

March 15-17, 2019
Prague, Czech Republic

CONFERENCE ABSTRACTS

**2019 2nd International Conference on Geoinformatics and Data
Analysis
(ICGDA 2019)**

**2019 2nd International Conference on Software and Services
Engineering
(ICSSE 2019)**

March 15-17, 2019

Prague, Czech Republic

Venue: Clarion Congress Hotel Prague

Add: Freyova 33, 190 00 Praha 9 – Vysočany

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Welcome Letter

Dear professors and distinguished delegates,

It is our great pleasure and privilege to welcome all of you to the 2019 2nd International Conference on Geoinformatics and Data Analysis (ICGDA 2019) and 2019 2nd International Conference on Software and Services Engineering (ICSSE 2019) here in Prague. This unique gathering aims to bring together international academicians, scientists and industrialists for knowledge sharing, exchange of ideas, collaborations and presentation of their research outcomes.

We wish to express our sincere appreciation to all individuals and organizations who have contributed to the conference, especially to our colleagues in the technical program committee for their thorough review of all the submissions, which is vital to the success of the conference, and also to the members in the organizing committee who had dedicated their time and efforts in planning, promoting, organizing and helping the conference.

Special thanks are extended to our keynote speakers: Prof. Vit Vozenilek, from Palacky University, Czech Republic, Prof. Petr Kubicek, from Masaryk University Brno, Czech Republic and Prof. Salah Bourenane, from Ecole Centrale Marseille, France.

It is high time that such an event took place to highlight the remarkable contribution which Geoinformatics and Data Analysis, Software and Services Engineering Technology make in so many areas of our lives.

I am sure you will have fruitful and rewarding exchanges in the next few days. I wish you every success with this important conference and I look forward to learning about the outcome. I warmly welcome you again.

Yours Sincerely

ICGDA 2019 & ICSSE 2019 Organizing Committee

Yours sincerely,

Conference Organizing Committee
Prague, Czech Republic

Instructions for Presentation

Oral Presentations

- **Time:** a maximum of 15 minutes in total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
- You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
- It is suggested that you email a copy of your presentation to your personal inbox as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fonts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
- **Movies:** If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

Dress code

- Please wear formal clothes or national characteristics of clothing

Notes and Tips


- Your paper ID will be required for the registration.
- Your punctual arrival and active involvement in each session will be highly appreciated.
- One best oral presentation will be selected from each oral session. The Certificate for the best one will be awarded at the end of each session.
- After the session, there will be a group photo for all presenters in this session.
- Please kindly make your own arrangements for accommodations.

General Agenda at a Glance

< March 15, 2019, Friday >

 IN FRONT OF THE RECEPTION (2ND FLOOR)	
10:00-17:00	Registration & Materials Collection

Morning <March 16, 2019, Saturday >

 Banquet Room Aquarius		
09:00-09:10	Welcome and Opening Remarks	
	Prof. Vit Vozenilek, Palacky University, Czech Republic	
09:10-10:00	Keynote Speech I	Prof. Petr Kubicek Masaryk University Brno, Czech Republic Speech Title: Cartography in Virtual Environments: The Role of Selected Visual Variables for Indoor Navigation
10:00-10:30	Coffee Break & Group Photo	
10:30-11:20	Keynote Speech II	Prof. Salah Bourenane Ecole Centrale Marseille, France Speech Title: Advances in Hyperspectral Image Processing with Recent Statistical Methods
11:20-12:10	Keynote Speech III	Prof. Vit Vozenilek Palacky University, Czech Republic Speech Title: Visual Analytics of Regional Distribution of Graduates in Chemistry, Economy and Technical Fields in the Czech Republic





Lunch Time <12:10-13:30>

Location: Veduta Restaurant (2ND FLOOR)

Note: Lunch coupon is needed for entering the restaurant.

Afternoon < March 16, 2019, Saturday>

13:30-15:30	<p>Session I Software design and testing</p>	 Banquet Room Aquarius
	<p>Paper ID SE008, SE009, SE011,SE012,SE013,SE015,SE023,SE028</p>	


13:30-15:30	<p>Session II Modern information technology and application</p>	 Banquet Room Taurus
	<p>Paper ID D001, D003, D014, D021, SE005, SE006, SE036, SE037</p>	



Coffee Break <15:30-16:00>



FOYER (3RD FLOOR)

16:00-18:15	<p>Session III Computer theory and technology</p>	 Banquet Room Aquarius
	<p>Paper ID D004, D008, D010, D012, D018,D020, SE007, SE034, D013</p>	




Dinner Time <18:30-19:30>

Location: Veduta Restaurant

Note: Dinner coupon is needed for entering the restaurant.

