News Letter

ISPRS Student Consortium

Interview with Prof. Christian Heipke

Asian Student Activities

SC Activities at the XXII ISPRS Congress

isprs

ISPRS SC NewsLetter

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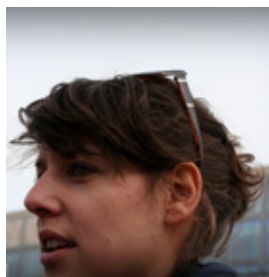- Designers of Newsletter

If you can help us with any of the above, please let us know!

info@isprs-studentconsortium.org

And also...
If you **would like to publish your research work** in the SC Newsletter send us your abstract on email written above. We will soon contact you for further information.

Dear ISPRS SC Newsletter readers,

After a first complete, steady and vital term of Student Consortium activity for and within ISPRS a new period begins for our society. We can say that last four years were a good example of enthusiastic collaboration between and for young people, resulting in many visible outputs: organizing events (especially Summer Schools), acknowledged publicity (existent Newsletter), general recognizability of the SC (constant increasing number of members) and other smaller but important actions, that are making Student Consortium a stable student organization on the map of international networks.

However, there is a new and different challenge in front of us. We live and create in a time marked by rapid changes. What was yesterday's case as a breakthrough can be tomorrow already outdated achievement or inadequate approach to work. Therefore we have to continue with the enthusiasm and even upgrade what we have learned during last period.

I believe that Student Consortium should work as a vibrant platform for education, research and intellectual exchange of information amongst students and young researchers also in the future – open for constructive dialogs and flow of information, with respect of the intellectual diversity of all its members. Therefore it is essential to start with optimistic and committed work at all the fields of our profession. In all this work the idea and the desire is to continue with networking, which will help us to acquire the knowledge easily, in the future to look for new solutions and together with others guide the society in the increasingly successful way. But in all listed here we shouldn't forget that the vision of Student Consortium is not only to gain professional abilities, but also personal qualities. Professional achievements don't have such a value if we cannot share it with good friends.

Upon entering the new quarter year I wish you all a good start, general well-being and successful work. Respect the power of the arguments and knowledge, be curious and active.

Urša Kanjir,
ISPRS SC Chair

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ISPRS Student Consortium

Let's Come Together to Make The World Smaller and Smaller, While Enlarging and Powering Our Student Consortium Network!!

JOIN US!!!

Prof. Christian Heipke

What are your visions as a new General Secretary at the ISPRS organization? Where do you see the ISPRS organization in 4 years?

Some of the grand challenges of today are global change, sustainable development, reliable energy and fresh water supply, mobility, health, feeding the poor, and disaster management. Photogrammetry, remote sensing and geospatial sciences have a lot to offer to successfully tackle these issues, and ISPRS is the premier scientific voice in the international arena in this regard.

ISPRS is unique in its three dimensions
- ISPRS is a scientific society embracing all three areas of photogrammetry, remote sensing and geospatial sciences.
- ISPRS is a society with activities ranging from pure science to exciting innovative applications, thus uniting academia, government, industry, and private business.
- ISPRS is a truly global society, not only serving the needs of groups with intimate knowledge in the field, but of all ages, and all nations. ISPRS is thus also the global society for education, technology transfer and capacity building.

While all three dimensions are of vital importance to ISPRS, I believe that it is decisive to realise that the roots and the main focus of ISPRS is a scientific one. An undisputed lead in scientific matters is the basis of the three dimensions, as it is today's science which defines tomorrow's products and services as well as the answers to global geospatial needs and thus the future of ISPRS.

In the coming four years I will work towards strengthening the scientific base of ISPRS, and thus towards strengthening the society as a whole.

How do you see the role of the Student Consortium in the ISPRS organization?

As mentioned, I believe that global education and technology transfer constitute one of three pillars of ISPRS. The Student Consortium plays a very important role in this regard. It represents the young generation of the society and thus its future, it is active in organizing summer schools, tutorials and workshops around the world. The Student Consortium thus contributes directly and successfully to the aims of ISPRS. Council as a whole pays a lot of attention to these activities and has established a direct link to the Student Consortium through the second vice president Marguerite Madden. The Consortium also has a link into Commission VI "Education, Technology Transfer and Capacity Development" and its working group VI/5 . Council members also try to be present in person during the Student Consortium activities for discussion and teaching. Finally, the ISPRS Foundation financially supports the activities of the Student Consortium.

What in your opinion are the main reasons students and young professionals should join organizations like SC?

I believe there are three main reasons:
- networking: as a young professional, it is imperative to get to know colleagues and partners for future common projects as well as competitors from around the world. Besides technical expertise, personal connections are the corner stone of a successful professional career. IN a network it is also possible to have access to the best in the world - something which is near impossible an a personal basis.

- multi-cultural environment: in organizations such as the ISPRS Student Consortium different cultures mix and mingle. Everybody quickly learns that there are usually many valid answer to a given problem, not just one. Also, a good solution is worth little without a path to get there, and this path may look very different in different cultural settings. Knowledge of such diversity not only enriches one's personal life, it is also an important soft skill and an added bonus when looking for a job.
- fun: getting to know people from around the world and making friends with them is not only a great learning experience, it provides lots of unexpected surprises and lots of fun and satisfaction.
Of course there are other ways to learn about different cultures and experience people from all over the world. When I was at university in the 1980's, the ISPRS Student Consortium did not yet exist. I took off travelling the world on an individual basis as much as I could and explored the globe. Today, joining an organization such as the ISPRS Student Consortium is an ideal way to learn about different cultures, have fun, and prepare yourself for the future - all at the same time and all while meeting great people from all over the world.

