SCHEDULE FOR
INTERNATIONAL SCIENTIFIC-AND-TECHNOLOGICAL CONFERENCE
EXTREME ROBOTICS

July 26-27, 2018, Russian State Scientific Center or Robotics and Technical Cybernetics (RTC), 21 Tikhoretsky prospect, Saint-Petersburg, Russia

JULY 26, 2018 (Thursday)			
09:30 –10:30	Registration of the participants, first floor (Central Entrance, RTC). Welcoming coffee. RTC Conference Hall foyer, second floor.		
10:30 – 12:45	Conference opening. RTC Conference Hall, second floor. Plenary session. RTC Conference Hall, second floor.		
12:45 – 13:30	Lunch time.		
13:30 – 15:30	Sessions and Conference Events.		
	Session **«Space Robotics»** Conference Hall, second floor, RTC	***Session*** **«Modeling of Robotic Complexes»** 3017 Room, second floor, RTC	***Session*** **«Robotics in Medicine. Perfusion Complexes for Transplantation and Resuscitation»** 4023 Room, third floor, RTC
15:30 – 16:00	Coffee break. RTC Conference Hall foyer, second floor.		Coffee break. 4023 RTC third floor, RTC
16:00 – 17:30	Sections sessions and Conference Events (Continue)		
	Session **«Space Robotics»** Conference Hall, second floor, RTC	***Session*** **«Modeling of Robotic Complexes»** 3017 Room, second floor, RTC	***Session*** **«Robotics in Medicine. Perfusion Complexes for Transplantation and Resuscitation»** 4023 Room, third floor, RTC
17:30 – 19:00	Festive program devoted to the Conference opening.		

JULY 27, 2018 (FRIDAY)		
10:00 – 11:00	Sessions and Conference Events (Continue).	
	Session **«Modeling of Robotic Complexes»** 3017 RTC Room, second floor, RTC	***Session*** **«Marine Robotics Technologies»** 4003 Room, third floor, RTC
11:00 – 11:30	Coffee break. RTC Conference Hall foyer, second floor.	Coffee break. 4003 Room, third floor, RTC
11:30 – 13:00	Sessions and Conference Events (Continue).	
	Session **«Modeling of Robotic Complexes»** 3017 Room, second floor, RTC	***Session*** **«Marine Robotics Technologies»** 4003 Room third floor, RTC
13:00 – 14:00	Lunch time.	
14:00 – 15:00	Sessions and Conference Events (Continue)	
	Session **«Modeling of Robotic Complexes»** 3017 Room, second floor, RTC	***Session*** **«Marine Robotics Technologies»** 4003 Room third floor, RTC
15:00 – 16:00	Poster Session. Poster Session Hall, second floor	
16:00 – 17:00	Final Plenary session. RTC Conference Hall, second floor.	
17:30 – 19:00	Festive program devoted to the Conference closing.	

PROGRAM FOR
INTERNATIONAL SCIENTIFIC AND TECHNOLOGICAL CONFERENCE
EXTREME ROBOTICS

JULY 26, 2018 (THURSDAY)

10:30 – 10:40	**Conference opening.** **Welcoming addresses for Conference participants**	**Conference Hall, second floor, RTC**

10:40 – 12:45	**Plenary Session**	**Conference Hall, second floor, RTC**

Co-chairmen:
Doctor of Technical Science, Professor ***Evgeny I. Yurevich***
Doctor of Technical Sciences ***Alexander V. Lopota***
Technical Assistant: ***Marina M. Burkina***

(Verbal presentation duration is up to 15 minutes. Answers to the questions - up to 5 minutes)

1. ***Igor A. Kalayev (RAS Academician, Doctor of Technical Sciences, vice-chairman of Scientific council on robotics of RAS, research supervisor of the direction of SFU, Taganrog town)*** Artificial intelligence: myths or reality
2. ***Maksim V. Zabelin (Doctor of Medical Sciences, Deputy head of Federal Medical Biological Agency of Russia, Moscow)*** Main directions of medicobiological maintenance of creation of medical robotic complexes
3. ***Sergey G. Tsarichenko (Doctor of Technical Sciences, Chief of the proving ground of NII GEODEZIJA, Krasnoarmeisk, Moscow region), S.E. Simanov, I.M. Sidorov (NII GEODEZIJA, Krasnoarmeisk, Moscow region)*** Parametrically-approximate method for solving the inverse kinematic problem for manipulators
4. ***Sergey A. Polovko (Candidate of Technical Sciences, Deputy Chief Designer of RTC, Saint-Petersburg), A.V. Popov (RTC, Saint-Petersburg)*** Application prospects of the hybrid groups of the special purpose mobile robots
5. ***Alexey A. Romanov (Doctor of Technical Sciences, Deputy Director for Science of JSC «Russian space systems», Moscow)*** Sixth technological way in space device engineering
6. ***Andrey V. Soleev (Head of Department of LLC NPP NTT Company, Saint-Petersburg)*** Ideology of use of the distributed payloads on royevy sets both unmanned aerial vehicles, and spacecrafts