< March 17, 2019, Sunday>

 In front of Clarion Congress Hotel (Team up)	
09:00-17:00	One Day Tour

Introduction of Speakers



**Prof. Vit Vozenilek,
Palacky University, Czech Republic**

Prof. Vit Vozenilek is a full professor and Ph.D. supervisor in Faculty of Science, Palacky University Olomouc, Czech Republic. He got his master degree in geography and mathematics in 1988 in Masaryk University, Brno, Czech Republic. He got a Ph.D. degree in physical geography in 1992 in the same university. Then he worked at Dept. of Geography at Palacky University Olomouc, Czech Republic, as an assistant for cartography and spatial modeling for more than seven years. He has involved many key projects as a supervisor for geocomputation and scientific visualization. In 1993, he received research scholarship at Birbeck College, University of London, UK. In 2001 he established Dept. of Geoinformatics at Faculty of Science, Palacky University Olomouc, Czech Republic. He is still its head. In 2010-2014, he held the position of vice-president of Palacky University Olomouc. His research interests include geovisualisation (map making, atlas compilation, cognition aspects of map use) and spatial modeling. In recently 10 years, Prof. Vozenilek has published 7 books, 5 atlases, 35 conference papers and 28 journal papers.

Prof. Vozenilek serves as vice-president of International Cartographic Association, vice-president of Czech Cartographic Society, a member of many scientific journals, boards, councils, and committees. He serves as a reviewer for many research funds and journals, including once with a high impact factor. Prof. Vozenilek gave many invited lectures at universities abroad – UK, USA, Israel, Germany, China, Poland etc. He was the keynote speakers in many international conferences.

Speech Title: Visual Analytics of Regional Distribution of Graduates in Chemistry, Economy and Technical Fields in the Czech Republic

Abstract:

This paper describes visual analytics in spatial analyses of the Distribution of Graduates in Chemistry, Economy and Technical Fields in the Czech Republic. To date, the use of GIS to explore human space, i.e. as encountered by an individual, has been very limited. This is partly due to the fact that most GIS operations are based on a traditional geographical view of space which is essentially two-dimensional with a fixed and external frame of reference. The absence of GIS procedures that consider social environment representations together is a clear indication, among others, of these limitations. Hence, traditional GIS operations are inadequate for developing models of human-space interaction. Though some attempts exist to relate GIS with cognition and perception, these have mostly concentrated on social preference. Ultimately, the design of new GIS routines, and/or the development of new spatial tools that will accommodate human and other factors, will become necessary if cognitive and perceptual factors are to be linked with spatial information. In the meantime, existing GIS can be used to illustrate the necessity and potential of these types of analyses. The idea that any spatial configuration structures human visual space by virtue of its distribution and geometry, and that such structure can be described spatially using different parameters, underlies the entire contribution. Visual analytics combines a series of your strongest, clearest elements such as maps, charts, and text.



Prof. Petr Kubicek
Masaryk University Brno, Czech Republic

He received his master degree (1987) as well as Ph.D. (1992) at the Department of Geography, Faculty of Science Masaryk University in Brno. In 1988 - 2000, he worked as a lecturer of physical geography, geomorphology, and GIS at the same department and actively participated in EU projects dealing with transfer of GI/GIS technologies, cross-border cooperation and development of data warehouses (Panel GI, CREDO, Well GIS). At the beginning of the 21st century he left the academia and spent five years at the commercial sector working in telecommunications and as a business representative for INTERGRAPH. Since 2005, he has been working at the Institute of Geography of Masaryk University in Brno. He defended the habilitation thesis in 2012 (Selected aspects of geospatial data uncertainty visualization) and currently specializes in digital cartography and geoinformation infrastructure.

Dr. Kubicek cooperates on the international level with International Cartographic Association commissions on Use, User and Usability Issues and Cognitive Issues in Geographic Information Visualization. He is also acting as a member of the national GeoInfo Strategy team preparing the document for the national government. He has over 90 publications focused on geoinformation and digital cartography.

Speech Title: Cartography in Virtual Environments: The Role of Selected Visual Variables for Indoor Navigation

Abstract:

The use of Virtual Reality (VR) in general and virtual geographic environments (VGEs) in particular is becoming more and more common. However, the use and usability of traditional cartographic graphical variables within such environments is still rather unclear. Presented speech briefly reviews the studies about the three-dimensional aspects of spatial visualization and defines the context for scientific as well as application development. Further, we present several empirical studies focusing on the role of colour hue, the level of realism within the VR environment, and graphical stimuli on the task (wayfinding) performance of users.



Prof. Salah Bourennane,
Ecole Centrale Marseille, France

Salah Bourennane is currently a full Professor and he held also the position of the Dean of Research at the Ecole Centrale de Marseille, France. He is also the head of the Multidimensional Signals Group at Institut Fresnel, Marseille. He has over 30 years of research experience in the field of signal and image processing. His current research interests include statistical signal processing, array processing, image processing, remote sensing, tensor signal processing, and performance analysis. He authored over 350 research papers in various top-tier international journals and conferences, and edited many books and served as a guest editor of several special issues. He served on the editorial boards of many international journals and proceedings including the International Journal of Signal Processing, Image Processing and Pattern Recognition, The International Journal of Image and Signal Systems Engineering, Journal of Remote Sensing and Technology, among others.