Report on Asian student activities on Photogrammetry and Remote Sensing

by Chaoyuan Lo and Hiroyuki Miyazaki

This report introduces the development of Asian student group on photogrammetry and remote sensing. Our scope is to bridge Asian youths for the knowledge translation and social networking. Since last decades, the number of Asian students and young scientists aiming at this research area continues growing. These youths had well-organized local communities in some Asian countries to promote students for their professions. The next step then is to establish the connection between students from different countries for sharing interests and knowledge according

Group photo of the 5th ISPRS-SC Summer School 2010 in Vietnam

to the global perspective. For example, international conferences were good paths to gather students for knowledge translation. However, frequent meeting and mailing were impossible because of financial issues. Following the development of Internet infrastructure, such as e-mail, voice call service, and social networking service, students have increased communication frequency and maintain their relationships. In addition, students can also derive a great opportunity to have brainstorming for the possibility of innovative contribution for societies. In the contribution of public society and academia, young scientists play important roles to be informal mentors for students. During last decades, Asian Association on Remote Sensing (AARS) has attempted to promote youths with above experiences in Asian region. This society holds an annual conference since 1980, which is Asian Conference on Remote Sensing (ACRS).

The beginning of Asian student activities at ACRS started from 2007. This event was held in Kuala Lumpur, Malaysia. AARS organized a competition for youths for introductions to their researches and activities in universities and institutes, namely Student Session (SS). This competition gave them a strong motivation to involve in this communication platform.

At ACRS2008, SS was separated into two parts including "Student Programs" and "Student Activities" in Colombo, Sri Lanka. Professors and researchers for introductions of student program gave the first part. The second part consisted of activity presentation and discussion. This open discussion let students think about how to encourage them for frequently attending ACRS. In their conclusion, financial issues for students were the major considerable topic. These issues included financial supports and travel costs to promote Asian students attending activities. From ACRS2008, these two parts has become the important sessions within the conference program.

For the improvement of student activities, ACRS2009 extended the schedule to arrange three parts for youths. The organizers, who were local students, invite students to

participate one-day technical sessions and present their investigations in Beijing, China. They also held the Youth Party for culture exchanges. The following two parts were also the presentations of student programs and student activities.

Besides these two events, students suggested to establish a communication platform for the sustainable social networking at ACRS2010 in Hanoi, Vietnam. After the closing ceremony of ACRS2010, AARS cooperated with ISPRS WG VI/5 to organize the fifth ISPRS-Student Consortium (SC) Summer School at Vietnam Institute of Geodesy and Cartography during 6-10 November. This event required a reasonable registration

Group photo of the 7th ISPRS-SC Summer School 2011 in Taiwan

fee for Asian students and encouraged them to attend this event. The number of participants was 54 from 13 countries. These two continuous events had shown the benefits to students for saving the costs.

At ACRS 2011, student organizers held a student sesion to let youths introduce their research activities from different universities in Taipei, Taiwan. This event had seven student volunteers from five countries to introduce student activities and their universities. After their introductions,

fifty participants attended this event to discuss which platform could be a possible solution for student networking. The conclusion covered a website, Facebook, LinkedIn, Google Plus, etc. The organizers also prepared "Student Night" and welcomed professors and all students to communicate together. There were about 130 participants attending this banquet. These two events were successful to achieve knowledge translation and social networking for Asian students. In this year, IS-PRS WG VI/5 and AARS also held the seventh summer school at National Central University (NCU), Jhongli, Taiwan during Oct. 8-12. The number of participants was 48. Among them, 19 were Taiwanese students and 29 were from foreign countries. For sharing culture experience and social networking, local organizers also provided two social events within this summer school. After five-year discussions and a series of student activities, we have concluded several issues including student promotion and financial issues. For social networking between Asian students, to establish the "Student Chapter" could be a sustainable scope, which is supported by AARS officially. The proposed statutes of Student Chapter will be discussed at ACRS 2012 in Pattaya, Thailand. Following these statutes, the student consortium for Asian youths will be formalized under AARS. We would expect that the Asian student group could enhance our networks and provide innovations for public societies. At last, Henry Ford's quote could give us a good footnote: "Coming together is a beginning. Keeping together is progress. Working together is success".

Geo-Informatics and Space Technology Development Agency (Public Organization): GISTDA

by Jakrapong Tawala

Geo-Informatics and Space Technology Development Agency (Public Organization): GISTDA, is a public organization under the supervision if the Ministry of Science and Technology. GISTDA has been playing a significant role in direct reception of the earth observation satellite signals, data archiving and processing, image analysis, provision of satellite data and GIS services in various forms, providing technical support, space technology research and development. GISTDA also acts as the national focal point in the field of Remote Sensing/GIS in Thailand. Transfer of geo-information technologies is another main task of GISTDA to promote the use of technologies among the users both from the government and private entities. Besides, opportunities for short and long term training and visits especially for scientists and scholars from neighboring countries to share experiences and knowledge are also welcome.

