TUM

PIA19
Photogrammetric Image Analysis

MRSS19
Munich Remote Sensing Symposium

Final Program

18 - 20 September 2019
Technische Universität München
Munich, Germany

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Pattern Analysis in Remote Sensing

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Automated extraction of objects from remotely sensed data is an important topic of research in Computer Vision, Photogrammetry, Remote Sensing, and Geoinformation Science. In order to discuss recent developments and future trends in research in automatic object extraction and their influence on sensors and processing techniques, the well-known ISPRS workshop "Photogrammetric Image Analysis" (PIA) and the "Munich Remote Sensing Symposium" (MRSS) are held as a common event for the first time.

While in the past PIA specialised on the automatic exploitation of the image content, MRSS focuses on the geometric processing of aerial and in particular of space imagery. Realising that both areas - geometry and semantics - can significantly support each other when considered together in exploitation of images and point clouds, the two events, organised under a common roof, are held at Technische Universität München (TUM) in September 2019. At the same time, they keep their identity, as the meeting is organised as two parallel workshops with common plenary sessions and common proceedings.

The aim of the common event is to seek, exploit and deepen the synergies between geometry and semantics, and to give the two scientific communities the possibility to discuss with and to learn from each other. Oral sessions with time slots of 25 min give space of 5 min for discussion of each presentation. Particular attention is also given to the poster sessions, which are supported by short oral presentations of the presenter before. The joint event addresses experts from research, government, and private industry. It consists of high quality papers, and provides an international forum for discussion of leading research and technological developments as well as applications in the field. It is worth mentioning that the ISPRS Foundation, Inc. (TIF) supports the event by providing **six travel grants** to qualified individuals especially from developing countries and regions.

Prospective authors were invited to submit either full papers or abstracts. In total we received **114** contributions from **28** countries.

Full papers (max. eight pages) underwent a rigorous double blind peer review process. We received **48** full papers for review. Most papers were reviewed by three members of the program committee, **16** papers were reviewed by four members of the program committee. In total we received **157** full paper reviews from **35** reviewers. The maximum number of full papers per reviewer was eight. Altogether **31** papers were accepted based on the reviews for publication in the "ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences" which correspond to an acceptance rate of **65%**. The fact that the full papers were peer reviewed is mentioned on each paper.

Papers not passing the full paper peer review process were considered in the following abstract review process. In total **83** contributions were reviewed for publication in "The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences". Finally **43** final papers (**52%**) were considered for publication.

In addition, I like to express my thanks to the Local Organising Committee, without whom this event could not have taken place. Ludwig Hoegner did a great job with the management of the conference tool. The final word processing of all incoming manuscripts and the preparation of the proceedings by Yusheng Xu are gratefully acknowledged. Christian Albrecht and Rong Huang also did a great job organizing the social event. We would also like to thank Christine Elmauer, Jingwei Zhu, Joachim Gehrung, Björn Borgmann, and Lealem Tessema for their support to make PIA19+MRSS19 a successful event.

Uwe Stilla

Conference Chair of PIA19+MRSS19

Conference Chair

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Program Overview

Time	Wednesday 09-18	Thursday 09-19	Friday 09-20
08:00		Registration	Registration
08:30		Session O_M&L Mapping and Localisation	
09:00			Session O_RAD Radar / Session O_RSD Remote Sensing Data
09:30			
10:00		Session O_KEY-2 Invited Talk	
10:30		Coffee Break	Coffee Break
11:00	Registration	Session O_PCP Point Cloud Processing	Session O_DNN Deep Learning in Remote Sensing
11:30			
12:00	Opening	Lunch	Closing
12:30	Session O_KEY-1 Keynote		
13:00	Session O_URB Urban Mapping		Farewell
13:30		Session O_FOR Forestry	
14:00			
14:30			
15:00	Coffee Break	Session O_SP3 Short Oral / Session O_SP4 Short Oral	
15:30	Session O_CAL Calibration / Session O_LCU Land Cover & Land Use	Poster Sessions P_PHO P_PCP P_DNN P_M3M	
16:00			
16:30	Session O_SP1 Short Oral / Session O_SP2 Short Oral	Session O_AGR Agriculture	
17:00			
17:30	Poster Sessions P_CAR P_VDP P_LCU		
18:00			
19:00	Icebreakter	Social Event	