13:30 – 17:30	Space Robotics Session	Conference Hall, second floor, RTC

Co-chairmen:
Doctor of Technical Science, Professor ***Igor G. Sokhin***
Candidate of Technical Sciences ***Alexander S. Kondratiev***
Technical Assistant: ***Elena M. Kuznetcova***

(Verbal presentation duration is up to 10 minutes. Answers to the questions - up to 5 minutes)

1. ***M.V. Mikhaylyuk[1], E.V. Strashnov[1], A.A. Prilipko[1], B.I. Kryuchkov[2], V.M. Usov[2] ([1]Federal State Scientific Research Institute of System Analysis of the Russian Academy of Science, Moscow, Russian Federation; [2]Federal State Gagarin Research&Test Cosmonaut Training Center, Star city, Moscow region, Russia)*** The on-board simulation and training system for performing manipulator's actions in the supervisory control mode and building the visual feedback for cosmonauts
2. ***P.N. Vlasov, I.G. Sokhin, A.A. Kuritsyn (Yu.A. Gagarin Research & Test Cosmonaut Training Center, Star City, Russia)*** Problems of interaction of crews with anthropomorphous robotic assistants in future space missions
3. ***Gerhard Grunwald, Máximo A. Roa, Armin Wedler (German Aerospace Center (DLR), 82234 Wessling, Germany)*** Robotics for in-space assembly
4. ***M.I. Malenkov[1], N.K. Guseva[1], E.A. Lazarev[1], D.N. Kuz'menko[1], I.Yu. Dalyaev[2], A.V. Vasiliev[2] ([1]STC "ROCAD"; [2]RTC, Saint-Petersburg)*** Beginning and development of design technologies of locomotion systems of planetary rovers
5. ***A.V. Vasiliev, I.Yu. Dalayev (RTC, Saint-Petersburg)*** RTC developments in the field of robotics for future on-orbit and planetary missions
6. ***P.P. Belonozhko (Bauman Moscow State Technical University)*** Synthesis of program motions of a robotic space module taking into account the intrinsic dynamics of the reduced system
7. ***I.Yu. Dalyaev, V.M. Kopylov (RTC, Saint-Petersburg)*** Control and sheduling methods for servicing spacecraft equipped with manipulators
8. ***I.E. Chernyshev, A.V. Yaskevich (RSC «Energia», Korolev, Russia)*** The legs stiffness characteristics determination of the new peripheral docking mechanism
9. ***E.M. Kuznetcova, I.Y. Dalyaev, V.V. Titov, E.A. Smirnov, A.A. Truts (RTC, Saint-Petersburg)*** Haptic device with parallel kinematics
10. ***F.B. Tebueva, V.I. Petrenko, V.O. Antonov, M.M. Gurchinskiy, N.Yu. Svistunov (North-Caucasus Federal University, Stavropol)*** A method of determining the mutual position of operator's arm joints for anthropomorphic space manipulator control
11. ***A.V. Safonov, A.N. Yusupov, A.V. Lopota (RTC, SPbPU, Saint Petersburg)*** An algorithm for auto tuning of digital controllers for mechatronic modules with space applications
12. ***I.V. Shardyko, A.N. Yusupov (RTC, Saint-Petersburg)*** Implementation of stiff and compliant joint trajectory control for space manipulation systems
13. ***N.V. Zarutckii, I.U. Dalyaev, V.A. Kuznetsov, M. U. Gook (RTC, Saint-Petersburg)*** Lessons learned from the development and test of the two-axis rotary platform for russian segment of ISS
14. ***A.V. Ivanov, V.M. Rulevskiy, N.N. Tsebenko (Research Institute of automatics and electromechanics «NII AEM TUSUR», Russia, Tomsk)*** System of control and management for cosmobot battery
15. ***K.A. Volnyakov (RTC, Saint-Petersburg)*** Influence of lubricants in zone of contact of surfaces
16. ***M.N. Belov (RTC, Saint-Petersburg)*** Scientific equipment for recording the gas-plasma environment

