institute of Ocean Science and Technology.

His research focuses on enhancing surface deformation mapping techniques using synthetic aperture radar (SAR), utilizing multi-temporal SAR interferometry (InSAR) to measure gradual surface deformation, and developing methods to map two- or three-dimensional surface displacements by integrating InSAR, multiple-aperture InSAR (MAI), and offset tracking measurements.

Additionally, Dr. Baek is involved in target detection, classification, segmentation, and prediction from satellite and geographic information system (GIS) data, as well as conducting multi-temporal satellite-based analyses of wetland topography.

Topic:
Comprehensive Earth Observation and Interpretation through GeoAI data

MR. REGINALD JAY L. ARGAMOSA

AI ENGINEER - AI/ML COMPUTATIONAL SCIENCE
ACCENTURE
PHILIPPINES

Mr. Reginald Jay Argamosa is recognized among Accenture's top 20% of data scientists worldwide. He possesses expertise in various technologies related to software engineering, cloud solutions, machine learning, and remote sensing. His core competencies include predictive modeling, deep learning, remote sensing, software engineering, model interpretability, and workflow management.

He has been involved in numerous research projects funded by the Department of Science and Technology and has served as a research specialist in projects such as Project MapABLE, Project GUHeat, Project Tanglaw, Project MaRS, and Project FRExLS, to name a few.

Currently, Mr. Argamosa works as an AI Engineer at Accenture in the Philippines, where he handles complex software development integration challenges to create robust and secure APIs. He is also responsible for model development in SageMaker and Azure Machine Learning.

Topics:
Session 1: Machine Learning systems and algorithms
Session 2: PyTorch and Semantic Segmentation for Satellite Images

DR. RHANDLEY D. CAJOTE

PROFESSOR
ELECTRICAL AND ELECTRONICS ENGINEERING INSTITUTE
UNIVERSITY OF THE PHILIPPINES DILIMAN

Dr. Rhandley D. Cajote is currently serving as Professor 7 in the College of Engineering at the University of the Philippines, Diliman. He earned his Doctorate Degree, Doctor of Philosophy in Electrical Engineering, from Chulalongkorn University, Bangkok, Thailand.

His research interests include Digital Signal Processing, Image Analysis, Machine Learning, Video Analytics, and Video Compression. Dr. Cajote has led and participated in various successful research projects funded by DOST and AUN-CRI.

Currently, he is working with the **Center for Integrated Circuit and Device Research on Project 3: Energy Efficient Machine Learning Hardware Co-Design.** This DOST-funded program aims to create an infrastructure and framework for sharing resources among academia, industry, and government. The goal is to reduce the risk associated with bringing new technologies from discovery to commercialization.

Topic:
Fundamentals of using Matlab for basic computing applications

DR. REINALD PUGOY

ASSOCIATE PROFESSOR
UNIVERSITY OF THE PHILIPPINES OPEN UNIVERSITY

Dr. Pugoy also serves as the Director of the UPOU ICT Development Office and earned his PhD in Computer Science and Information Engineering from National Cheng Kung University in Taiwan. His research interests include Artificial Intelligence (specifically Natural Language Processing, Machine Learning, Recommender Systems, and AI in Education) and Learning Management Systems (Moodle).

Since the emergence of ChatGPT and Generative AI in 2023, Dr. Pugoy has delivered 26 keynote addresses and presentations at various universities, institutions, organizations, and conferences across the Philippines and Southeast Asia.

Furthermore, his work has been published in the prestigious IEEE Transactions on Knowledge and Data Engineering, a leading journal in the field of AI and Data Science.

Topic:
Unveiling Spatial Narratives: Leveraging Natural Language Processing for Geospatial Contexts

Photos during the presentation of private companies at the Industry sessions

GeoAI in Practice
Albert Francis P. Florin

The ISPRS SC Summer School on GeoAI had multiple sessions to discuss various techniques in spatial data analysis. On the first day with Dr. Baek was a session on Earth Observatioin and Geohazard vulnerability; the second day with Mr. Argamosa was on Machine Learning and PyTorch on satellite images; the fourth day with Dr. Cajote focused on Matlab on raster analysis; and the fifth day with Dr. Pugoy on Natural Language Processing.

The session with Dr. Baek was an ice breaker, but not on the traditional sense. I assume most of the participants were with me in thinking that the first session was going to ease in the AI terminologies, but the esudden jump to practical real-world applications showed what this summer school has to offer. Although not one line of code was easy to understand, Dr. Baek presented that AI as a tool in geoprocessing follows the same flow as a traditional processing -- just with another tool in our belt.

This was further exemplified by Mr. Argamosa who first demonstrated traditional supervised and unsupervised classification, albeit with python code instead of a GIS App. These were already applications of machine learning and it follows that what came next was deep learning then convuolotional deep

learning. For someone who has not mastered remote sensing, all of these appear the same, just that the Convolutional Neural Network looks at groups of pixels instead of just one. However, deep learning is an emerging field and being a pioneer for geo applications was never going to be easy.

On the fourth day, Dr. Cajote said something truly inspiring. *"You're not supposed to b e programming in Matlab."* Matlab was truly different from Python in the first two days. Creating beautiful plots was simple and interactive. Although other languages like can generate interactable plots with much effort, Matlab does it in a few function calls, most of which was just telling the plotter what to plot. Comparing with other languages on user friendliness, Matlab is at the top, followed by R, then Python. This would also work as rankings on how easy it is to train analysts to the most scriptable; scriptable being something like the pipelines discussed by Mr. Argamosa on Day 2.

Day 5 sees the discussion of the AI that changed the world due to its popularity: NLPs and LLMs. The quick poll by Dr. Pugoy showed that most participants already interact with these types of AI, and the discussion that followed focused on *adopt* and *adapt*. The two part of his talk was AI in geodata science and analysis, but due to how easy LLMs are to use majority of the talk was about responsible use. "LLMs are autocomplete on steroids," a belief I held since the GPT boom. The talk encapsulates what I felt when I first explored AI -- a starting point to creatively generate ideas, while us humans are what does everything else.

There were many different types of AI discussed over the summer school, ranging from classical Machine Learning to modern deep neural networks. All talks demonstrated AI as a tool and that humans will still be the ones who do the thinking and shoulder the responsibility. With how the talks were ordered it appeared that Days 1 and 2 were examples of how AI is being used in geospatial applications, then Days 3 and 4 were encouraging the participants to play around with AI due to how user-friendly they tools were. The culmination of all these was an ideathon, where responsibility for AI was handed to us participants to think of our own applications for the environment, or for our own social impact.