September 18, Wednesday

11:00	**Registration** [Immatriculation Hall]
12:00	**Welcome and Opening** [Theresianum 0606]
12:15	Session O_KEY-1: **Keynote** *Chair:* Mayer H [Theresianum 0606]
12:15	**Direct methods for realtime visual SLAM** **Cremers D** Technical University of Munich (TUM), Germany
13:00	Session O_URB: **Urban Mapping** *Chair:* Mayer H [Theresianum 0606]
13:00	**Ultra-high resolution imaging of facades and vertical infrastructure by carborne SAR and airborne CSAR** Palm S[1,3], Sommer R[1], Tessmann A[2], Stilla U[3] [1]Fraunhofer FHR, Germany [2]Fraunhofer IAF, Germany [3]Technical University of Munich (TUM), Germany
13:25	**Semantic urban mesh enhancement utilizing a hybrid model** **Tutzauer P, Laupheimer D, Haala N** University of Stuttgart, Germany
13:50	**Efficient surface-aware semi-global matching with multi-view plane-sweep sampling** Ruf B[1,2], Weinmann M[2] [1]Fraunhofer IOSB, Germany [2]Karlsruhe Institute of Technology, Germany
14:15	**A representation of MLS data as a basis for terrain navigability analysis and sensor deployment planning** Gehrung J[1,2], Hebel M[1], Arens M[1], Stilla U[2] [1]Fraunhofer IOSB, Germany [2]Technical University of Munich (TUM), Germany
14:40	**Coffee Break** [Immatriculation Hall]

15:10	Session O_CAL: **Calibration** *Chair:* Meidow J [Theresianum 0606]
15:10	**Analysis of influencing factors of curve matching based geometric calibration for ZY3-02 altimeter data** **Zhou M[1], Chen L[1,2], Wang J[1], Teng G[1], Li C[1], Yao Q[1], Chen J[1]** [1]Chinese Academy of Sciences, PR China [2]University of Chinese Academy of Sciences, PR China
15:35	**Modelling wide-angle lens cameras for metrology and mapping applications** **Jarron D[1], Shahbazi M[1], Lichti D[1], Radovanovic R[2]** [1]University of Calgary, Canada [2]McElhanney Geomatics Engineering Ltd.
16:00	**Impact of different trajectories on the extrinsic self-calibration for vehicle-based mobile laser scanning systems** **Hillemann M[1,2], Jutzi B[1]** [1]Karlsruhe Institute of Technology, Karlsruhe, Germany [2]Fraunhofer IOSB, Germany
15:10	Session O_LCU: **Land Cover & Land Use** *Chair:* Reinartz R [Theresianum 0602]
15:10	**A comparison between the hadoop and spark distributed frameworks in the context of region-growing segmentation of remote sensing images** **Bides de Andrade R[1], Fonseca dos Santos JM[1], Ostwald Pedro da Costa GA[1], Abelha Mota GL[1], Nigri Happ P[2], Queiroz Feitosa R[2]** [1]Rio de Janeiro State University, Brazil [2]Pontifical Catholic University of Rio de Janeiro, Brazil
15:35	**A comparative analysis of unsupervised and semisupervised representation learning for remote sensing image categorization** **Soto Vega PJ[1], Bermúdez Castro JD[1], Nigri Happ P[1], Queiroz Feitosa R[1,2]** [1]Pontifical Catholic University of Rio de Janeiro, Brazil [2]Rio de Janeiro State University, Brazil
16:00	**Semantic segmentation of airborne images and corresponding digital surface models -- additional input data or additional task?** **Schmitz M, Brandenburger W, Mayer H** Bundeswehr University Munich, Germany

