

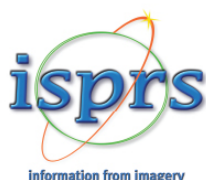


Technical Program

**ISPRS WG II/10,
II/5 Workshop**

2019

"Photogrammetric and computer vision
techniques for video surveillance,
biometrics and biomedicine"



3rd ISPRS International Workshop
Photogrammetric and computer vision techniques for video surveillance,
biometrics and biomedicine

Technical Program

Moscow, 2019

VENUE

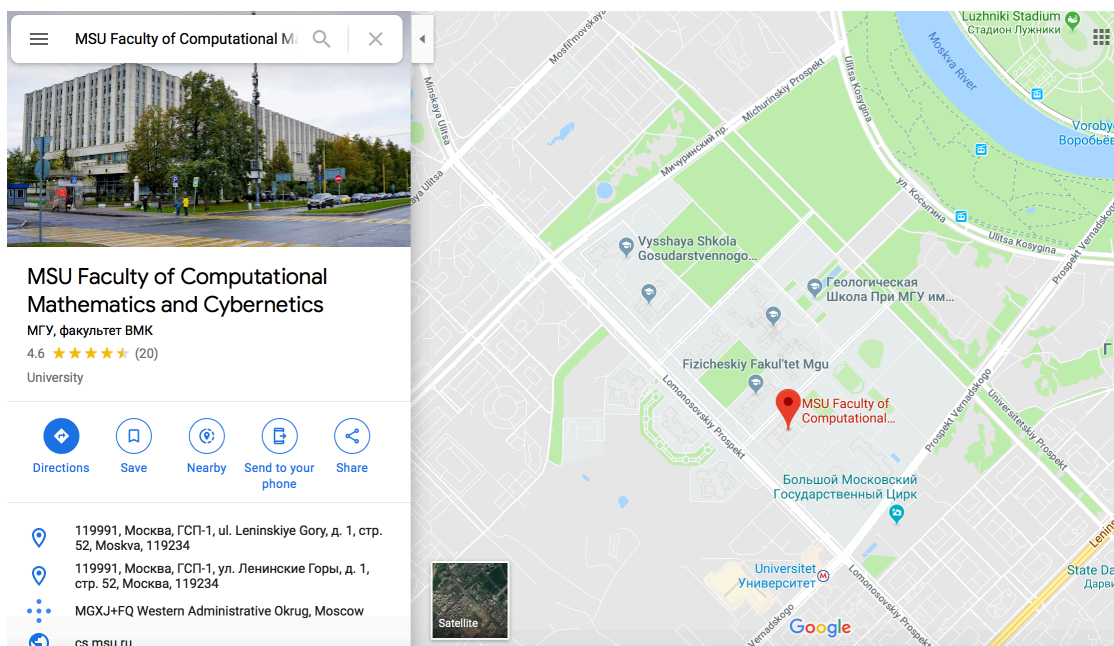
MSU Faculty of Computational Mathematics and Cybernetics

Opening, Technical and Poster Sessions, Closing:

Main part of the workshop will take place at MSU Faculty of Computational Mathematics and Cybernetics on May, 13-15.

Locations:

Rooms П5, 685, П8a of Faculty of Computational Mathematics and Cybernetics.