How Hivemapper is Changing the Game with Decentralized Mapping and Blockchain

Hi there, Ariel Seidman here, founder of Hivemapper. Today, I want to talk about something that's changing how we think about maps and geospatial data: decentralized mapping. It's a concept that we're excited about at Hivemapper because it combines the power of blockchain technology with community-driven efforts to create something truly revolutionary.

The Problem with Traditional Mapping

Let's start by looking at how mapping has traditionally been done. For years, a few big companies have controlled the creation and distribution of maps. They own the data, decide how it's shared, and set the prices. This centralized control comes with several problems:

1. Limited Access: High-quality map data is often expensive and hard to access. If you need detailed information, you might have to pay a lot or not get it at all.
2. Outdated Maps: Traditional maps can quickly become outdated, especially in areas where things change rapidly, like busy cities or new developments.
3. Lack of Community Input: The people who live in and use these mapped areas every day have little to no input in creating the maps. They don't have a say in what gets included or how accurate the information is.

These issues make it clear that we need a new way to create maps—one that involves everyone and provides up-to-date information.
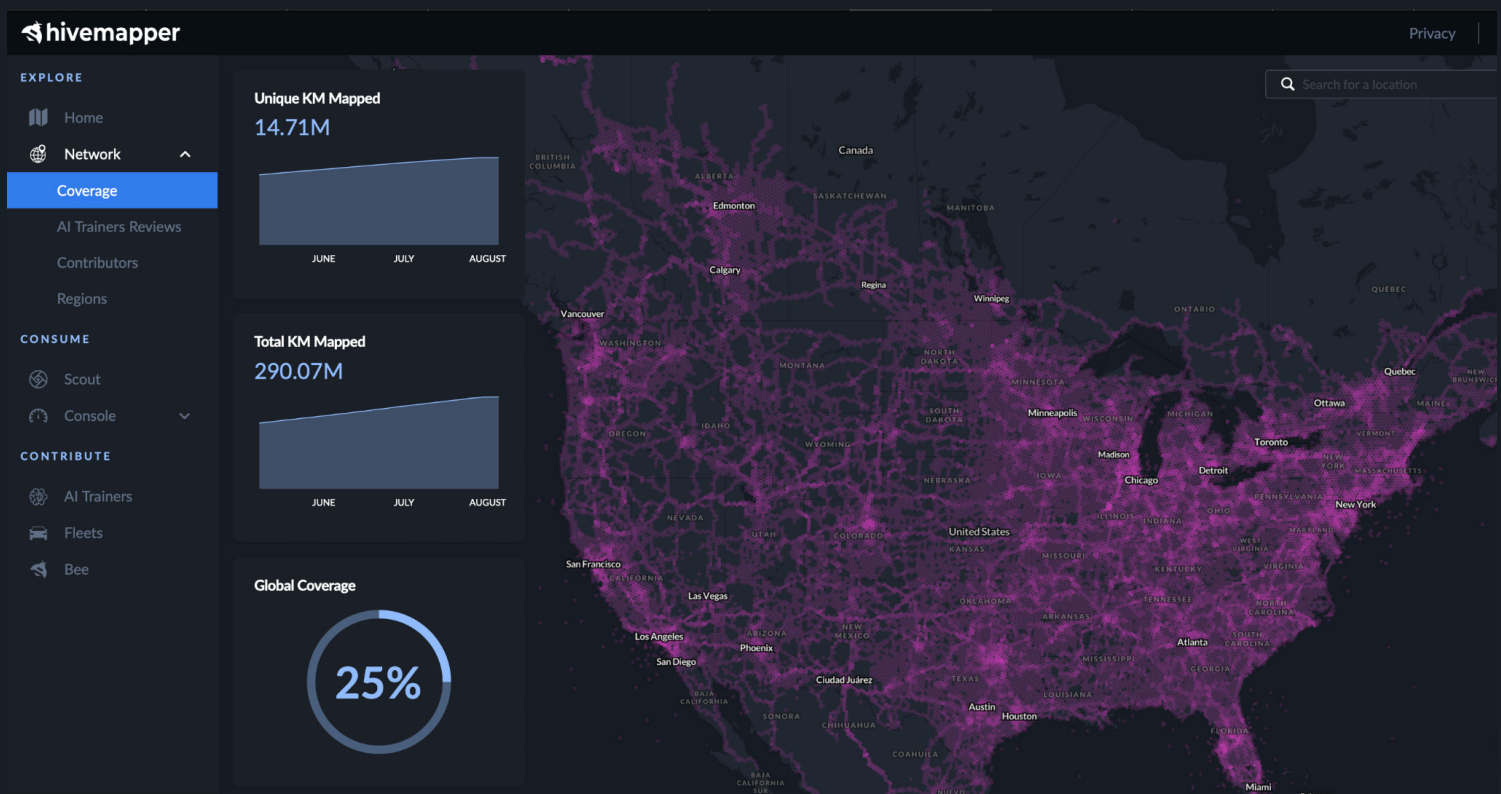
Introducing Hivemapper: A New Way to Map the World

At Hivemapper, we've created a decentralized mapping network that changes how we collect and share road intelligence. Our approach relies on the power of blockchain technology and community participation to create a more accurate, accessible, and fair mapping system. So far, Hivemapper has mapped one-quarter of the world's road networks, doing so five times faster than Google.

How it Works

1. Community-Driven Data Collection:
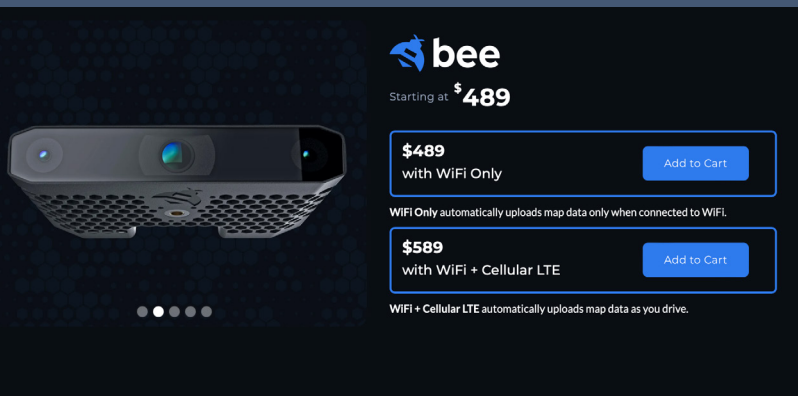
Every day, thousands of people drive on roads we aim to map and analyze. We've got the ideal setup to capture fresh map data through our community of drivers equipped with Hivemapper dashcams. These dashcams aren't just regular cameras; they are map-making machines. They capture high-quality street-level imagery while you drive, contributing valuable data to our global map network. This means that everyone—from everyday drivers to fleet operators—can become a map contributor just by going about their daily routines.