16:30	Session O_SP1: **Short Orals** [Theresianum 0606]
16:30	Session O_SP2: **Short Orals** [Theresianum 0602]
17:00	Session P_CAR: **Autonoumous Driving (Poster)** [Immatriculation Hall]
P01	**A concept for an automated approach of public transport vehicles to a bus stop** Albrecht C, Stilla U Technical University of Munich (TUM), Germany
P02	**Environmental data delivery for automotive simulations by laser scanning** Barsi A[1], Csepinszky A[2], Krausz N[1], Neuberger H[1], Poto V[1], Tihanyi V[1] [1]Budapest University of Technology and Economics, Hungary [2]NNG
P03	**Semantic road scene knowledge for robust self-calibration of environment-observing vehicle cameras** Hanel A, Stilla U Technical University of Munich (TUM), Germany
P04	**On the fusion of camera and LiDAR for 3D object detection and classification** Kozonek N, Zeller N, Bock H, Pfeifle M Visteon, Germany
P05	**INS-aided 3D LiDAR seamless mapping in challenging environment for future high definition map** Tsai GJ[1], Chiang KW[1], El-Sheimy N[2] [1]National Cheng-Kung University, Taiwan [2]University of Calgary, Canada
17:00	Session P_LCU: **Landcover & Landuse (Poster)** [Immatriculation Hall]
P06	**Fuzzy logic based burned severity classification and mapping with Landsat-8 data** Valipour Shokouhi B[1], Eslami M[2] [1]Tartu University, Estonia [2]University of Tehran, Iran
P07	**Spatiotemporal analysis on CO2 emissions from households of Japan** Cong R, Saito M, Hirata R, Ito A National Institute for Environmental Studies, Japan
P08	**Semantic segmentation of water bodies in multi-spectral satellite images for situational awareness in emergency response** Wieland M, Martinis S, Li Y German Aerospace Center (DLR), Germany

P09	**Machine learning for sea ice monitoring from satellites** **<u>Dumitro CO</u>, Andrei V, Schwarz G, Datcu M** German Aerospace Center (DLR), Germany
P10	**Mapping glacier changes using clustering techniques on cloud computing infrastructure** **<u>Ayma V</u>[1,2], Beltrán C[1], Happ P[3], Costa G[4], Feitosa R[3,4]** [1]Pontifical Catholic University of Peru, Peru [2]Peruvian Navy, Peru [3]Pontifical Catholic University of Rio de Janeiro, Brazil [4]Rio de Janeiro State University, Brazil
P11	**Improvement of existing and development of future copernicus land monitoring products - the ECoLaSS project** **<u>Sevillano Marco E</u>, Schwab K, Sommer C, Probeck M** GAF AG, Germany
P12	**Real-time wildfire detection from space - a trade-off between sensor quality, physical limitations and payload size** **<u>Shah S</u>, Gruebler T, Krempel L, Ernst S, Mauracher F, Contractor S** Orbital Oracle Technologies GmbH, Germany
P13	**Characterization and modeling surface soil physicochemical properties using Landsat images: a case study in the Iraqi Kurdistan region** **<u>Al-Quraishi AMF</u>[1], Sadiq HA[2], Messina JP[3]** [1]Knowledge University, Iraq [2]Salahaddin University, Iraq [3]Michigan State University, USA
P14	**Statistical analysis of airborne imagery combined with GIS information for training data generation** **<u>Häufel G</u>[1], Bulatov D[1], Helmholz P[2]** [1]Fraunhofer IOSB, Germany [2]Curtin University of Technology, Perth, Australia
P15	**UAS imaging applications to monitor restored peatlands** **<u>Ikkala LE</u>** University of Oulu, Finland
P16	**Aggregating cloud-free Sentinel-2 images with google earth engine** **Schmitt M[1], Hughes L[1], <u>Qiu C</u>[1], Zhu XX[1,2]** [1]Technical University of Munich (TUM), Germany [2]German Aerospace Center (DLR), Germany

17:00	Session P_VDP: **Video Data Processing (Poster)** [Immatriculation Hall]
P17	**Events recognition for a semi-automatic annotation of soccer videos: a study based deep learning** **Kazi Tanil LF**, Ghomari A, Kazi Tani MY University of Oran1, Algeria
P18	**Development of a high-speed videogrammetric measurement system with application in large-scale shaking table test** **Gao S**[1], **Ye Z**[1,2], **Wei C**[1], **Liu X**[3], **Tong X**[1] [1]Tongji University, PR China [2]Technical University of Munich (TUM), Germany [3]Beijing University of Civil Engineering and Architecture, PR China
P19	**Video image target recognition and geolocation method for UAV based on landmarks** **Zhang Z, Shi Q, Lan C, Ma Q, Wang H, Sun W, Zhang H** Information Engineering University, PR China
P20	**FutureGAN: anticipating the future frames of video sequences using spatio-temporal 3d convolutions in progressively growing GANs** **Aigner S**, **Körner M** Technical University of Munich (TUM), Germany
19:00	**Icebreakter** [Theresianum]