'**Geospatial information is a vital tool for our country to compete in the international arena**'
Dr. Anond Snidvongs, Executive Director of GISTDA
The interview to Geospatial World about geospatial information.

In order to enhance the utilization in remote sensing and GIS, Geo-Informatics and Space Technology Development Agency (Public Organization): GISTDA was established on November 3, 2000 as a public organization which assumes all responsibilities and activities for space technology and geo-informatics applications.
The THailand Earth Observation Satellite (THEOS) is the first operational earth observation satellite of Thailand. The THEOS program was developed by GISTDA, EADS Astrium, the prime contractor, initiated work on the satellite in 2004. On October 1, 2008, THEOS was successfully launched by Dnepr launcher from Yasny, Russian Federation. Today, GISTDA is developing a worldwide network of distributors to allow the users to use and access to all GISTDA products.
In 2012, GISTDA wishes to humbly express its gratitude to His Majesty the King for graciously naming the first Thai operational EO satellite "Thaichote" signifying the glory of Thailand. Thaichote's major mission is to provide worldwide geo-referenced images to Thailand and countries around the world to support interdisciplinary applications, including agriculture, forestry, land use, environmental monitoring, cartography, water resources, coastal zone, and natural disaster management and so on. Thaichote can support timely image of any part of the world in less than 3 days, with the resolution of 2 meter in panchromatic and 15 meter in multispectral images. Thaichote visible blue band is similar to that of the Landsat Thematic Mapper while the visible green and red and the near-infrared bands are similar to those of the SPOT family of imagers.

Vision: Delivering Values from Space

Objective: Developing geo-informatics and space technology as a non boundary knowledge for the country development

Roles:
- To develop space technology and geo-informatics applications to be beneficial to the general public
- To develop the satellite data base and the derived natural resources information center
- To provide data services relating to space technology and geo-informatics
- To provide technical services and develop human resources in satellite remote sensing and geo-informatics
- To conduct researches and development as well as to implement other activities related to space technology, including the development of small satellites for natural resources survey
- To be the core organization to establish common standards for remote sensing and geo-informatics systems

At the present, GISTDA has a ground receiving station at Ladkarbang, was established in 1982 as first of its kind in Southeast Asia, with a receiving capability of 2,500 km. and Space Kreovation Park (SKP) where creativity and innovation comes together by 2013 at Si Racha, Chon Buri province, which consists of 5 main parts as follows
- Geo-informatics Research & Training Center: As the Geo-Informatics and Training center of the ASEAN for R&D and technology transfer by experts.
- Thaichote Operations Center: Thaichote Operations Center for activities including Thaichote satellite control, mission planning, satellite data receiving, and processing
- Space Technology Laboratory Center: Space Technology Laboratory Center is a center of its kind for Thailand and ASEAN region. The center will be equipped with state-of-the-art instrument for assembling and testing.
- Space Technology Park Building: Space Technology Park Building provides infrastructure supporting R&D activities to be done by private sectors, like Science Park, S and GI-base innovation will be created as GISTDA will bridge the gaps among research institutes, and universities.
- GIS & Space Technology Museum: GIS & Space Technology Museum exhibits all S & GI activities in order to create imagination among the student and people. The museum will be a technical information center as well.

GISTDA aim to expand Thaichote Ground Control Station as an epicenter of SKP for Space & GIS operations, R&D and knowledge transfer. With its strategic location close to the industrial area on the eastern seaboard of Thailand, it shall bridge the gap among GISTDA, the universities and the industry firms through co-operative R&D, human-resource and shared facilities. Thus, SKP can create a unique "Space Park" with dynamic clusters that accelerate economic growth.

For more information, please visit *www.gistda.or.th*
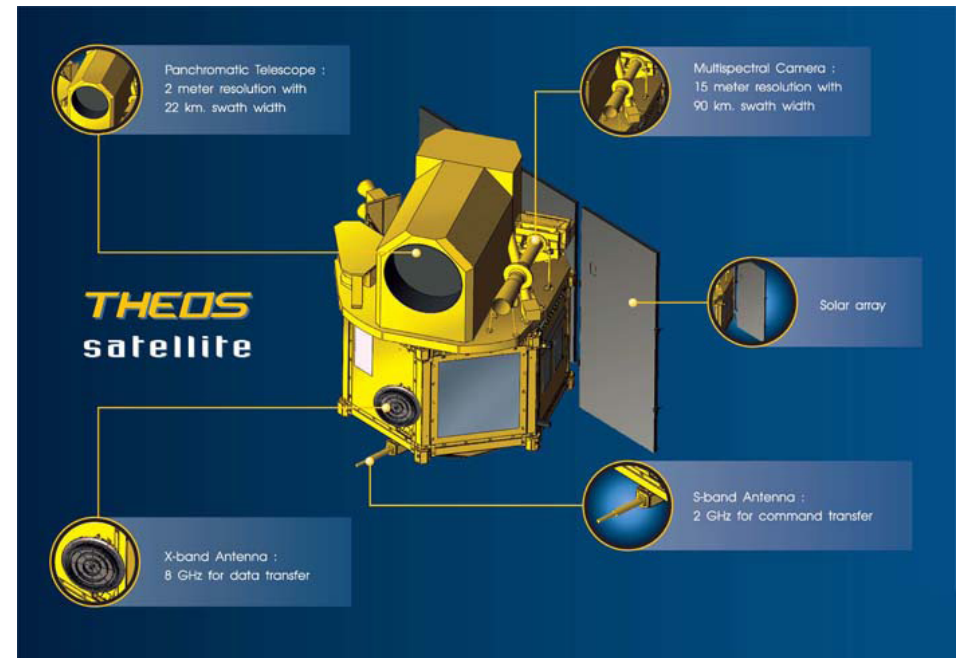
Beyond just a conference – student involvement with the ASPRS