2. AI and Machine Learning:

Once we've gathered the data, we use advanced AI and machine learning to analyze it. These technologies help us pick out essential features from the images, including turn restriction signs, stop signs, highway exit signs, speed signs, and traffic lights. This process ensures that our maps are accurate and detailed, providing the best possible information for navigation, planning, and more.
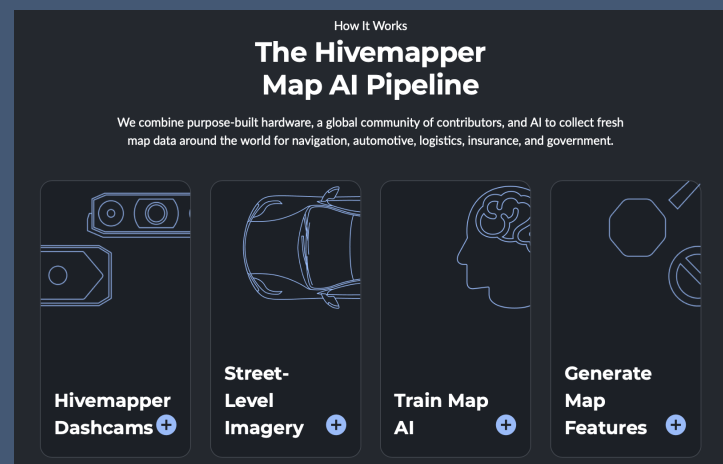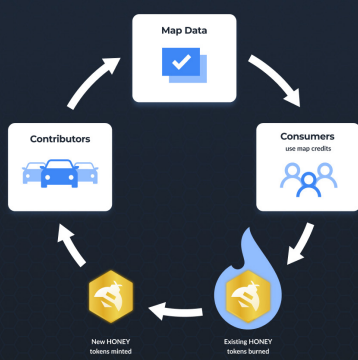
3. Blockchain-Based Rewards:

Contributors to the Hivemapper network don't just help us make better maps—they also earn rewards for their efforts. We use a digital token called HONEY as an incentive. When you contribute data, you earn HONEY tokens. These tokens can be used to access map data or exchanged, providing a tangible benefit for those who help build our maps.

Real-World Applications and Future Potential

The possibilities for decentralized mapping are endless, and Hivemapper is paving the way for innovation across multiple industries. With data coming from a worldwide network of contributors, Hivemapper ensures that our maps are always up-to-date and accurate. This is crucial for applications like navigation, urban planning, and emergency response, where outdated information can lead to costly mistakes.

Decentralized mapping is not just a trend; it's the future of geospatial data. At Hivemapper, we're excited to lead this change, offering a new way to create and use maps that empower communities and promote fairness.

By harnessing blockchain and community participation, we're building a mapping network that's open, accurate, and rewarding. This isn't just about technology—it's about creating a more connected and informed world.

As Hivemapper continues to grow, we're confident that our decentralized approach will set a new standard in mapping, transforming how we see and interact with our world.

Interested in learning more about how hivemapper works?

Check out our website: https://hivemapper.com/

Want to contribute?

Learn how you can join our mapmaking network with our next-generation dashcam Bee: https://bee.hivemapper.com/

DIMO

DIMO is a connected car network that puts drivers back in control of their car data. With over 100k cars connected across the United States, Canada and Europe, there are instances of connected cars being within 150 meters of each other. As the network expands with cars, the instances of nearness will only increase enabling vehicle to vehicle (V2V) communication. This opens the door to exciting opportunities, including further decentralization of DIMO, proof of location, and improvement to transportation that could aid in autonomous driving for smart cities.

Why V2V Communication Matters?

Improving Transportation & Aiding Autonomous Driving

V2V can be used to communicate road conditions ahead of the driver's/vehicle's direct line of sight (e.g. a lane closure). The processed data about the sensed surroundings can be passed backwards in lines of vehicles so autonomous vehicles can plan their actions further in advance.

Further, autonomous driving is simpler when vehicles are communicating their intentions (e.g. an upcoming turn) because the vehicles can plan for other vehicles' actions before they're taken.

Although DIMO devices are not yet equipped with V2V, it is a later step in a connected world. Vehicle agnostic connectivity with DIMO is a next step in the wider vehicle connectivity/connected world (in contrast to an OEM-specific communication).The future of the global fleet is mixed, and vehicles on the road today will need to be compatible with future technologies.

Proof of Location & Movement Driving

As vehicles roll past each other, they can issue credentials to one another. This enables vehicles to not only share data, but create trust scores for one another based on how often they are issuing valid or invalid attestations. Similar to how physical trust works today, vehicles from different manufacturers may develop higher or lower trust scores based on their real-world performance.

As most vehicles are close to one other vehicle at least once per day, the general area that vehicles are operating in can also be validated. Then, suspicious jumps in GPS locations can be identified as potential spoofing when a vehicle moves from an area with a high trust score to one with a low score.
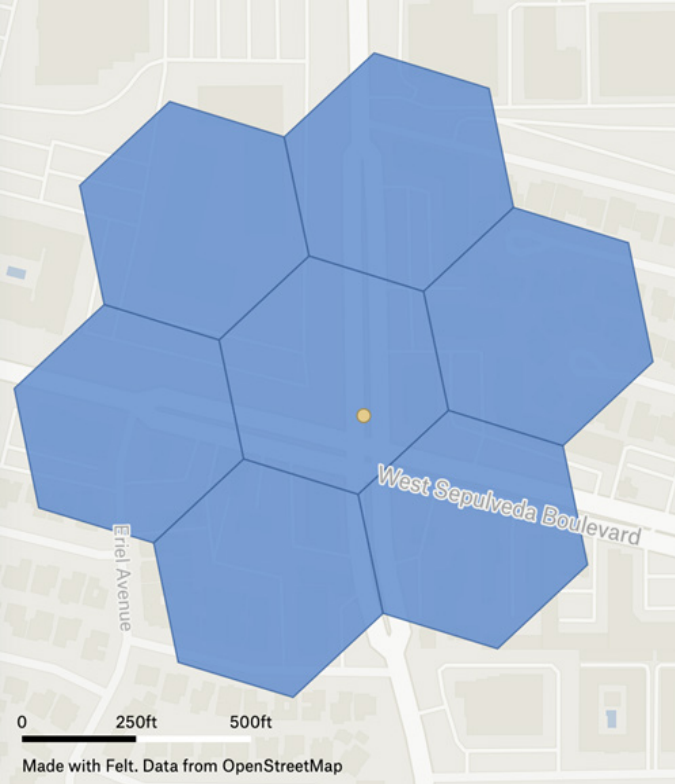
Correlation Based Method

It can be a computationally intensive problem to compare all GPS points to determine if two unique vehicles were close to one another. One solution without a huge compute cost utilizes Uber's H3 hexagon mapping of the world and sorting of data in each hexagon by timestamp.