September 19, Thursday

08:00	**Registration** [Immatriculation Hall]
08:30	Session O_M&L: **Mapping and Localisation** *Chair:* Weinmann M [Theresianum 0606]
08:30	**Image-to-image translation for enhanced feature matching, image retrieval and visual localization** **Müller MS[1], Sattler T[2], Pollefeys M[3,4], Jutzi B[1]** [1]Karlsruhe Institute of Technology, Germany [2]Chalmers University of Technology, Sweden [3]ETH Zürich, Switzerland [4]Microsoft
08:55	**Rule-based mapping of parked vehicles using aerial image sequences** **Knöttner J[2], Rosenbaum D[1], Kurz F[1], Reinartz P[1], Brunn A[3]** [1]German Aerospace Center (DLR), Germany [2]BVV, Germany [3]University of Applied Sciences Würzburg-Schweinfurt, Germany
09:20	**Draw and order — modeless interactive acquisition of outlines** **Meidow J, Lucks L** Fraunhofer IOSB, Germany
09:45	Session O_KEY-2: **Invited Talk** *Chair:* Stilla U [Theresianum 0606]
09:45	**Direct structural analysis of objects represented by point clouds** **Kollmannsberger S, Kudela L, Rank E** Technical University of Munich (TUM), Germany
10:10	**Coffee Break** [Immatriculation Hall]

10:40	Session O_PCP: **Point Cloud Processing** *Chair:* Yang B *Co-Chair:* Jutzi B [Theresianum 0606]
10:40	**Semantic segmentation of manmade landscape structures in digital terrain models** Kazimi B, Thiemann F, Sester M Leibniz University Hannover, Germany
11:05	**Semantic labeling and refinement of LiDAR point clouds using deep neural network in urban areas** Huang R, Ye Z, Hong D, Xu Y, Stilla U Technical University of Munich (TUM), Germany
11:30	**Automatic extraction of power lines from UAV lidar point clouds using a novel spatial feature** Zhou M, Li K, Wang J, Li C, Teng G, Ma L, Wu H, Li W, Zhang H, Chen J, Chen L Chinese Academy of Sciences, PR China
11:55	**Using neural networks to detect objects in MLS point clouds based on local point neighborhoods** Borgmann B[1,2], Hebel M[1], Arens M[1], Stilla U[2] [1]Fraunhofer IOSB, Germany [2]Technical University of Munich (TUM), Germany
12:20	Lunch
13:30	Session O_FOR: **Forestry** *Chair:* Michaelsen E [Theresianum 0606]
13:30	**Dead wood detection based on semantic segmentation of VHR aerial CIR imagery using optimized FCN-Densenet** Jiang S[1], Yao W[1], Heurich M[2] [1]The Hong Kong Polytechnic University, Hong Kong S.A.R. (China) [2]Bavarian Forest National Park, Grafenau, Germany
13:55	**Tree drought stress detection based on 3D modelling** Xia Y, Tian J, d'Angelo P, Reinartz P German Aerospace Center (DLR), Germany
14:20	**Evaluation of deep learning techniques for deforestation detection in the Amazon forest** Ortega Adame MX[1], Bermudez Castro JD[1], Nigri Happ P[1], Feitosa R[1,2], Rodrigues Gomes A[3] [1]Pontifical Catholic University of Rio de Janeiro, Brazil [2]Rio de Janeiro State University, Brazil [3]National Institute for Space Research, Brazil