by Ivan Detchev

It was approximately four years ago when I had the chance to attend my first American Society for Photogrammetry and Remote Sensing (ASPRS) conference. I remember landing in Denver on a sunny November day, picking my expedition backpack from the luggage carrousel, stuffing my carry-on in it, and hopping on the bus to downtown. To be honest I had the preconceived idea that everyone in the western states drove their own vehicle, and the land was nothing but a giant network of eight-lane highways. To my surprise I saw a number of wind farms on the way to the city, and I could not help but notice the magnificent view of the Rocky Mountains in the not-so-far distance. Also, little did I know that Denver had the best rated transit system in America at the time. These would not be the only surprises I would encounter during my week as an ASPRS volunteer in Denver.

I had about an hour or two to spare before the start of my volunteer information session at the conference hotel. So as soon as I got to downtown Denver, I pulled my black and white film camera and headed for a short tour of the city centre. I saw skyscrapers, a gothic style cathedral, the state capitol, an impressive clock tower, and the Denver Union Station. Scrolling through my photos though, I also see random transmission lines, construction sites, an old warehouse, back lanes, emergency staircases, parkades and motorcycles. I guess I had subconsciously not only photographed well known landmarks, but also attempted to record an exciting moment in my times of travel.

Once I made it to the hotel lobby I suddenly felt very intimidated. Being used to student hostels, this was my first time to stay in a four-star hotel. With my hands almost shaking I passed my room confirmation sheet to the attendant behind the reception desk, and with a near stutter I explained that ASPRS would cover my accommodation and conference registration since I was a student assistant. With a cold smile (indicating that I had given her more information than she needed to know) the concierge checked me in and explained where I needed to go for my orientation meeting.

I entered a room full of other student volunteers – people I had never met before.

My first thought was that the meeting would feel uncomfortable and it would seem awkwardly long. On the contrary, Kim Tilley, the communications director of ASPRS, called my name, introduced me to the rest of the students and passed me my volunteer package. How did she even know who I was? I guess there is a reason why Kim is the back-bone of anything student-related at the ASPRS. The meeting went quickly, and before I knew it, I was out for dinner with all the volunteers.

My duties at the conference included helping at the registration desk and the staff room, checking participants' badges at the technical sessions, the general assembly, and the exhibition hall, putting up and taking down posters, and participating at workshops. I had a great time not only professionally, but also personally and socially. I made friends with students from Korea, Vietnam, India, the United States, and Latin America. We had profound discussions on the hardships of finding sufficient funding for foreign students in graduate school, the importance of tipping in American restaurants, and how to help the homeless.

In conclusion, I just wanted to point out that ASPRS really makes an effort to accommodate students as much as possible. I think all other imaging and geospatial information organizations related to the International Society for Photogrammetry and Remote Sensing (ISPRS) should follow their lead in this regard. Since my first ASPRS conference I have tried to make the effort and attend one of their conferences (either in the spring or in the fall) every year. And so should you! I cannot guarantee that you will have such a personal experience as I did back in 2008, but you won't know it until you try!

Report on the activities of the Student Consortium (SC) at the XXII ISPRS Congress 2012, Melbourne

by Chaoyuan Lo

Technical session of Youth Forum

Certificates of appreciation

ISPRS held the XXII Congress in Melbourne and had a huge success during 25 Aug. to 1 Sept. 2012. The XXII Congress provided a great opportunity to demonstrate the advancements and applications of new technologies and promote the professions of students and young scientists. In the promotion to the youths, the Student Consortium (SC) and related ISPRS WG VI/5 organised many activities to link their networks and communications. In the exhibition session, the SC also prepared ISPRS-SC newsletters to deliver its latest information for participants at the booth.

The core among these activities was the Youth Forum, which included four technical sessions, a panel discussion, and the SC General Assembly on 27 Aug. In the technical sessions, fifteen student presenters from nine different places participated in this contest to introduce their research results. Their focus topics covered UAV technologies, image matching, data registration, 3D modelling, and others. The Youth Forum Best Paper Award, sponsored by Leica Geosystems with 1000 SFr., was selected by a jury. This award went to Mr. Wilfried Hartmann, ETH Zürich for his paper titled "Determination of the UAV Position by Automatic Processing of Thermal Images". In the panel discussion, three invited speakers, Professor Carolyn Merry (Ohio State Univ.), Professor Kohei Cho (past President of ISPRS Technical Commission VI and AARS General Secretary) and Mr. Jack Ickes (Leica Geosystems), gave several brief speeches and discussed the future vision with youths. The discussed issues, which were proposed by the SC, covered working experience, employment and academic opportunities. These speakers also encouraged youths to face their future careers. In the SC General Assembly, officers from the ISPRS Council, including the President and General Secretary, and the WG VI/5 gave several short speeches about the historical development of the SC and the future visions. Considering the future situation within the next four years, the SC General Assembly also refined the articles of SC statutes. To encourage youths to participate in the ISPRS events, financial support was considered to be one of the solutions, including low registration fees, scholarship, etc. On the other hand, the SC General Assembly elected six new SC board members for the next four years. Based on the international cooperation perspective, the SC will also connect to the Asian Student Group, which belongs to the student chapter of Asian Association on Remote Sensing (AARS), for the network expansion. In addition, the African region is also a possibility to cooperate for the organisation of ISPRS-SC Summer School.