For every GPS coordinate, we find the h3 hexagon it lies in (the center one pictured), and then find the k-ring of hexagons surrounding it.

Then, all the GPS points that are in (or adjacent to) the visited hexagon are ordered by the timestamp. When a hexagon was visited by (or adjacent to) two unique vehicles where the gap between the timestamps is under 60 seconds, we assume the vehicles were close enough that they would have been able to communicate V2V.

Hexagons at resolution 10 have a circumradius of about 76.104 meters. So the furthest two points can be is just under 6 * 76.104=456.624 meters. At resolution 11, the furthest is just under 172.59 meters, and at resolution 12, it is about 65.232 meters.
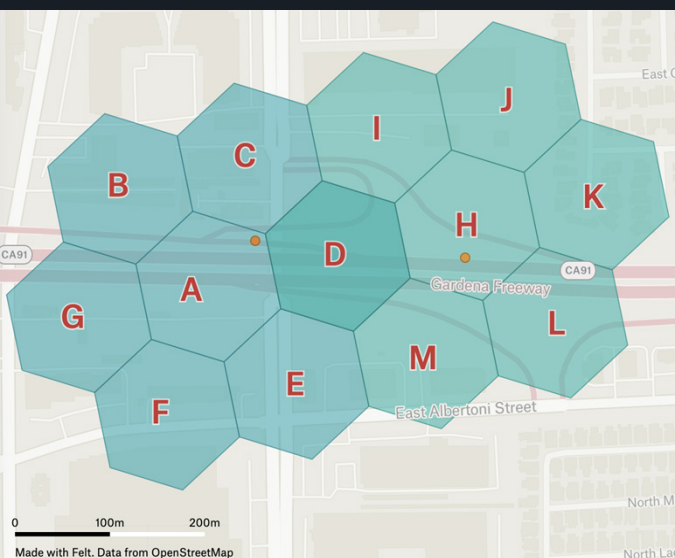

Sample Resolution 10 H3 Hexagons
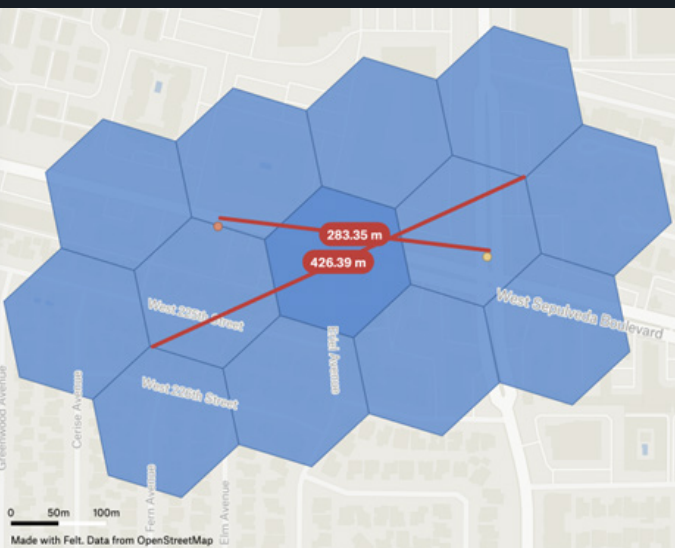
Two sample GPS coordinates in H3 hexagons with shared hexagons in their k-rings

| H3 Hexagon	K-ring	Timestamp	Vehicle ID	Hexagon Visit ID
A	B	12:00:00	1	Z
A	C	12:00:00	1	Y
A	D	12:00:00	1	X
H	D	12:00:15	2	X
A	E	12:00:00	1	W
A	F	12:00:00	1	V
A	G	12:00:00	1	U
H	I	12:00:15	2	T
H	J	12:00:15	2	S
H	K	12:00:15	2	R
H	L	12:00:15	2	Q
H	M	12:00:15	2	P

These hexagons allow us to set a threshold distance between two GPS points and find all "close" pairs of GPS points. This process avoids an O(N^2) comparison and allows the problem to be solved with an O(N*logN) sort of the data points by the timestamps.

The table contains data points for the hexagons (and k-ring) in the image below. When the points are grouped by the hexagon id for each hexagon in the k-ring and then sorted by timestamp, we find that vehicles 1 and 2 share a hexagon in their k-ring (hexagon D) during hexagon visit ID X.