14:45	Session O_SP3: **Short Orals** [Theresianum 0606]
14:45	Session O_SP4: **Short Orals** [Theresianum 0602]
15:15	**Coffee Break** [Immatriculation Hall]
15:15	Session P_DNN: **Deep Learning in Remote Sensing (Poster)** [Immatriculation Hall]
P21	**Land use classification based on multi-structure convolution neural network features cascading** Men J[1], Fang L[2], Liu Y[1], Sun Y[1] [1]China University of Geoscience, PR China [2]Chinese Academy of Science Quanzhou, PR China
P22	**Automatic object extraction from high resolution aerial imagery with simple linear iterative clustering and convolutional neural networks** Carrilho AC, Galo M São Paulo State University, Brazil
P23	**Lithological classification using multi-sensor data and convolutional neural networks** Brandmeier M[1], Chen Y[1,2] [1]Esri Deutschland GmbH, Germany [2]Technical University of Munich (TUM), Germany
P24	**Super-resolution for Sentinel-2 images** Galar M[1], Sesma R[2], Ayala C[2], Aranda C[2] [1]Public University of Navarre, Spain [2]Trabajos Catastrales S.A., Spain
P25	**Remote sensing scene classification using multiple pyramid pooling** Yao Y, Zhao H, Huang D, Tan Q Tsinghua University, Beijing, PR China
P26	**Windthrow detection using deep learning on planet and high-resolution aerial images** Deigele W[1,2], Brandmeier M[1], Straub C[3], Seitz R[3] [1]Esri Deutschland GmbH, Germany [2]Technical University of Munich (TUM), Germany [3]LWF Freising, Germany
P27	**Landcover mapping based on UAV high-resolution images and deep learning** Bountos NI[1], Brandmeier M[2] [1]Technical University of Munich (TUM), Germany [2]Esri Deutschland GmbH, Germany

15:15	Session P_M3M: **Mapping and 3D Modeling (Poster)** [Immatriculation Hall]
P28	**Design of orientation assessment functions for gestalt-grouping utilizing labeled sample data** Michaelsen E, Meidow J Fraunhofer IOSB, Germany
P29	**Automated chain for large-scale 3D reconstruction of urban scenes from satellite images** Tripodi S, Duan L, Trastour F, Poujade V, Laurore L, Tarabalka Y Luxcarta Technology, France
P30	**Segmentation of image pairs for 3D reconstruction** Mohammed HMM, El-Sheimy N University of Calgary, Canada
P31	**City modelling using geoinformatics: a case study of the college of engineering campus, Salahaddin University, Iraq** Sadey HA Salahaddin University, Iraq
P32	**The corresponding points screening algorithm based on Gaussian kernel fuzzy clustering** Tan Q, Zhao H, Wu W Tsinghua University, Beijing, PR China
P33	**Towards the automatic detection of geospatial changes based on digital elevation models produced by UAV imagery** Bauman T, Almog O, Dalyot S The Technion, Israel
15:15	Session P_PHO: **Photogrammetry (Poster)** [Immatriculation Hall]
P34	**Block adjustment of large-scale high-resolution optical satellite imagery without GCPs based on the GPU** Fu Q[1,2], Liu S[1], Tong X[1], Wang H[1] [1]Tongji University, PR China [2]Jinggangshan University, PR China
P35	**Monocular-depth assisted semi-global matching** Hödel M, Koch T, Hoegner L, Stilla U Technical University of Munich (TUM), Germany
P36	**Mapping system and photogrammetric processing method for tethered balloon platform** Li J[1,2], Li C[1], Su G[3], Li W[1], Ma L[1], Liu Y[1] [1]Chinese Academy of Sciences, PR China [2]University of Chinese Academy of Sciences, PR China [3]Chinese Academy of Surveying & Mapping, PR China
P37	**A joint calibration method of 3D images acquired by common optical path payload** Teng G, Zhou M, Hu J, Wu H, Li W, Zhang H, Chen J, Wang J Chinese Academy of Sciences, PR China

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15:15	Session P_PCP: **Point Cloud Processing (Poster)** [Immatriculation Hall]
P38	**Contour extraction of planar elements of building facades from point clouds using global graph-based clustering** Xu Y, Stilla U Technical University of Munich (TUM), Germany
P39	**Direct co-registration of TIR images and MLS point clouds by corresponding key-points** Zhu J, Xu Y, Hoegner L, Stilla U Technical University of Munich (TUM), Germany
P40	**Classification of data from airborne LiDAR bathymetry with the random forest algorithm based on different feature vectors** Kogut TA[1], Weistock M[1], Bakuła K[2] [1]University of Technology, Koszalin, Poland [2]Warsaw University of Technology, Warsaw, Poland
P41	**Semantic change detection of river ground points in airborne LiDAR bathymetry data using voxel occupancies** Boerner R, Hoegner L, Stilla U Technical University of Munich (TUM), Germany
P42	**Unsupervised automatic building extraction using active contour model on unregistered optical imagery and airborne LiDAR data** Nguyen TH[1,2], Daniel S[1], Guériot D[2], Sintès C[2], Le Caillec JM[2] [1]Université Laval, Québec City, Canada [2]IMT Atlantique, Brest, France
P43	**A mathematical sensor model for indoor use of a multi-beam rotating 3D LiDAR** Tesema LS[1,2], Jäger R[2], Stilla U[1] [1]Technical University of Munich (TUM), Germany [2]University of Applied Sciences Karlsruhe
P44	**Fusion of feature based and deep learning methods for classification of MMS point clouds** Tosic D, Tuttas S, Hoegner L, Stilla U Technical University of Munich (TUM), Germany