Tymyriazev State Biological Museum

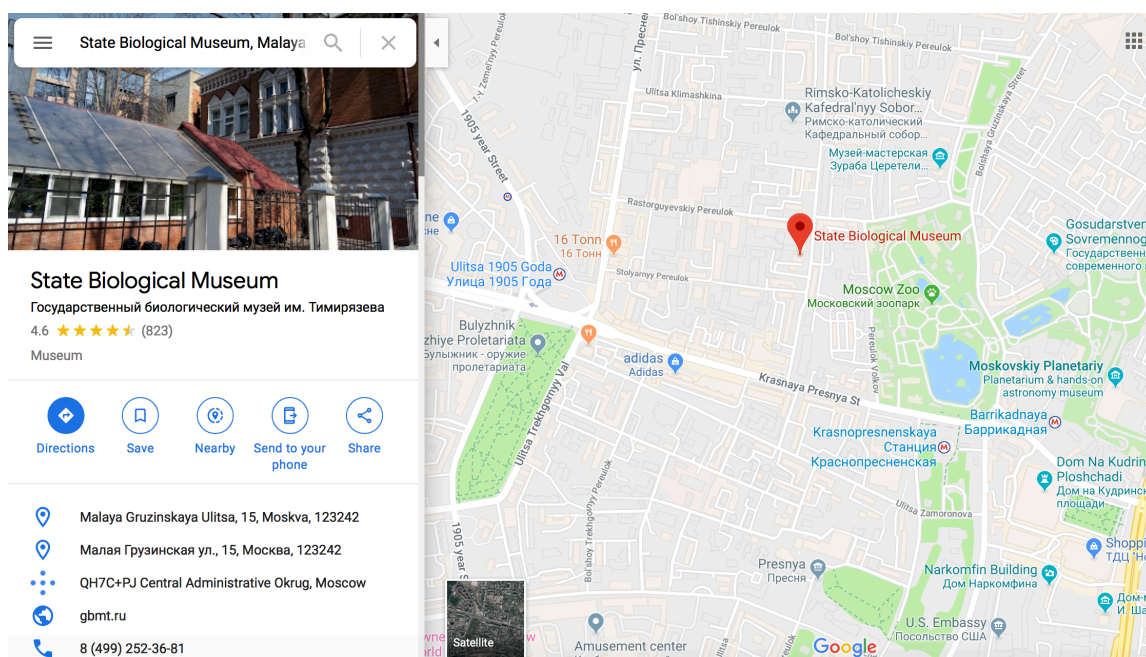
Special Technical session TS4:

A special Technical session on new photogrammetric and computer vision methods for anthropology will take place at Tymyriazev State Biological Museum on May, 14.

The session is organized in cooperation with Institute of Ethnology and Anthropology RAS as a joint session with International scientific conference «Problems of studying the variability in anthropology. New in a variety of traditional».

Location:

Hall 13 of Tymyriazev State Biological Museum.



Technical program

Registration

	Date	Time		Type		Place
1	12.05.2019	15:00 – 17:00		Preliminary Registration		Lomonosov MSU, Foyer of CMC Faculty [i]
2	13.05.2019	08:30 – 10:00		Registration		Lomonosov MSU, Foyer of CMC Faculty [i]

13.05.2019. П5 FCMC MSU. Opening

	Time	Type	Speaker	ID	Title
	09:50	Opening	Vladimir Knyaz		Introduction
	10:00	Opening	Sergey Zheltov		Welcome from GosNIIAS
	10:07	Opening	Igor Sokolov		Welcome from Lomonosov MSU
	10:14	Opening	Andrei Raigorodskii		Welcome from MIPT

13.05.2019. TS1: Biomedical image and sequence analysis

Room: П5 FCMC MSU **Chair:** Andrey Krylov

	Time	Type	Speaker	ID	Title
	10:20	Invited	Paolo Rota	503	Beyond Pure Vision, A Quick Peek On Multimodal Deep Learning For Industrial Applications
1	11:00	Oral [iii]	Dmitry Ryumin	167	Automatic Detection And Recognition Of 3D Manual Gestures For Human-Machine Interaction

Continued on next page

	Time	Type	Speaker	ID	Title
2	11:20	Oral [iii]	Xu Chen	154	Real-Time Tracking In Satellite Videos Via Joint Discrimination And Pose Estimation
	11:40		Coffee break		
3	12:00	Oral [iii]	Aleksandr Zotin	161	Animal Detection Using A Series Of Images Under Complex Shooting Conditions
4	12:20	Oral	Yiping Chen	178	Automated Extraction Of Liver Outlines From Computed Tomography Scan Images Using A Cuda-Based Segmentation Method
5	12:40	Oral	Dmitry Murashov	191	Detecting Events In Video Sequence Of Video-Eeg Monitoring
6	13:00	Oral	Alexandra Zhuravskaya	196	Method For Assessing The Symmetry Of Objects On Digital Binaryimages Based On Fourier Descriptor
	13:20	15:20	Lunch		
	13:20	15:20	§ URSS Publishing Group presentation		