A K-ring approach to detecting vehicles near each other reduces the possibilities of missed points. Once we employ this method we see these instances occurring as frequently as 1% of data points (resolution 11) and 25% of vehicles at least once per day in New York City.
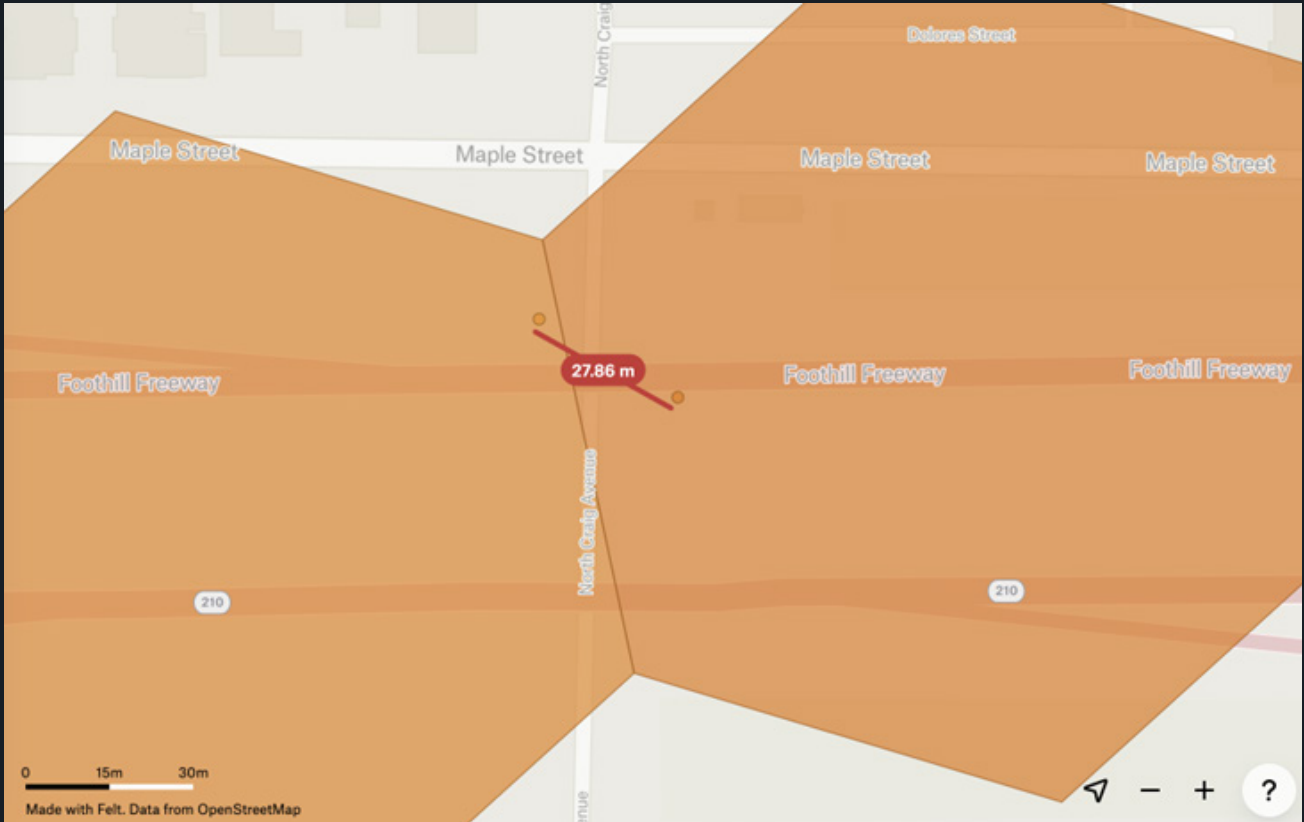
GPS points in neighboring H3 Hexagons
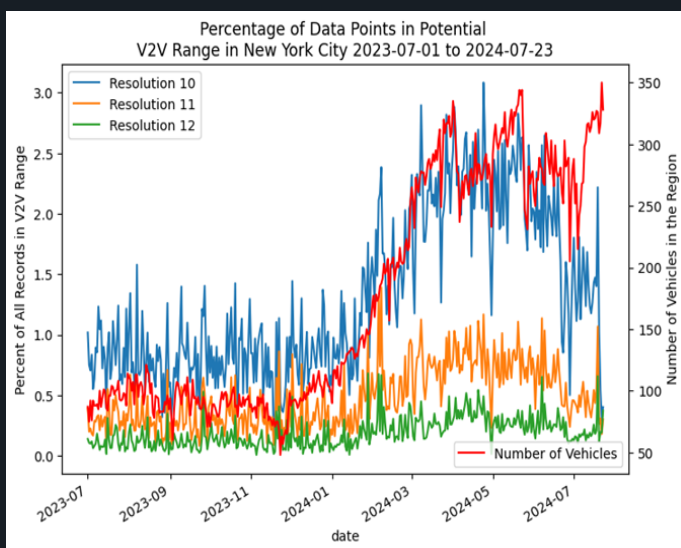
Percentage of GPS points in K-Ring range of other GPS points for H3 Hexagon resolutions 10, 11, and 12
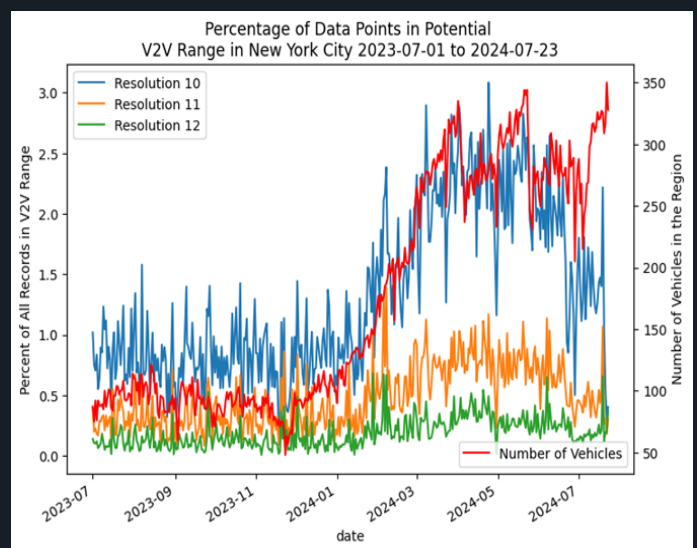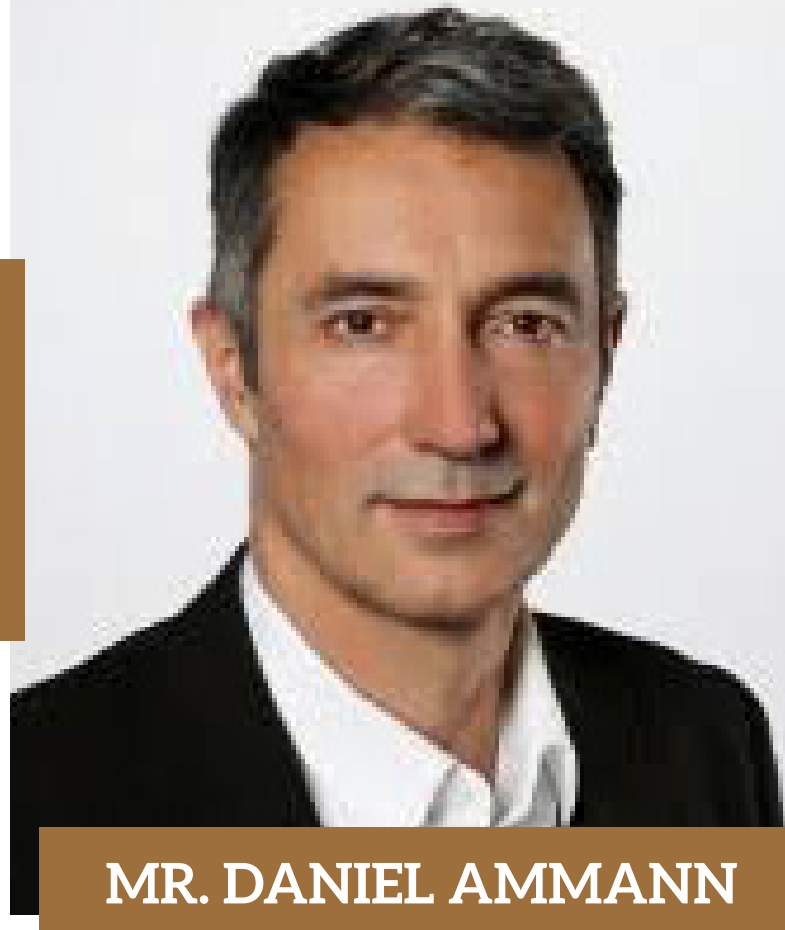

Percentage of vehicles with at least one GPS point in K-Ring range of other GPS points for H3 Hexagon

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Current Position - President & Co-Founder Affiliation:

Onocoy Association

Research Interests and Expertise:

GNSS, RTK, Semiconductor, Decentralization

MR. DANIEL AMMANN

Daniel Ammann is an entrepreneur with a demonstrated history of working in the semiconductors, software, and satellite navigation industry. Experienced in International Business, Product Marketing, Business Development, Innovation, General Management, Organization, Business strategy and tactics, M&A (Buyer side negotiations, post-acquisition integration), and JVs (lead business negotiator). Also a co-founder of u-blox (but left after 21 years), an Electronics Engineer from ETH Zurich, and a passionate

Can you briefly tell us about your project and its main objectives? What aspects of Web3 and blockchain technology made you decide to adopt it for your activity?