16:30	Session O_AGR: **Agriculture** *Chair:* Bareth G [Theresianum 0606]
16:30	**Determination of detailed morphological features for phenotyping of sugar beet plants using 3D-stereoscopic data** Scholz O[1], Uhrmann F[1], Wolff A[2], Pieger K[1], Penk D[3] [1]Fraunhofer EZRT, Germany [2]Strube D&S, Germany [3]Friedrich-Alexander-University Erlangen-Nuremberg
16:50	**Microwave satellite remote sensing for monitoring agricultural landscapes** Hütt C University of Cologne, Germany
17:10	**The benefit of spectral and point-cloud data for yield and quality assessment of grasslands** Wachendorf W, Astor T University Kassel, Germany
17:30	**Proximal crop canopy sensing for variable rate nitrogen fertilization** Jasper J, Reusch S Yara International, Germany
18:15	Walk from [Theresianum] to [Kuenstlerhaus]
19:00	**Social Event** [Kuenstlerhaus]

08:00	**Registration** [Immatriculation Hall]
09:00	Session O_RAD: **Radar** *Chair:* Feitosa R [Theresianum 0606]
09:00	**A semi-supervised approach to SAR-optical image matching** Hughes LH, Schmitt M Technical University of Munich (TUM), Germany
09:25	**Using coherent scatterers in time series of high resolution SAR images for the monitoring of construction activity** Villamil Lopez CA[1,2], Stilla U[1] [1]Technical University of Munich (TUM), Germany [2]German Aerospace Center (DLR), Germany
09:50	**A deep learning approach for urban underground objects detection from vehicle-borne ground penetrating radar data in real-time** Zong Z[1], Chen C1, Mi X[1], Sun W[1], Song Y[1], Li J[1], Dong Z[1], Huang R[2], Yang B[1] [1]Wuhan University, PR China [2]Chinese Academy of Sciences CAS, PR China
09:00	Session O_RSD: **Remote Sensing Data** *Chair:* Yao W [Theresianum 0602]
09:00	**Data augmentation approaches for satellite image super-resolution** Ahmed M[1], McKinstry A[1], Maul T[2], Vu T[3] [1]Irish Centre for High-End Computing, Ireland [2]The University of Nottingham Malaysia, Malaysia [3]Hoa Sen University, Vietnam
09:25	**PCCT: A point cloud classification tool to create 3D training data to adjust and develop 3D convent** Barnefske E, Sternberg H HafenCity University Hamburg, Germany
09:50	**SEN12MS – A curated dataset of georeferenced multi-spectral Sentinel-1/2 imagery for deep learning and data fusion** Schmitt M[1], Hughes LH[1], Qiu C[1], Zhu XX[1,2] [1]Technical University of Munich (TUM), Germany [2]German Aerospace Center (DLR), Germany
10:15	**Coffee Break** [Immatriculation Hall]

10:45	Session O_DNN: **Deep Learning in Remote Sensing** *Chair:* Hänsch R [Theresianum 0606]
10:45	**Supervised detection of bomb craters in historical aerial images using convolutional neural networks** **Clermont D**, Kruse C, Rottensteiner F, Heipke C Leibniz University Hannover (LUH), Germany
11:10	**Deep residual learning for single-image super-resolution of multi-spectral satellite imagery** **Wagner L**, Liebel L, Körner M Technical University of Munich (TUM), Germany
11:35	**Adversarial domain adaptation for the classification of aerial images and height data using convolutional neural networks** **Wittich D**, Rottensteiner F Leibniz University Hannover (LUH), Germany
12:00	**A many-to-many fully convolutional recurrent network for multitemporal crop recognition** **Chamorro Martinez JA**[1], **Bermudez Castro JD**[1], **Nigri Happ P**[1], **Feitosa R**[1,2] [1]Pontifical Catholic University of Rio de Janeiro [2]State University of Rio de Janeiro
12:25	Session 15: **Closing** *Chair:* Stilla U [Theresianum 0606]
12:45	**Farewell** [Immatriculation Hall]