13:30 – 17:30	Modeling of Robotic Complexes Session	3017 Room, second floor, RTC

Co-chairmen:
Doctor of Technical Science, Professor ***Victor P. Pavlov***
Candidate of Technical Science ***Vladimir A. Pavlov***
Technical Assistant: ***Tatiana V. Volpyas***

(Verbal presentation duration is up to 10 minutes. Answers to the questions - up to 5 minutes)

1. ***I.L. Ermolov[1], B.S. Lapin[2], S.A. Sobolnikov[2] ([1]Institute for Problems in Mechanics of RAS; [2]MSTU "STANKIN", Moscow)*** Software for development, modeling and operation of multi-robot control systems
2. ***V.V. Arykantsev, A.A. Goncharov, V.V. Chernyshev (Volgograd State Technical University)*** Modeling of contact interaction of support elements (stop) walking mover with the ground under conditions of complex loading
3. ***V.M. Bitny-Shlyakhto, I.A. Vasilyev (RTC, Saint-Petersburg)*** Development of the Principles of investigation and cartography of the working zone of robots
4. ***O.P. Goidin[1], I.L. Ermolov[2], S.A. Sobolnikov[1] ([1]FSUE VNIIA, Moscow; [2]Institute for Problems in Mechanics of RAS)*** RobSim software for mobile robots modeling
5. ***I.L. Ermolov (Ishlinsky Institute for Problems in Mechanics RAS, Russia, Moscow)*** Ergonomics issues of robots' workspace
6. ***I.L. Ermolov, S.P. Khripunov (Scientific Council on Robotics and Mechatronics of RAS, Russia, Moscow)*** Group interaction of UGVs equiped with highly propulsive wheels
7. ***O.M. Kapustina (National Research University "Moscow Power Engineering Institute", Moscow)*** Manipulability and motion planning of KUKA youBot robot
8. ***O.N. Krakhmalev (Bryansk State Technical University, Bryansk, Russia)*** Object-oriented modeling of manipulation robots
9. ***A.N. Mozhaev (RTC, Saint-Petersburg)*** Segmentation of point clouds by means of Point Cloud Library
10. ***V.V. Chernyshev, V.V. Arykantsev (Volgograd State Technical University)*** Investigation of dynamics of walking robots moving along the bottom
11. ***L.Yu. Vorochaeva, A.V. Malchikov, A.A. Postol'niy (Southwest State University, Kursk)*** Approaches to designing wheeled jumping robot
12. ***P.K. Shubin, E.A. Voronov, K.G. Matarenka (RTC, Saint-Petersburg)*** Approach to the realization methodology of reliability calculation of robotic systems and their components
13. ***A.S. Gabriel, V.N. Ulanov, S.G. Chuprov (Peter the Great St.Petersburg Polytechnic University, St.Petersburg)*** Optimization of the design calculation of friction planetary gears with force closure by elastic rings
14. ***A.V. Vazaev, V.P. Noskov, I.V. Rubtsov (Bauman Moscow State Technical University (BMSTU)*** Combined model in tool equipped mobile robot control system

13:30 – 17:30	Robotics in Medicine. Perfusion Complexes for Transplantation and Resuscitation Session	4023 Room, third floor RTC

Co-chairmen:
Doctor of Medical Sciences ***Oleg A. Reznik***
Vaycheslav Kharlamov
Technical Assistant: ***Sergey A. Nikitin***

(Verbal presentation duration is up to 20 minutes. Answers to the questions - up to 5 minutes)

1. ***A.S. Samoylov (SRC – FMB, Saint-Petersburg)*** Development of domestic radiotherapeutic installation on the basis of the compact generator of neutrons
2. ***O.N. Reznik (Saint-Petersburg I.I. Dzhanelidze Research Institute of Emergency Medicine, Pavlov First Saint Petersburg State Medical University)*** The concept of perfusion rehabilitation for donor organs 2.0
3. ***A.E. Skvortcov (Pavlov First Saint Petersburg State Medical University)*** Use of portable perfusion devices in organ donation
4. ***V.V. Kharlamov, S.A. Nikitin, O.N. Reznik, A.E. Skvortcov (RTC, Saint-Petersburg)*** Modern perfusion complexes for extracorporeal membrane oxygenation (ECMO) reanimation
5. ***S.V. Golovinkiy, N.B. Nechaev, M.S. Simonova, V.N. Poptcov, S.V. Gotie (V.I. Shumakov NMITs transplantology and artificial organ of the Russian Ministry of Health, Moscow)*** Opportunities and the prospects of use of ex vivo of perfusion of donor lungs in clinical transplantology
6. ***I.A. Filatov, A.V. Adaskin (Biosoft-M Company, Moscow), O.N. Reznik, A.E. Skvortcov (Saint-Petersburg***