Onocoy's primary objective is to create a decentralized, community-powered network of GNSS reference stations, providing affordable and accessible high-quality RTK corrections for precise positioning. By leveraging Web3 and blockchain technology, onocoy ensures transparency, security, and incentivization through a token-based reward system, which is essential for building a global, decentralized infrastructure and maintaining data integrity.

Who or what inspired you to start your activity?

The founders of Onocoy, with extensive backgrounds in GNSS technology and blockchain, were inspired by the limitations and high costs associated with traditional RTK services. They saw an opportunity to use blockchain technology to overcome these challenges by decentralizing the network and involving the community.

Do you think you could have achieved the same results without Web3 and blockchain?

No, the decentralized and incentivized approach provided by Web3 and blockchain is crucial for Onocoy's vision. The transparency and security of blockchain ensures trust in the data, while the incentivization through tokens increases the community participation and infrastructure growth, which would be challenging to achieve with traditional Web2 methods.

Would you ever go back to Web2 methods now that you are deeply involved with Web3?

Given the advantages of transparency, security, and community involvement offered by Web3, it is unlikely that Onocoy will go back to Web2 approaches. The decentralized approach is fundamental to our business model and objectives.

Citizen science is a common term used to describe the involvement of local non-professionals and members of the community into scientific data acquisition and processing. Do you think Web3 decentralized mapping or DePIN are a form of "incentivized citizen science" for industries or are more than just financially rewarding

Yes, DePIN (Decentralized Physical Infrastructure Networks) can be considered as a form of incentivized citizen science. They not only financially reward contributors but also empower them to be part of a global network that helps in the collection of scientific data and enhancing the accuracy of GNSS data, which benefits a wide range of industries. In addition, DePIN approaches allow contributors to participate in the project's governance and hence steer it towards common goals.

What is the greatest challenge you faced in this field so far, how you overcame it, and what you learned from the experience?

The greatest challenge has been ensuring the integrity and accuracy of data in a decentralized network. Onocoy solves this by an AI-based fraud detection system that employs methods such as Generative Adversarial Networks (GANs) and Explainable AI (XAI) to identify and mitigate fraudulent data. This has highlighted that security in a decentralized system is a critical component in building

What can you say about the current trends in DePIN, blockchain and decentralized mapping related to adoption and general public perception?

The use of DePIN and blockchain is on the rise, as more stakeholders realize that this technology (web3) has the potential to revolutionize industries by lowering costs and increasing accessibility. Public perception is generally positive, especially as successful use cases and applications demonstrate the practical benefits and reliability of these technologies.

What do you think are the potential contributions of international scientific international organizations like the ISPRS Student Consortium in promoting decentralized mapping and blockchain technology?

Organizations such as the ISPRS Student Consortium can play a crucial role in promoting DePIN and blockchain technology by facilitating research, education, and collaboration. They can help standardize best practices, foster innovation through academic and industry partnerships, and increase the public's awareness about the potential uses of these technologies. Please reach out to us via info@onocoy.com if you have any project or research idea, questions or are just curious about our project and team. Anyone is welcome to participate, contribute and work together for this

What advice would you give to young professionals and enthusiasts looking to contribute to the field of decentralized mapping, DePIN and blockchain technology?

Young professionals should focus on acquiring a strong foundation in both the technical and practical aspects of blockchain and GNSS technologies. Interacting with the community through projects, contributing to open-source platforms, and staying updated with the latest developments in the field are important. Additionally, understanding the real-world applications and potential impacts of these technologies will enable them to innovate and contribute meaningfully.

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Current Position
- Senior Technical Program Manager
Affiliation:
Amazon

Research Interests and Expertise:
*Geospatial, Web3, Blockchain,
Cryptocurrency, Smart Contracts, Artificial
Intelligence, Quantum Computing, Digital
Twins, Supply Chain, Logistics, Land
Management and Real Estate, Authoritative
vs Trusted Data.*

Note: Interview conducted in August 2024.
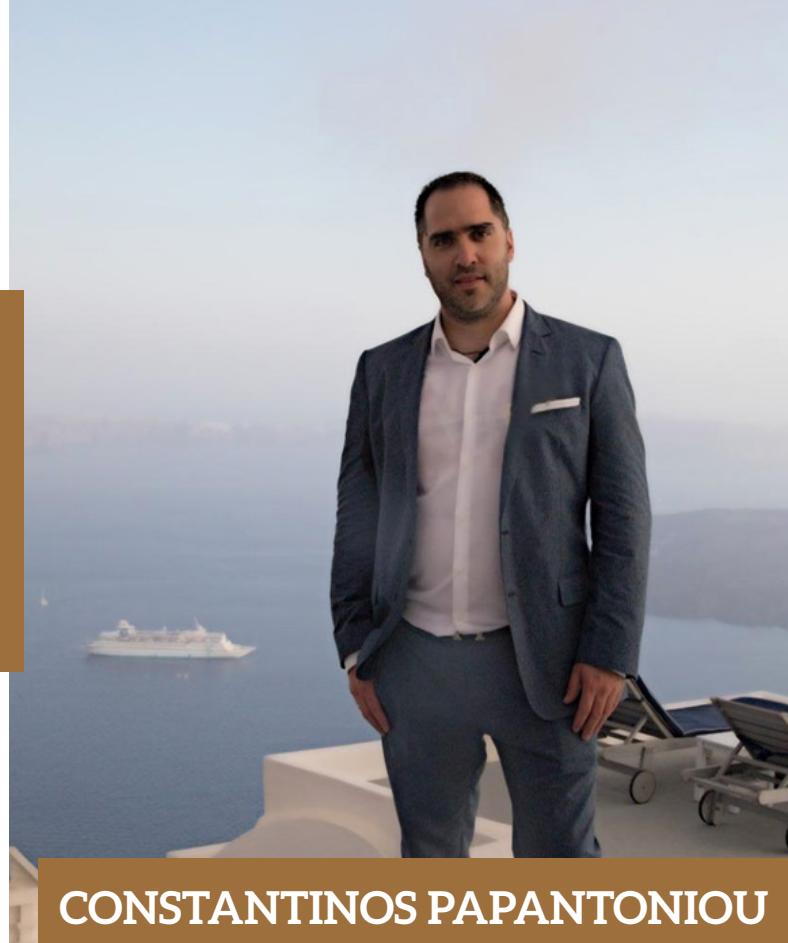
CONSTANTINOS PAPANTONIOU

Dr. Constantinos Papantoniou is the founder and inventor of the GeoBlockchain Framework. He specializes in integrating emerging technologies such as Blockchain, AI, and Digital twins with Geographic Information Systems (GIS).