The conference will be held at Technische Universität München (TUM), a over 150 year old academic center of excellence. The conference site is conveniently located on the main campus area in the museum destrict (Maxvorstadt) near the city center. TUM main campus area can be easily reached from the subway (U-Bahn), line U2 station [Theresienstraße].
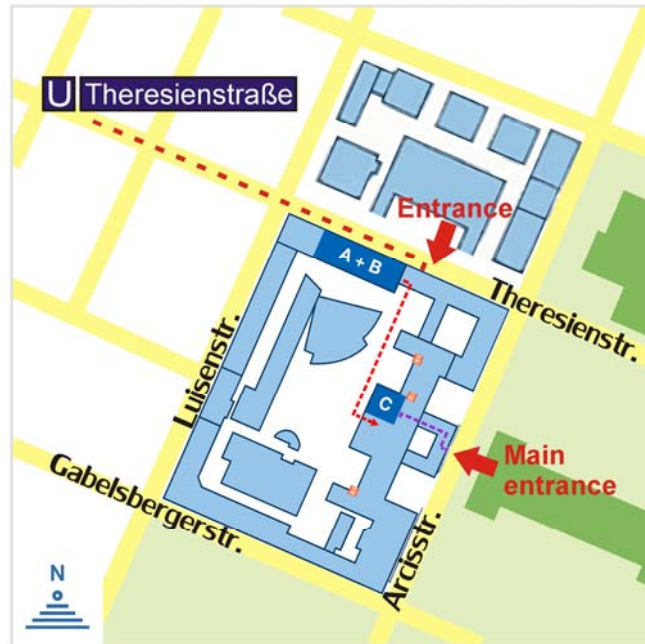

Munich is a city of fascinating experiences. Historic buildings of every period, grand boulevards and squares, bear imposing witness to a culture centuries old. Art, in the museums and outside, lures millions of visitors to the city year after year. Unique are Munichs beer gardens. Both, locals and guests are enjoying this special way of come together during the warm evenings in summer time.

Munich is surrounded by some most splendid landscape including the Bavarian Alps and a number of pleasant lakes. Also, famous sights, including the castles of King Ludwig II are within easy reach of the city.
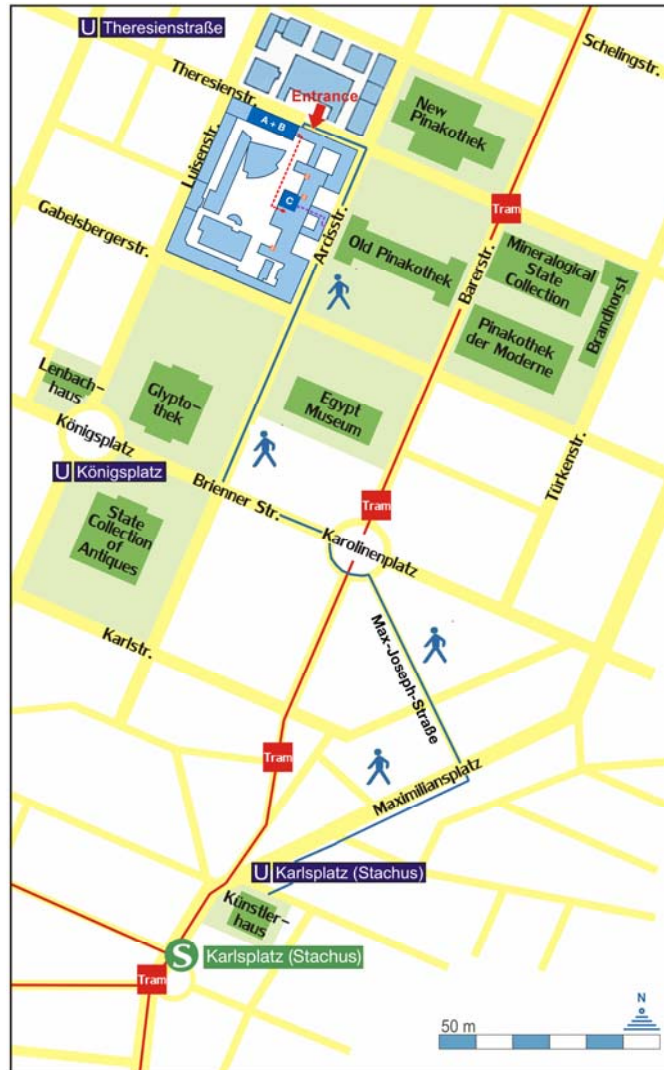
Ice Breaker