13.05.2019. PS1: Medical data processing and visualization

Room: Foyer II5 FCMC MSU **Chair:** Margarita Favorskaya

	Time	Type	Speaker	ID	Title
1	13:20	Poster	Lange Mikhail	169	Mutual Information As Efficiency Criterion For Classification Schemes: Application To Face Recognition In Ensemble Of Images
2	13:20	Poster	Mikhail Bogachev	189	Universal 3D Representation Of Multi-Level Processed Images Based On Percolation Theory Principles
3	13:20	Poster	Anna Sergeeva	194	Facial Micro Expression Analysis For Deception Detection: Methods And Applications
4	13:20	Poster [iv]	Thi Thu Thao Tran	206	An Adaptive Variational Model For Medical Images Restoration
6	13:20	Poster	Stanislav Brianskiy	202	Image Filtering Using Morphological Thickness Map
7	13:20	Poster	Alexander Starostin	207	Two-Step Model-Based Deconvolution Of Defocused Images In Physiological Optics
8	13:20	Poster [iv]	Denis Ivanko	164	Automatic Lip Reading Of Hearing Impaired People
9	13:20	Poster	Sergei Loginov	180	Survey Of Walking Variability Using Local Video Tracking

Continued on next page

	Time	Type	Speaker	ID	Title
10	13:20	Poster	Nikita Lomov	188	Fast And Accurate Algorithm For Computing Skeleton-Geodesic Histograms
11	13:00	Poster	Andrey Tarasov	204	Target Tracking System Development

13.05.2019. TS2: Medical data processing and visualization

Room: II5 FCMC MSU **Chair:** Andrey Kopylov

	Time	Type	Speaker	ID	Title
1	15:20	Oral [v]	Inessa Gracheva	183	Tone Compression Algorithm For High Dynamic Range Medical Images
2	15:40	Oral [v]	Dang Thanh	153	Blood Vessels Segmentation Method For Retinal Fundus Images Based On Adaptive Principal Curvature And Image Derivative Operators
3	16:00	Oral	Sofia Fedotova	192	Algorithms For Adjustment Of Symmetry Axis Found For 2D Shapes By The Skeleton Comparison Method
4	16:20	Oral [v]	Tamerlan Sagindykov	181	Preprocessing And Registration Of Miniscope-Based Calcium Imaging Of The Rodent Brain
	16:40		Coffee break		
5	17:00	Oral [v]	Oleg Seredin	187	Privacy-Preserving Extensible Fall Detection System Based On Skeleton Description Of A Human Posture
6	17:20	Oral [v]	Andrei Dovganich	186	Dermatological Image Denoising Using Adaptive Henlm Method

14.05.2019. TS3: 2D and 3D data analysis

Room: 685 FCMC MSU **Chair:** Alexander Chibunichev

	Time	Type	Speaker	ID	Title
	10:00	Invited	Fabio Remondino	501	Towards Photogrammetry 2020
1	10:40	Oral [v]	Margarita Favorskaya	160	Digital Watermarking Of 3D Medical Visual Objects
2	11:00	Oral [v]	Alexander Bondarev	159	The Procedures Of Visual Analysis For Multidimensional Data Volumes

Continued on next page

	Time	Type	Speaker	ID	Title
	11:20		Coffee break		
3	11:40	Oral [v]	Viacheslav Danilov	197	Ray-Based Segmentation Algorithm For Medical Imaging
4	12:00	Oral	Alena Zakharova	177	Visual And Cognitive Interpretation Of Heterogeneous Data
5	12:20	Oral [v]	Rathnakar Shetty	210	Action Recognition using Undecimated Dual Tree ComplexWavelet Transform from Depth Motion Maps /Depth Sequences
6	12:40	Oral [v]	Olga Malenova	208	Models Of Images With Radial-Circular Structure
	13:00	15:00	Lanch		
	15:00	Panel	Margarita Favorskaya (moderator)	301	Panel Discussion