Dr. Papantoniou has a PhD, MBA, and two master's degrees and has earned multiple blockchain certifications. Also, he is a certified Geographic Information Systems (GIS) professional.

Currently, he is the Senior Technical Program Manager for Maps at Amazon, and he previously worked at Esri where he served as the Senior Technical Lead and Consultant on Multiple Projects including building one of the Most Advanced Cadastre National Systems in Europe and implementing solutions for the Ebola outbreak as part of the World Health Organization and Bill and Melinda Gates Foundation initiative.

Can you briefly tell us about your current research and what aspects of blockchain technology made

A couple of years ago, when I was more deeply involved in the world of cryptocurrencies, I began to look beyond economics and delve into the technology itself. It was then that I discovered blockchain technology had a geographic component, which sparked my interest in exploring how geospatial data could be integrated with it. My research in this area actually began before my PhD. During my PhD, I tailored my coursework and activities to leverage scientific, quantitative, and design methods to study how blockchain and geospatial concepts could intersect. Some of my early research questions revolved around concepts like "private versus public blockchains," "can blockchains be used as decentralized geodata storage spaces," and "should we use blockchains as geodata storage in the first place?" This exploration led to my project called GeoBlockchain, with the first use cases focusing on supply chain and real estate management.

What actually brought you to the blockchain? What was the spark?

I've always been fascinated by the idea of fully immersing myself in cutting-edge technologies. My journey started with blockchain, but I also explored Artificial Intelligence, specifically how to make smart contracts autonomous with AI. Lately, I've been very interested in Quantum Computing, which also uses cryptography. The world is moving toward a digital era of smart technologies, and as we progress, we need more fuel—more resources—because the current infrastructure isn't sufficient to keep up with the growing demands of digital assets.

Do you think blockchain and Web3 can achieve tasks that are otherwise not possible?

It really depends on the use case. Not all geospatial applications need blockchain integration. For example, GeoBlockchain can provide trustless information that can be leveraged in geospatial information systems. In the supply chain, for instance, blockchain can eliminate the middleman, reduce bureaucracy and costs associated with it, and mitigate friction due to differing national legislations. This can streamline the process from when goods leave their point of origin until they reach the supermarket. Other examples include converting certificates or luggage tracking into digital assets that can be tracked around the world. However, it's essential to consider whether blockchain integration is truly necessary for a specific application.

What are the most important barriers to adopting blockchain for geospatial?

The biggest barrier is blockchain technology itself. Geospatial technology has been widely adopted for many years, so it's not the issue. For new technologies like blockchain to be fully embraced by society, a change in human behavior and acceptance is required. Cryptocurrencies, for instance, were initially met with fear due to the lack of policies. However, as more regulations emerge, people are gradually accepting and adopting them, and even banks are beginning to accept cryptocurrencies. It's only a matter of time before blockchain is fully accepted in society, leading to more applications in areas like GeoBlockchain, particularly in real estate and supply chain management. Eventually, it will be part of a digital trust ecosystem.

What is the greatest challenge you faced so far, how did you overcome it and what you learnt?

The greatest challenge was convincing people of my idea in the early stages. Initially, I faced a lot of criticism and rejection when talking about blockchain. However, rather than being discouraged, these criticisms motivated me to conduct more research to provide scientific evidence that could support my ideas, acting as a form of quality assurance. After years of experiments, conferences, publications, peer reviews, and even a patent on GeoBlockchain, the idea has gained more acceptance. This journey taught me that perseverance and a commitment to proving your ideas with solid evidence can eventually lead to success.

Do you see any current trends emerging using the GeoBlockchain framework?

Yes, I see several emerging trends and use cases in the GeoBlockchain space. Supply chain management and real estate are significant trends, particularly in using hybrid approaches that combine public and private blockchains. Another trend involves using tokens on publicly traded blockchains like Ethereum. There are also various applications mapping blockchain transactions. However, most of these trends are currently driven by the private sector.

What do you think are the best contributions or roles that international scientific organizations like ISPRS SC can have in raising awareness of GeoBlockchain?

International scientific organizations like ISPRS SC can play a vital role in expanding this technology, especially by supporting early-career scientists with new ideas and research. Young researchers are the fuel of tomorrow's ideas. There's enormous potential to create a new format of geospatial data, similar to GeoJSON, that could package geospatial data into a tokenized asset embedded in a blockchain. For instance, you may not know the sources of your map geodata, and even if the authoritative source is known, you may not trust it. Researchers could create a new trust layer for mapping data. Additionally, technologies like ChatGPT could be used to create maps, but there needs to be a way to verify and trust the sources of the data in the most authoritative way possible.

What advice would you give to young professionals, students and enthusiasts who want to contribute to these fields?

My first advice is not to be afraid—get involved and learn. As you learn, you'll gain more knowledge, which will help you understand how to apply these technologies to your specific field of study. Don't be afraid to experiment with new technologies. Even if they fail, there's no such thing as failure, only challenges. These challenges are opportunities to create solutions, which is exactly how we progress in research—through iteration. Another piece of advice is to involve users from day one. Don't wait until the end of a project to collect feedback. Start early and integrate what you learn throughout the process.

Geo Week, presented by Geo Week News, was created in response to the changing needs of the built world and geospatial professionals and to acknowledge the increasing convergence of technology. Geo Week's conference program and tradeshow floor feature commercial applications of geospatial and 3D technologies, innovations, and case studies in the built environment, advanced airborne and terrestrial remote sensing solutions and more. Multiple strategic partnerships, including Conference and Event Partners ASPRS and Reality Capture Network, plus Event Partners ISPRS, MAPPS, USGIF, USIBD, and WGIC strengthen Geo Week. Geo Week occurs February 10-12, 2025, at the Colorado Convention Center, Denver, CO. For more information, visit https://www.geo-week.com/.

Geo Week is produced by Diversified Communications' technology portfolio, which also includes Commercial UAV News; Geo Week, Geo Week Newsletter, 3D Technology Newsletter, AEC Innovations Newsletter, Geo Business (UK) and Digital Construction Week (UK).