I.I. Dzhanelidze Research Institute of Emergency Medicine*, *Pavlov First Saint Petersburg State Medical University) Portable perfusion device for emergency recovery and maintenance of transplant perfusion during transport in the donor body

7. ***K.Yu. Senchik, G.I. Gafton, (Petrov Scientific research institute of oncology, Saint-Petersburg), N.A. Grayznov, V.V. Kharlamov, S.A. Nikitin, A.V. Shumilov (RTC, Saint-Petersburg)*** Principles of information-control systems construction for hardware-software complexes of hyperthermic chemo-perfusion in oncology

JULY 27, 2018(FRIDAY)

10:00 – 15:00	Modeling of Robotic Complexes Session	3017 Room, second floor, RTC

Co-chairmen:
Doctor of Technical Science, Professor ***Victor P. Pavlov***
Candidate of Technical Science ***Vladimir A. Pavlov***
Technical assistant: ***Tatiana V. Volpyas***

(Verbal presentation duration is up to 10 minutes. Answers to the questions - up to 5 minutes)

1. ***A.A. Vlasenko, A.L. Korotkov (RTC, Saint-Petersburg)*** The manipulator design principles based on multi turn joints for a small robotic platform with quick equipment replacement
2. ***A.S. Gubankov[1], D.A. Yukhimets[2] ([1]FEFU, Vladivostok, [2]IACP FEB RAS, Vladivostok)*** Identification method of kinematic parameters of multilik industrial manipulator
3. ***V.E. Pavlovsky[1], D.A. Gribkov[2], I.A. Orlov[1], A.V. Podoprosvetov[2], E.Yu. Kolesnichenko[1] ([1]Keldysh Institute of Applied Mathematics of RAS, Moscow, [2]Lomonosov Moscow State University, mathematical-mechanics faculty, Moscow)*** Mobile manipulator on six-wheel mecanum platform
4. ***E.S. Briskin, K.Yu. Lepetukhin, A.V. Maloletov, V.A. Serov, A.P. Kirillov (Volgograd State Technical University, Volgograd)*** On the motion control of a robotic multi-section center-pivot irrigation machine for processing non-circular fields
5. ***A.N. Goloshchapov (LLC AVI Solutions, Saint-Petersburg)*** Manufacturing localisation - as a way of technologies transfer
6. ***M.A. Nogin, A.L. Korotkov, A.V. Rogov, O.A. Shmakov, A.V. Lopota (RTC, SPbPU, Saint Petersburg)*** RTC proving ground for mobile robotic complexes
7. ***D.D. Lipovskiy, Yu.A. Denisenya, A.V. Vasilev (Federal State Budgetary Institution «The 33rd Central Research Test Institute of the Ministry of Defense of Russian Federation»)*** Special requirements to robotic complexes of military units of radiological, chemical and biological defense
8. ***A.S. Gorobtsov[1], A.E. Andreev[1], O.O. Mugin[2], D.Y. Petrov[3] ([1]Volgograd State Technical University, Volgograd, Russia, [2]Mechanical Engineering Research Institute of the Russian Academy of Sciences, [3]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia)*** The gate generator for control system of the biped and multi-legged robots
9. ***A.V. Lekareva, A.A. Kobzev, A.A. Mahfouz (Vladimir state university n.a. A.G. and N.G. Stoletovykh, Vladimir)*** Features of constructing a mobile robotic complex of waterjet cutting of oil pipelines
10. ***M.B. Ignatiev (GUAP, Saint-Petersburg)*** Network-centric control of a group of competing robots
11. ***M.B. Ignatiev (GUAP, Saint-Petersburg)*** System analysis of translocating (locomotion) problems in Arctic and Antarctic space

10:00 – 15:00	Marine Robotics Technologies Session	4003 Room, third floor, RTC

Co-chairmen:
Oleg D. Semenov
Candidate of Physico-Mathematical Sciences ***Victor I. Yudin***
Technical assistant: ***Yana V. Dymnikova***