14.05.2019. TS4: Photogrammetry for anthropology

Room: Hall 13 Timiryazev Museum **Chair:** Vladimir Knyaz

	Time	Type	Speaker	ID	Title
1	10:00	Oral [vii]	Mikhail Novikov	174	3D Reconstruction Of The Skeleton Of An Ancient Egyptian Mummy From Collection Gmii Of A. S. Pushkin
2	10:20	Oral [vii]	Goharik Petrosyan	201	Application Of Photogrammetric Techniques In Palaeodontological Studies Trough Automated Digital Shape Analysis of Human Teeth
3	10:40	Oral	Ilia Perevozchikov	214	Composite Images As A Research Tool In Physical Anthropology
4	11:00	Oral [vii]	Anatoly Maksimov	175	Vision Based Anthropological Automated 3D Measurements and Analysis
	11:20		Coffee break		
5	11:40	Oral [vii]	Samvel Apresyan	199	Automated Digital Odontometric Study Of Manual And Computer-Aided Methods Of Tooth Crown Modelling In Dentistry
6	12:00	Oral [vii]	Guangling Lai	203	A Multi-Scale Integer Coding And Index Method For Voxel Model
7	12:20	Oral	Natalia Leybova	200	Comparative Odontometric Anthropological Study Of Human Teeth And Their 3D Images

Continued on next page

	Time	Type	Speaker	ID	Title
8	12:40	Oral	Armen Gaboutchian	198	Assessment Of Human Tooth Crown Relief And Cusp Slope Inclination Using Automated Digital Odontometry
9	13:00	Oral	Ravil Galeev	142	Comprehensive review of non-contact techniques in anthropology
	13:20	15:00	Lunch		
	13:20	15:00	§ URSS Publishing Group presentation		
	15:00	Panel	Natalia Leybova (moderator)	302	Panel Discussion

15.05.2019. TS5: Machine learning

Room: П8a FCMC MSU **Chair:** Yury Vizilter

	Time	Type	Speaker	ID	Title
	10:00	Invited	Victor Lempitsky	502	Convolutional Networks In Telepresence Applications
1	10:40	Oral [vi]	Davood Akbari	156	Spectral-Spatial Classification Of Hyperspectral Imagery Using Neural Network Algorithm And Hierarchical Segmentation
2	11:00	Oral [vi]	Vladimir Kniaz	157	Long Wave Infrared Image Colorization For Person Re-Identification
	11:20	Break	Coffee break		
3	11:40	Oral	Margarita Favorskaya	165	The Study Of Activation Functions In Deep Learning For Pedestrian Detection And Tracking
4	12:00	Oral	Vladimir Mizginov	158	Synthetic Thermal Background And Object Texture Generation Using Geometric Information And Gan
5	12:20	Oral	Nikita Lomov	163	Neural Networks For Shape Recognition By Medial Representation
6	12:40	Oral [vi]	Andrey Nasonov	195	Blur Map Estimation For Image Sharpening Using Convolutional Neural Network
	13:00	15:00	Lunch		
	13:00	15:00	§ URSS Publishing Group presentation		

15.05.2019. PS2: Object detection and recognition

Room: Foyer П8 FCMC MSU **Chair:** Boris Vishnyakov

	Time	Type	Speaker	ID	Title
1	13:00	Poster	Olga Malenova	185	Algorithms For The Automatic Detection Of Markers On The Facies Of Human Biological Fluids
2	13:00	Poster	Ekaterina Poliakova	205	Robots Navigation Using Low-Cost Stereo Cameras
3	13:00	Poster [vii]	Maria Protsenko	193	Iris Image Key Points Descriptors Based On Phase Congruency
4	13:00	Poster	Vladimir Kniaz	210	BinaryNet: effective tile map compression for faster change detection search in satellite images
5	13:00	Poster	Alexey Chulichkov	173	Classification Of Gel Blood Cards By Morphological Analysis And Neural Network Methods
6	13:00	Poster [vii]	Dmitry Gavrilov	162	Deep Learning Based Skin Lesions Diagnosis
7	13:00	Poster [vii]	Anastasiia Merkulova	227	Semantic Segmentation of Great Scale 3D Point Clouds Based on Geometric Partitioning
8	13:00	Poster	Dmitrii Beloborodov	190	Contour Depth Features For Shape Recognition And Binary Image Transformation
9	13:00	Poster	Vincenzo Barrile	209	Geomatics Methodologies For Classification Of Magnetic Resonance Imagery: Comparison Among Different Techniques
10	13:00	Poster [vii]	Dmitry Fateev	222	Detection of Small Size Object Using Generative Adversarial Network
11	13:00	Poster	Alexandr Mishkin	152	Edge Detection In Medical Images By Deep Learning