Within the last four years, the SC has achieved several events to promote students and young scientists. Regarding their contributions, Professor Manos Baltsavias (Chair of the ISPRS Working Group "Promotion of the Profession to Young People") and Cemal Özgür Kivilcim (Past Chairperson of ISPRS-SC) were awarded President's Citations and The Willem Schermerhorn Award, respectively. After the closing ceremony of XXII ISPRS Congress, the SC will continue and strengthen the existing activities and distribute newsletters to promote youths' participation within ISPRS.

SC and WG VI/5 past and current officers with the Techncial Commission VI past President, Prof. Martien Molenaar (including the photographer at bottom right)

Determination of the UAV Position by Automatic Processing of Thermal Images

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The application of micro Unmanned Aerial Vehicles (UAVs) in photogrammetry and remote sensing is increasing since they facilitate the rapid and flexible acquisition of areas and objects at a medium scale. If images acquired from micro UAVs need to be accurately geo-referenced, the method of choice is classical aero-triangulation, since on-board sensors are usually not accurate enough for direct geo-referencing. In this paper we investigate whether thermal images in combination with artificial ground control points (GCPs) may be used for direct geo-referencing. Thermal images have lower resolution than RGB images and at the same time more blur and more distortion.

Data acquisition

The UAV system used in our test, Falcon 8 from Ascending Technologies, performs vertical take-off and landing (VTOL). The payload of the system is an uncooled thermal camera FLIR Tau 640 with a relatively high geometric resolution of 640 x 512 pixels. In preparation for image acquisition, the thermal camera is calibrated and flight planning is done. Furthermore, artificial GCPs are distributed in the field. During the flight the thermal camera records continuous video.

Data processing

Data processing starts with the synchronization between the video and the position log of the UAV. Based on the synchronization, thermal images are selected from the video stream. In preparation for bundle adjustment, the GCP locations are detected automatically in the thermal images. The bundle adjustment itself was performed with the photogrammetric software INPHO.

Results

The results of bundle adjustment are affected by the number of GCPs and the applied image matching strategy. To investigate the impacts of both factors, different configurations with a varying number of GCPs and different matching strategies have been tested. Compared with the default settings reducing the search region and increasing the tie point density pays off, meaning that although potentially weaker tie points are added, the increased redundancy improves the robustness against false matches and the block stability. . The accuracy is influenced not only the number and distribution of tie points but also by the number and distribution of the GCPs. Using fewer GCPs, indirect geo-referencing becomes more efficient, due to the reduced effort required for GCP surveying, and when using artificial GCP tar-gets, as we do, also for preparing the targets. Reducing the number of GCPs from 16 to 11 does not have much effect on the object point accuracy. For both cases, the achieved accuracy is about ± 1 cm for the horizontal components and about ± 3 − 4 cm in the vertical direction. Regarding the distribution which is visualized in (Fig. 1), 10 GCPs at the boarder of the bundle block and one GCP in the middle appears to be sufficient for the block tested here.

It is a natural question to ask whether the GNSS and IMU observations from the navigation system on the UAV should be used during bundle adjustment. While they can certainly serve as initial values, the navigation data does not have any positive effect on the bundle adjustment. If given high weights it even degrades performance, supporting the claim that indirect geo-referencing is to be preferred if sensors on micro UAVs are to be oriented accurately.

Conclusions and Outlook

We have implemented and evaluated an automated photogrammetric orientation pipeline for thermal imagery acquired from UAVs, from sensor calibration to aero-triangulation. We have advocated the use of artificial GCPs – on one hand, well-defined natural points are hard to guarantee in thermal images; on the other hand, the extra effort for the GCP targets is offset by the advantage that GCP measurement can be automated.

With the object point accuracy of ± 1 cm in horizontal and ± 3 - 4 cm in vertical direction, the approach should be suitable for most applications where geo-referenced thermal images are required. Furthermore the UAV position could be determined with an accuracy of less than ± 10 cm, a good order of magnitude better than with single-frequency GNSS and cheap inertial navigation. If the orientation procedure could be made to run in real-time, thermal photogrammetry might also be suitable for outdoor UAV navigation.
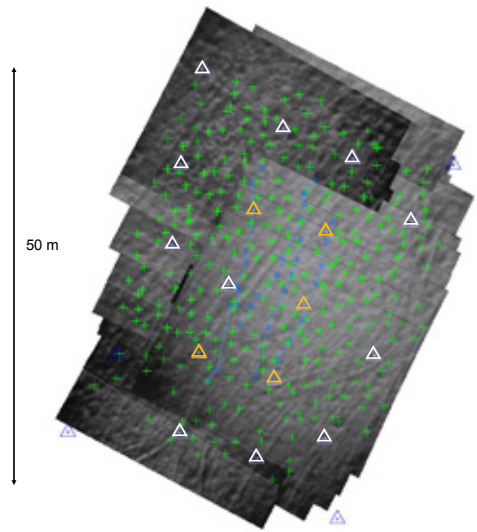