(Verbal presentation duration is up to 10 minutes. Answers to the questions - up to 5 minutes)

1. ***B.A. Luskin, D.O. Semenov, A.I. Zakharov (CDB ME "RUBIN", Saint-Petersburg)*** Development (designing) of robotic complexes in CDB ME "RUBIN"
2. ***L.A. Martynova, G.G. Bezruk (GNIITs RT of the Ministry of Defense of the Russian Federation, Moscow)*** Modern Approaches to Assessing Safety of Experimental Samples of Marine Robotechnical Complexes of Military Purpose
3. ***G.G. Bezruk (GNIITs RT of the Ministry of Defense of the Russian Federation, Moscow)*** The treat conceptual model of testing information security of marine robotechnical complexes of millitary purpose
4. ***V.K. Abrosimov[1], A.N. Mochalkin[1], E.I. Tatarenko[2] ([1]Software Engineering Company "Network-Centric Platforms", Limited Iiability/SEC "NCP"Ltd, Samara, Russia, [2]OOO DB "Talisman", Samara, Russia)*** Marine robotized complex for solving problems in situational awareness
5. ***V.F. Filaretov, D.A. Yukhimets, E.Sh. Mursalimov (Institute of Automation and Control Processes FEB***

RAS, Vladivostok) Mission planner for a group of autonomous underwater vehicles

6. ***V.V. Arykantsev, A.A. Aryskin, O.O. Belyaev, A.Ya. Ksenzenko, E.A. Prysev, V.E. Pryanichnikov, V.V. Chernyshev, S.R. Eprikov (International laboratory "Sensorika", MSTU "STANKIN", RSUH Institute for new educational technologies and informatization, Keldysh Institute of Applied Mathematics of RAS, Moscow, Volgograd State Technical University, Volgograd)*** Supervisory control of the underwater legged vehicle
7. ***D.A. Gromoshinskii, A.V. Popov (RTC, Saint-Petersburg)*** Detecting metal-containing objects with ferromagnetic sensors mounted on unmanned underwater vehicle
8. ***N.A. Shchur[1,3], D.A. Vokhmintcev[2] ([1]Peter the Great St.Petersburg Polytechnic University, St.Petersburg, [2]RTC, St.Petersburg, [3]NRC «Kurchatov Institute» - PNPI, Gatchina, Russia)*** Autonomous underwater vehicles hydrodynamic instability
9. ***V.A. Shurygin, V.A. Serov, I.V. Kovshov, S.A. Ustinov (Join-stock company «The Federal research-and-production center «Titan Barricades», Volgograd, Russia)*** The development and ensuring the exploitations of the arctic offshore hydrocarbons fields by using the robotized legged platforms
10. ***S.I. Savin, D.Yu. Medvedev (South West State University, Kursk, Russia)*** Determination of the availability of pipeline branches using deep convolutional neural networks
11. ***V.M. Rulevskiy[1], V.G. Bukreev[2], E.B. Shandarova[2], V.A. Chekh[1] ([1]Research Institute of Automation and Electromechanics, Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia, [2]National Research Tomsk Polytechnic University, Tomsk, Russia)*** Optimization of voltage regulator parameters for underwater vehicle power supply system

15:00 – 16:00	**Poster Session**	**Hall, second floor, RTC**

1. ***M.S. Bitkov, A.R. Klimov, M.S. Milekhin (MIREA, Moscow)*** Investigation of the possibility and development of proposals for the implementation of advanced micro-gyroscopic devices involving nanotechnologies
2. ***S.D. Soldatov, V.V. Vasiliev (MIREA, Moscow)*** Investigation of directions of hardware components creation for microrobotics
3. ***G.A. Zaroev, M.E. Udonov, S.V. Loginov (MIREA, Moscow)*** Application of additive technologies in robotics
4. ***A.A. Kul'pin, V.S. Lukin (MIREA, Moscow)*** Investigation of the possibility of sharing radar and hyperspectral survey data using a geospatial data warehouse

16:00 – 17:00	**Final Plenary Session. Conference closing**	**Conference Hall, second floor, RTC**

Co-chairmen:

Oleg Martyanov
Doctor of Technical Science, Professor ***Evgeny I. Yurevich***
Doctor of Technical Sciences ***Alexander V. Lopota***
Technical Assistant: ***Marina M. Burkina***

Summaries from Sessions Chairmen.
Discussion on conference results and issue points.
Adoption of the Conference decisions.