15.05.2019. TS6: Object detection and recognition

Room: II8 FCMC MSU **Chair:** Hema Shekar Basavegowda

	Time	Type	Speaker	ID	Title
1	15:00	Oral [viii]	Alexander Khvostikov	171	Automatic Mucous Glands Segmentation In Histological Images
2	15:20	Oral	Liansheng Wang	155	Detecting Protrusion Lesion In Digestive Tract Using A Single-Stage Detection Method
3	15:40	Oral [viii]	Dmitry Yudin	168	Detection Of A Human Head On A Low-Quality Image And Its Software Implementation

Continued on next page

	Time	Type	Speaker	ID	Title
4	16:00	Oral [iv]	Yun Zhang	172	Moving Object Detection Using Spatial Correlation In Lab Colour Space
	16:20		Coffee break		
5	16:40	Oral [viii]	Nikita Andriyanov	166	Investigation Of Filtering And Objects Detection Algorithms For A Multizone Image Sequence
6	17:00	Oral	Sharada Bhat	213	Reliability Index For Iris Code Matching In Iris Recognition Systems
7	17:20	Oral	Nikita Bagrov	184	Face Recognition With Low False Positive Error Rate
	17:40	18:00	Closing		

Social program

	Date	Start	End	Place	Event
	13.05.2019	18:00	21:00	Moscow River-boat tour [xi]	Welcome party
	13.05.2019	14:00	15:00	MSU Main building [xiii]	Walking tour
	14.05.2019	13:00	15:00	Moscow Kremlin [xii]	Walking tour
	14.05.2019	14:00	15:00	MSU Main building [xiii]	Walking tour
	14.05.2019	14:00	15:00	Timiryazev State Museum of Biology [xiv]	Walking tour

Moscow river boat tour13.05.2019 ¹¹ Setun pier13 May
18:00am
MR
id:sp1
SP([11](#))

PSBB19 Welcome party takes place on the board of a Moscow river boat.



Welcome river cruise starts from Setun pier (near Lomonosov MSU campus) and returns to the same pier.

There's hardly a better way to absorb Moscow's atmosphere than on a ship sailing up and down the Moskva River. Attendees will have a chance to see the most famous sites of Moscow from the river.

The route goes along Moscow river embankments to the city centre, passing Luzhniki Olympic Sport Center, Gorky Park, Christ the Savior Cathedral, and the Kremlin.

14 May
13:00am
MK
id:sp3
SP(11)

Moscow Kremlin tour

14.05.2019 ¹

¹ Red Square, 1

The Moscow Kremlin is considered to be a symbol of the Russian statehood. The Kremlin hill became the main sightseeing of Moscow. The architectural ensemble “The Moscow Kremlin and Red Square” is included into the UNESCO List of World Cultural and Natural Heritage.

The Moscow Kremlin State Historical and Cultural Museum and Heritage Site incorporates the Armoury Chamber and the architectural ensemble of the Cathedral Square, consisting of the Assumption, Archangel and Annunciation cathedrals, the Church of Laying Our Lady’s Holy Robe, the Patriarch’s Palace with the Twelve Apostles’ Church and the ‘Ivan the Great’ Bell Tower complex, as well as the exhibition halls in the Assumption Belfry and in the One-Pillar Chamber of the Patriarch’s Palace.