Figure 1: Visualization of the bundle block with tie points (plus signs), GCP locations (triangles) and flight strips (blue lines)

40 Years of UNESCO's World Heritage Convention (1972-2012); the use of Geosciences in the Protection of World Cultural and Natural Heritage

by Thanasis Moysiadis
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November 16th, 2012 marked the 40th anniversary of UNESCO's World Heritage Convention concerning the protection of the world cultural and natural heritage, adopted by the General Conference at its seventeenth session in Paris in 1972 [1], [2].

According to Article 1 of the convention [1], the term "cultural heritage" refers to monuments, groups of buildings and sites of outstanding universal value from a historical, aesthetic, artistic, scientific, ethnological or anthropological point of view.

"Natural heritage" as described in Article 2 [1] refers to natural features, consisting of physical and biological formations, geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants and natural sites, all of which, are of outstanding universal value from the aesthetic, scientific or conservation point of view.

The aim of the World Heritage Convention is the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage, as outlined above, of outstanding universal value. [1], [2]. The two main initiatives of the World Heritage Convention are [1]:

The World Heritage List

The World Heritage Committee was set up to delevop, publish and update selection criteria for inscribing properties of cultural and natural heritage on the World Heritage List. It also draws up operational guidelines for the implementation of the World Heritage Convention, setting out, among other principles, those of monitoring and reporting on properties on the List.

The List of World Heritage in Danger

This List was set up to draw attention to properties needing special international consideration and priority assistance.

The use of photogrammetry, remote sensing and laser scanning contribute towards these two initiatives for the documentation, protection and monitoring of cultural and natural heritage [3], [4].

Accurate geometric modelling of cultural heritage is an irreplaceable part not only for restoration but also for protection purposes. Therefore, it requires the recording of position, shape and dimensions, using the optimal methodology and equipment. There are a wide range of techniques for three dimensional measurements which are characterised by the type of measurements, the scale of the final product, the size, the complexity of the object and the budget available. Techniques ranging from conventional surveying to aerial/close range photogrammetry and aerial/terrestrial laser scanning can be implemented for this modeling, and their use differs according to the aforementioned characteristics [3].

Photogrammetry provides completeness, precision, uniform accuracy, texture and three-dimensional data in cultural heritage documentation [3], [4], [5] using a dense image network geometry or stereopair configuration. New photogrammetric techniques have been developed [5] and are still developing, from standard photogrammetric processing to automatic stereo matching algorithms, while digital photogrammetry and the use of non-metric cameras are widely used [5] due to their high quality, ease-of-use, low cost, and increased resolution. Laser scanning from either aerial of or terrestrial platforms provides very precise three dimensional point data over relatively short time and models accurately both simple and complex surfaces of cultural heritage [3]. The acquisition of XYZ coordinates, the so-called point cloud, refers to a common coordinate system and provides the user an understanding of the spatial distribution of a subject. The point cloud may also include additional information, such as pulse amplitude or RGB data.

By means of satellite remote sensing, natural heritage issues can be addressed to monitor regional and global changes, since data from inaccessible areas are collected. Satellite imagery from both active and passive systems are used to monitor natural features, geological and physiographical formations, natural sites, physical disasters such as earthquakes, floods, pollution of the atmosphere and the oceans, snow distribution, water resources and land use/land cover [6].

Land use/land cover change detection and prediction through the use of satellite imagery, is one of the most significant applications of remote sensing. It contributes significantly to the detection, monitoring and prediction of the changes in natural heritage made over the years or that need to be made in the future. [7]. Therefore, it offers great potential not only for the management of the natural environment but also for the management of social and economical consequences to the human environment. Some of the methodologies for such applications can

be categorized as: delineation of changes, multivariate temporal resolution in feature space, image rationing and subtraction, image regression, post-classification comparison, and multi-temporal linear data transformation [7], [8].

From a local to global level, cultural and natural heritage of outstanding universal value requires their constant identification, protection and conservation. May all the activities, research projects and campaigns of the last 40 years continue to transmit to new generations the aim and the goals of the World Heritage Convention in the years to come.

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SC website and official groups on social media

by Hiroyuki Miyazaki and Mete Ercan Pakdil

We launched the web-based content management system in 2008. As our mission includes providing a platform for exchange of information, it has been our communication platform with ISPRS-SC members spreading worldwide. Features of the SC website are as follows.

Member directory: Since launch of the website, 802 people have registered on the website as a member of ISPRS-SC. Every member can access to information of specific persons and can contact with them. This function is helpful for members to find people for holding events such as workshops. It is also useful for members to find mentors on research activities and career development.

All of personal information is secured since the system is completely developed and hosted by us. Authentication of member account is required for using the member directory. In addition, all requests of member account are validated by web administrator.