He has served on the technical program committees for numerous premier conferences and workshops including Advanced Concepts for Intelligent Vision Systems, International conference on latent variable analysis and signal separation, International Conference on Vision, Image and Signal Processing, and many others. He was an organizer of several international conferences such as the 6th European Workshop on Visual Information Processing at Marseille, 2016. He received a Ph.D. degree from Institut National Polytechnique de Grenoble, France, in signal processing.

Speech Title:

Advances in Hyperspectral Image Processing with Recent Statistical Methods

Abstract:

Tensor formulation in signal processing has received great attention since the recent development of multi-component sensors, especially in hyperspectral imagery, video, Biometry, etc.. Indeed, the digital data obtained from these sensors are fundamentally higher order tensor, that is, multiway arrays whose elements are accessed via more than two indexes. Each index is associated with a dimension of the tensor generally called mode. An hyperspectral image is a multidimensional array also named as a third order tensor and it normally consists of hundreds of spectral bands. While acquired images in hyperspectral imagery are disturbed by additive noise, which can degrade classification and target detection applications. To reduce the noise, some new approaches, such as tensor decomposition methods, have been used to denoise those images and showed some prospects in this field. Multiway filters are proposed to process a HSI as a whole entity, the filter in each mode is computed as a function of the filters in other modes, which reflects its capability in integrally utilizing the information in each mode of the multidimensional data. In practice, HSIs are always disturbed by hard-removed non-white noise, but the multiway filters could not deal with the cases with non-white noise. Recent techniques to process these HSIs are discussed in this talk. The experiments of simulated and real-world images are given to present the performances of target detection after denoising by different tensorial filters.

One Day Tour

Team up: 08:50, In front of Hotel Congress

Český Krumlov Town

View of Český Krumlov



The settlement arose beneath the castle, which was erected from about 1240 onwards by a local branch of the noble Vítkovci family, descendants of Witiko of Prčice. The fortress was first mentioned in a 1253 deed as Chrumbenowe. According to local legend, the name derives from Middle High German *krumbe ouwe* which can be translated as "crooked meadow", after a bend of the Vltava River. It was also mentioned in the 1255 *Frauendienst* poem by minnesinger Ulrich von Liechtenstein. Located at a ford of an important trade route in the Kingdom of Bohemia, a settlement arose soon after beneath the

castle. The Czech name Krumlov is documented as early as in 1259. Most of the architecture of the old town and castle dates from the 14th through 17th centuries; the town's structures are mostly in Gothic, Renaissance, and Baroque styles. The core of the old town is within a horseshoe bend of the river, with the old *Latrán* neighborhood and castle on the other side of the Vltava.

Český Krumlov Castle



Český Krumlov Castle is unusually large for a town of its size; within the Czech Republic it is second in extent only to the Hradčany castle complex of Prague. Inside its grounds are a large rococo garden, an extensive bridge over a deep gap in the rock upon which the castle is built, and the castle itself, which in turn consists of many defined parts dating from different periods. After the garden had been inadequately maintained in the second half of the 20th century, the site was included in the 1996 World Monuments Watch by the World Monuments Fund. With financial support from American Express the garden's central fountain was documented and reconstructed, and remains functional today.

Church of St. Vítus (*Kostel Sv. Víta*) is a Gothic church, inside the Castle, dating back architecturally to the 15th century, with frescoes from the same period.

◇ This is only preliminary tour program and might be modified according to actual conditions. Your understanding will be much appreciated.

◇ Travel costs doesn't include attraction tickets and lunch costs.

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Conference Venue

VENUE Name: Clarion Congress Hotel Prague



Address:

Freyova 33, 190 00 Prague, Czech Republic
TEL: +420 211 131 139

How to make reservation:

E-mail: reservation@cchp.cz
Tel: +420 211 131 119
Web: www.clarion-hotels.cz

How to get to:

Transport from the Vaclav Havel Airport by taxi takes about 30-45 min. (19,5 km/ 12 miles). Hotel taxi at the rate of CZK 990. For reservation please contact concierge (concierge.cchp@clarion-hotels.cz, + 420 211 131 137), or reservation department (reservation.cchp@clarion-hotels.cz, + 420 211 131 119). Please book at least 24 hours in advance.

Points of interest:

Wenceslas Square

Wenceslas square – the most famous cultural and business centre of Prague. In the fact it's a boulevard with many shops, restaurants and bars. Just 15 minutes from our hotel by underground, yellow line B.

Note