The history of organizing and developing the museum institution in the Moscow Kremlin covers almost three hundred years and involves periods of prosperity and rapid development of museum and research activities, periods of heroic struggle for saving national treasure as well as periods of stagnation, followed by revival.

MSU main building: Museum of Earth Science13 and 14.05.2019 ¹¹ ul. Leninskiye Gory, 1, Moscow

13&14 May

14:00am

MSU

id:sp2

SP([11](#))

The Scientific and Educational Museum of Earth Science is a centralized structural unit of Moscow State University. A resolution of the USSR Council of Ministers was created in 1950 during the construction of the Main Building of Moscow State University, the highest part of which was supposed to house a new type of museum that combines scientific research on the planet Earth, a museum designed to provide students with in-depth knowledge and integrated ideas about Earth sciences.

The Museum is located on five floors (24-28) of the Main Building of Moscow State University, occupies 2,500 square meters. meters.

In 24 rooms, the exposition introduces the whole complex of Earth sciences, consistently revealing topics from the history of the development of natural sciences at Moscow University to the general characteristics of large geographic areas.



The whole exposition is richly illustrated with works of art: sculptural portraits of prominent natural scientists, paintings, bas-reliefs.

In the frieze belt of the numerous halls of the Museum there is a gallery of painting canvases (262 paintings), reflecting the diverse landscapes of our country, written by major artists, mostly from nature. By order of the Museum, a gallery of 80 busts of prominent natural scientists was created who made a great contribution to the study of the nature of the country. Busts are made by famous sculptors in marble, bronze and plaster. The museum has a gallery of portraits of prominent scholars and historical figures, whose activities are connected with Moscow University.

14 May
14:00am
TSMB
id:sp4
SP(11)

Timiryazev State Museum of Biology

14.05.2019 ¹

¹ Malaya Gruzinskaya Ulitsa, 15, Moscow

The museum is located in the historical building – former estate of collector and patron Pyotr Shchukin, the creator of "Russian Antiquities" museum. Visitors always fascinate architecture of the manor, built in pseudo-Russian style at the turn of XIX-XX centuries.



The exhibition and collection of the Museum are extremely diverse: beautiful taxidermy and unique formulations of the malformations, paleontology and botany, animalistic painting and plastic anthropological reconstruction, dioramas and biogroups, sea shells and dummies mushrooms.

The live green exhibition of the greenhouse contains more than 228 species and varieties of plants: tropical, endangered, plants predators. In the warmer months in the courtyard of the museum, you can see the open air exhibition – wild plants of Moscow region, including Moscow Red Book plants.

THE
MOSCOW
INSTITUTE
OF PHYSICS AND
TECHNOLOGY
(MIPT)



was founded in the difficult postwar years when the country had to increase defense capabilities and develop new trends in the industry. Leading Russian scientists and chief designers proposed a model of learning, the "Phystech System", based on close integration between academia, science and industry. For over 60 years the legendary "Phystech System" has trained thousands of distinguished scientists who have taken dominant positions in the international scientific community and received worldwide recognition.

Today MIPT is synonymous to high-quality education and graduate demand. There are Nobel Prize winners and prominent businessmen among MIPT alumni, as well as key members of the Russian Academy of Sciences, the previous president of which was also an MIPT alumnus. Among the Institute's staff and graduates are many scientific luminaries, including ten Nobel laureates. So, the 2010 Nobel Prize winners Andre Geym and Konstantin Novoselov are MIPT alumni.

The MIPT brand is well known among our international partners: global technical universities and research centers. MIPT is sometimes referred to as "the Russian MIT." President of Massachusetts Institute of Technology (MIT) Prof. L. Rafael Reif heads the International Board of MIPT.

Each research university all over the world is interested in discussing and solving the same high-priority issues. We share the mutual objective of attracting stellar students. Our common mission is to mature their passion into a profession.

For the past years MIPT has improved its positions in the top world university rankings like Times Higher Education (THE) and QS. THE rankings names MIPT among 100 most prestigious schools globally. It is also consistently present in global subject rankings in natural science, physics, astronomy and mathematics, computers science — our major fields of study.