Event information: The website is providing up-to-date information of ISPRS-SC events (e.g. summer school) and associated events. Members can post event information and, after review by the web administrator, the post will be announced to the members. This function is a useful tool for making public announcement.

Document archives: The website stores digital archives of ISPRS-SC newsletter and materials of SC events. Everyone can download them without charges and can use them for their purposes, such as self learning.

In addition to the website, we have created official groups on Facebook, the most popular social media in the world. Those are rather informal, so interactive communications are more often than the SC official website. Anyone who has interests on our activity can join the groups and bring announcements and discussions in easy way. On the Facebook group page, you can find up-to-date information of relevant events and job opportunities posted by volunteers.

We also created an official group on LinkedIn, another social media for building professional network. The group is still little active, but we expect this service will accelerate our networking of photogrammetry, remote sensing and spatial information sciences.

By joining the groups on social media, you may find good friends and new opportunities of your professional field. We are planning to link the social media with our website for innovative networking.

Find us as : **ISPRS Student Consortium**

http://www.**linkedin**.com/groups/ISPRS-Student-Consortium-4510838

https://www.**facebook**.com/groups/107547415994592/

Thailand, The Land of Free People

by Ayda F. Aktaş

Welcome to Thailand! Thailand's name in the Thai language is Prathet Thai, which means "Land of the Free." This is because it is the only country in Southeast Asia that was never colonized by a European nation. Thailand is bordered by four countries: Myanmar (formerly Burma) to the north and west, Laos to the north and east, Cambodia to the southeast, and Malaysia to the south. And because of its location, Thailand's culture and history are heavily influenced from India and China.

Thailand is a constitutional monarchy. The Chakri Dynasty is the current ruling royal house of the Kingdom of Thailand (the Head of the house is the King of Thailand) since the founding of the city of Bangkok in 1782 by King Buddha Yodfa Chulaloke (Rama I). King Bhumibol Adulyadej (Rama IX), who is the reigning King of Thailand, is the world's longest-serving current head of state and the longest-reigning monarch in Thai history, ascended the throne in 1946.

The capital and largest city is Bangkok, which is Thailand's political, commercial, industrial and cultural hub. The ceremonial name for Bangkok holds the Guinness Record as the longest name for a place. It is "Krung Thep Mahanakhon Amon Rattanakosin Mahinthara Yuthaya Mahadilok Phop Noppharat Ratchathani Burirom Udomratchaniwet Mahasathan Amon Piman Awatan Sathit Sakkathattiya Witsanukam Prasit". This stands for "City of Angels, Great City of Immortals, Magnificent City of the Nine Gems, Seat of the King, City of Royal Palaces, Home of Gods Incarnate, Erected by Visvakarman at Indra's Behest".

The country is deeply spiritual and Buddhism is the main religion, with more than %90 of the population Buddhist. It's easy to see wats (temples), Buddha statues, and mini offerings everywhere.

The local climate is tropical and characterized by monsoons within three seasons (hot-dry season, wet season and cool season). There is a rainy, warm, and cloudy southwest monsoon from mid-May to September, as well as a dry, cool northeast monsoon from November to mid-March.

Thailand is full of surprises. It has some of the most Guinness World Records per person in the world, including largest ever aerobics workout, biggest hamburger, man with longest hair and most linked skydivers, most couples married underwater, most Mini Coopers in a convoy. In addition, it is home to the world's largest gold Buddha, the largest crocodile farm, the largest restaurant, the longest single-span suspension bridge, and many more.

During and afterwards the ACRS 2012 and 8th ISPRS Student Consortium and WG VI/5 Summer School there will be:
- Loi Krathong festival (the festival of lights) (28th Nov)
- River Kwai Bridge Week (7-16th Dec)
- Thai King Birthday Celebrations (05th Dec)
- Ayutthaya World Heritage and Red Cross Fair (10-19th Dec)

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- On-screen vector capture, vector import and export, vector display, polygonal image subsets;
- Interactive measurement and area histograms;
- Slope, aspect, raster buffering, multi-criteria decision making.

Dragon is fully internationalized and is available in more than a dozen languages including Thai, Bahasa Indonesia, Traditional Chinese and Turkish, as well as European languages. Context-sensitive help makes learning a snap. The Dragon Programmer's Toolkit provides an API so researchers can easily implement their own processing algorithms to be integrated with the package.
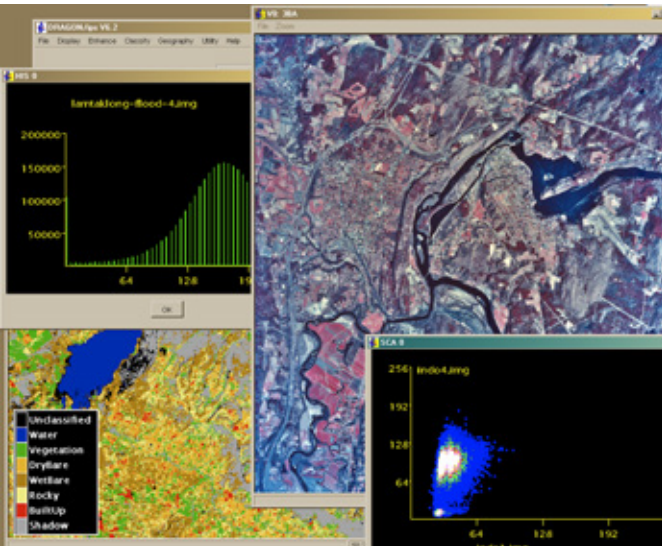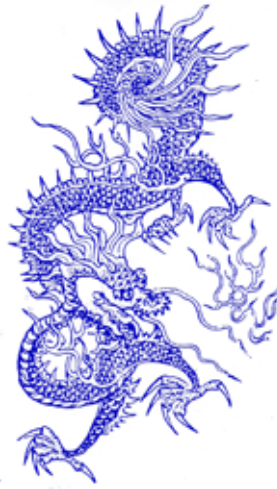
OpenDragon, a version limited to 1024x1024 image subsets, is available for free download and is in use in more than eighty countries.