The Ice breaker will be on Wednesday after the poster session. The poster session and ice breaker are located at the Immatriculation Hall (Location C).
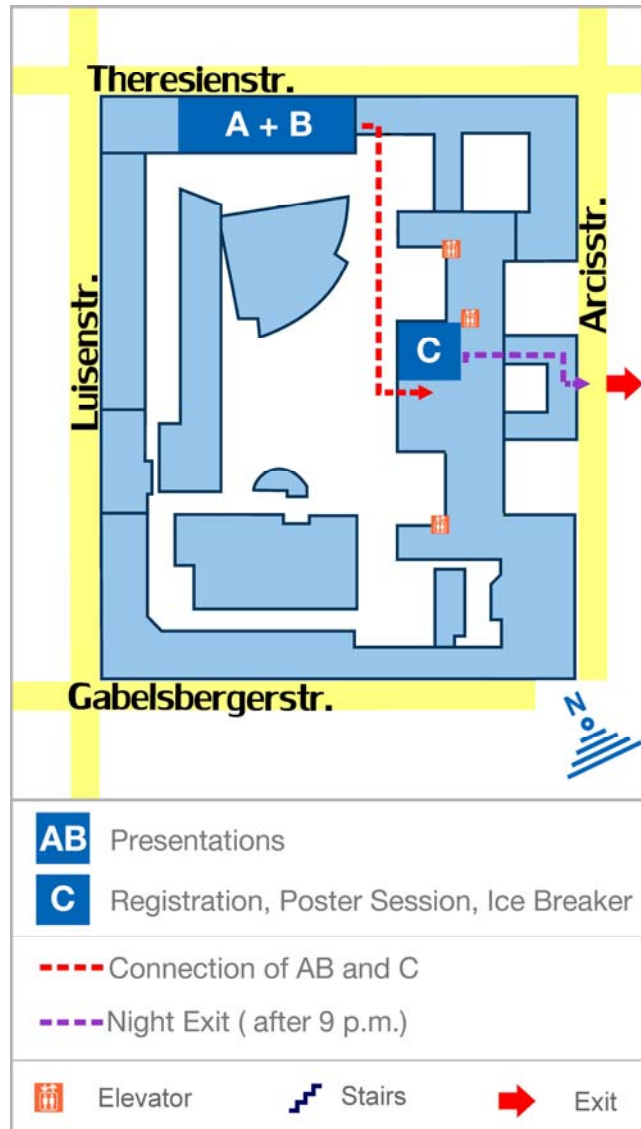
Social Event - Künstlerhaus

The conference dinner will take place at the "Münchner Künstlerhaus" (House of Artists). It is placed within the heart of Munich at Lenbachplatz. The "Münchner Künstlerhaus" was built at the end of the 19th century and opened to the public in 1900 by prince regent Luitpold. Originally it was conceived as a place where artists could meet Munich society. During the World War II the building was destroyed, rebuilt after the war and returned to the House of Artists Association in 1954. Today "Münchner Künstlerhaus" is still living proof of the style and society model of its time of origin. It is employed as a location for variety of congresses, festivities, and exhibitions.

Internet access is possible using wireless LAN.

If you have an account for eduroam, choose the wireless LAN with **ID "eduroam"** and login with your eduroam account.

If you do not have an eduroam account, wireless LAN is available with **ID "mwn-events"**.
User: "pia19mrss19"
Password: "6T19wZF4"

Configuration profiles for wireless network access are available via the QR code or this URL: https://www.lrz.de/wlan (follow the link mwn-events). Access to this site is available via the open Wi-Fi (the SSID) "lrz".

Wireless LAN "con" is active from Wednesday to Friday from 08:00 to 20:00.

Please ask a member of the local organizing committee for any assistance!

Check for latest infos either on the conference webpages:

www.pia.tum.de
www.mrss.tum.de

or via our mobile app

To download mobile app, please visit
http://conference4me.eu/download
or type 'conference4me' in Google Play or iTunes App Store.