For more information about exhibiting at the Geo Week, visit the Exhibitor Information page or contact Casey Reynolds, Sales Manager, at creynolds@divcom.com or (207) 842-5624 or Dominique Caron, Account Executive, at dcaron@divcom.com or (207) 842-5404. For Attendee Inquiries, visit the Attendee Inquiry page or email info@geo-week.com

Advisory Board Announced for Geo Week 2025

Portland, Maine – USA, September 3, 2024 – Organizers of Geo Week, the premier event that champions the coming together of geospatial technologies and the built world, have announced an impressive list of influential leaders within the geospatial and built world industries who will be participating on the 2025 Advisory Board. The Advisory Board is responsible for recommending conference topics and speakers, reviewing submitted abstracts, consulting on the program, and acting as a resource to develop different aspects of the event. Geo Week 2025 takes place February 10-12, 2025, in Denver, Colorado.

"Geo Week brings together experts and academics across the whole spectrum of the geospatial community. This allows attendees to see what is new and is being developed in terms of technology, methods, and ideas, all in one place"

- Andrew Brenner (Geo Week Advisory Board; Director of Government Geospatial Growth Initiatives, NV5 Geospatial)

Geo Week Announces Geo Empower Event Scholarship Program Emphasizing "Tech for Good"

Portland, ME, October 10, 2024 – Organizers of Geo Week announced the launch of the Geo Empower Event Scholarship, an initiative dedicated to empowering university students passionate about utilizing geospatial, surveying, mapping, and 3D technology for social good. With a vision to foster an inclusive and diverse community, this scholarship program seeks to nurture innovation, facilitate knowledge exchange, and provide access to mentoring and networking opportunities by selecting university students to attend Geo Week through an event scholarship.

"We are thrilled to introduce the Geo Empower Event Scholarship...

Geospatial technology is transforming how we address challenges like environmental monitoring, urban planning, and disaster response. We are dedicated to investing in the next generation of geospatial leaders who will use technology to better their communities, and we aim to provide a powerful platform for mentorship and education early in their careers. This scholarship will empower younger generations seeking access to opportunities in the field."

- Lora Burns (Senior Marketing Manager and DEI Manager, Geo Week 2025)

Geo Week is seeking Geo Empower Event Scholarship applications from students currently studying at a university in the United States who are passionate about applying technology towards positive social and environmental impacts. Three students will be selected as Geo Empower Event Scholarship recipients and will receive a full conference pass to Geo Week, complimentary hotel accommodations, a travel stipend towards airfare, and mentorship matching onsite with geospatial professionals in leadership positions. For more information, including full scholarship application details and eligibility, visit the Geo Empower Event Scholarship information page. Applications are due October 31, and Geo Week takes place February 10-12, 2025 in Denver, Colorado. Learn more about Geo Week at www.geo-week.com.

UPCOMING EVENTS

Event Name	Dates	Venue	Website
GISTAM 2025	01-03 Apr 2025	Porto, Portugal	https://gistam.scitevents.org/
59th Photogrammetric Week	01-04 Apr 2025	Stuttgart, Germany	https://phowo.ifp.uni-stuttgart.de/
ISPRS Geospatial Week 2025	06-11 Apr 2025	Dubai, UAE	https://gsw2025.ae/
44th EARSeL Symposium	26-29 May 2025	Prague, Czech Republic	https://symposium.earsel.org/44th-symposium-Prague/
Dreiländertagung 2025 der SGPF, DGPF und OVG	03-06 Jun 2025	Muttenz / Basel, Switzerland	http://www.dlt2025.ch/
ISPRS WG II/8 PSBB25	09-11 Jun 2025	Moscow, Russia	https://sites.google.com/view/psbb25/
ISPRS WG I/6 EUROCOW – European Workshop on Calibration and Orientation Remote Sensing	16-18 Jun 2025	Warsaw, Poland	https://www.eurocow.org/
The 13th International Conference on Mobile Mapping Technology	20-22 Jun 2025	Xiamen, China	https://mmt2025.xmu.edu.cn/2025/
IGARSS 25	3-8 Aug 2025	Brisbane, Australia	https://www.2025.ieeeigarss.org/

SCHOLARSHIPS *AND* OPPORTUNITIES

PhD

PhD candidate on 3D reconstruction and modelling of roofs in European cities
TU Delft

Delft, Netherland

Deadline: 2 March 2025

https://3d.bk.tudelft.nl/jobs/phdmultiroofs/

PhD student "3D reconstruction of the forest canopy from aerial images" (m/f)
IGN

Saint-Mande, Ile-de-France

Deadline: 28 Feb 2025

https://www.ign.fr/nous-rejoindre/offres-emploi/doctorant-e-reconstruction-3d-de-la-canopee-forestiere-partir-dimages-aeriennes-fh-1032

Other opportunities

NASA Terrestrial Ecology Data Synthesis Internship

USA

Deadline: 28 Feb 2025

https://stemgateway.nasa.gov/s/course-offering/a0BSJ000001VxCv/nasa-terrestrial-ecology-data-synthesis-internship

Lecturer / Senior Lecturer / Reader: Global Terrestrial Water
University of Glasgow

UK

Deadline: 5 March 2025

https://www.jobs.gla.ac.uk/job/lecturer-slash-senior-lecturer-slash-reader-global-terrestrial-water?source=gla.ac.uk

PostDoc

Impacts of Climate Extreme Events on Health

NASA

Deadline: 1 Nov 2024

https://zintellect.com/Opportunity/Details/0296-NPP-NOV24-GSFC-EarthSci

PhD position in Deep learning for automated building damage assessment
University of Surrey

Guildford, England

Deadline: 23 April 2025

https://www.surrey.ac.uk/fees-and-funding/studentships/deep-learning-automated-building-damage-assessment

PhD position within Remote Sensing and Innovative AI for Land Resource Mapping and Monitoring
NMNU

Norway

Deadline: 3 March 2025

https://www.jobbnorge.no/en/available-jobs/job/274754/phd-position-within-remote-sensing-and-innovative-ai-for-land-resource-mapping-and-monitoring

Lecturer / Senior Lecturer / Reader: Natural Hazards and Climate Extremes
University of Glasgow

UK

Deadline: 5 March 2025

https://www.jobs.gla.ac.uk/job/lecturer-slash-senior-lecturer-slash-reader-natural-hazards-and-climate-extremes?source=gla.ac.uk

Grant-Funded Researcher (A) - Remote Sensing and Vegetation Ecology
The University of Adelaide

Australia

Deadline: 18 Feb 2025

https://careers.adelaide.edu.au/cw/en/job/515188/grantfunded-researcher-a-remote-sensing-and-vegetation-ecology
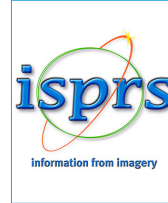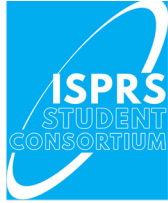
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ACKNOWLEDGEMENT

Stay safe, everyone!

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