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More: http://www.open-dragon.org and http://www.dragon-ips.com

WinASEAN 5.0

WinASEAN 5.0 is the latest development version of the software package WinASEAN – Windows based Advanced System for Environmental data ANalysis with remote sensing. The WinASEAN has been long time used for hands-on training in the framework of the Earth Observation for Tropical Ecosystem Management Seminars, which had been annually organized from 1992 to 2000 by NASDA and UN ESCAP. The WinASEAN 5.0 is released in two versions: educational WinASEAN Edu and professional WinASEAN Pro. The only difference between two packages is that educational version can process image with size less than 2000 pixels per line and 2000 lines per image. All analysis functions are identical for both versions except that image display modules of educational version has the capability to show an image with dimension the same as of the professional one. WinASEAN 5.0 can process both one byte and two byte image data.

Detail description of WinASEAN including information on algorithm can be found in WinASEAN help. WinASEAN user interface and workflows were designed and developed primarily for training and education purposes. However, the system can be used for practical use due to well-developed algorithm, which allows high performance of data analysis.

For more information contact: duong.nguyen2007@gmail.com
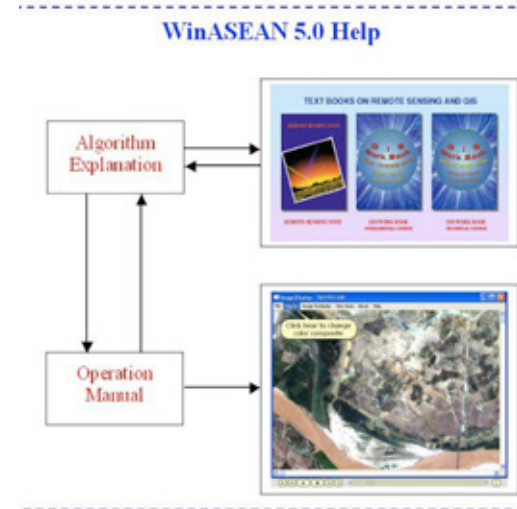
European LIDAR Mapping Forum (ELMF 2012)
Salzburg, Austria, 4-5 December 2012
For more info visit: http://www.lidarmap.org/ELMF/

The 8th Int. Symposium on Geo-information for Disaster Management
Enschede, The Netherlands, 13-14 December 2012
For more info visit: http://www.gi4dm.net/2012/

International Conference on Computer Vision in Remote Sensing (CVRS2012)
Xiamen, China, 16-18 December 2012
For more info visit: http://cvrs2012.xmu.edu.cn/

Defence Geospatial Intelligence (DGI): GeoInt Case Studies, Strategies & Tech.
London, UK, 21-23 January 2013
For more info visit: www.dgieurope.com

ESA 2nd Advanced Course on Radar Polarimetry 2013
Frascati, Italy, 21-25 January 2013
For more info visit: https://earth.esa.int/web/guest/polarimetrycourse2013

Wavelength Conference 2013
Glasgow, UK, 11-13 March 2013
For more info visit: http://www.rspsoc-wavelength.org.uk/wavelength2013

International Workshop "The Role of Geomatics in Hydrogeological Risk"
Padua, Italy, 27-28 February 2013
For more info visit: http://www.cirgeo.unipd.it/geomatics4risk/

Geoinformatics 2013
Heidelberg, Germany, 13-15 March 2013
For more info visit: http://geoinformatik2013.de/index.php/en/

TUTORIALS

Geo Tutorials
http://geotutorials.ro/

RESOURCES

CartoTalk
http://www.cartotalk.com/

LandsatLook Viewer
http://landsatlook.usgs.gov/

EDUCATION

NASA Academy
https://www.academyapp.com/

FREE SOFTWARE

OSGeo-Live 6.0
http://live.osgeo.org

PostgreSQL
http://www.postgresql.org/

JOBS, CAREER OPPORTUNITIES

Careers Cafe
http://www.techjobscafe.com/?site=GIS

GoGeomatics
http://gogeomatics.ca/

JOURNALS

Journal of Geodesy and Geoinformation
http://www.hkmodergi.org/jgg/

European Journal of Remote Sensing
http://www.aitjournal.com/

RELATED ORGANIZATIONS, ASSOCIATIONS

United Nations Office for Outer Space Affairs (UNOOSA)
http://unoosa.org/

Geological Remote Sensing Group (GRSG)
http://www.grsg.org.uk/

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Our previous Newsletter issues