

THE SCHEDULE
OF 7th IARP INTERNATIONAL WORKSHOP ON ROBOTICS FOR RISKY
ENVIRONMENT -EXTREME ROBOTICS
7th IARP RISE-ER'2013

October 2-3, 2013

Lenexpo Exhibition Complex, 103, Bolshoy pr. V.O.

Russian State Scientific Center for Robotics and Technical Cybernetics (RTC), Tikhoretsky prospect 21
Saint-Petersburg, Russia

October 2, 2013 (Wednesday), Lenexpo Exhibition Complex				
12:30 – 13:00	Participants registration. Conference-Hall 7-1 Entry, pav. 7, Lenexpo Exhibition Complex			
13:00 – 13:30	Workshop opening. Conference-Hall 7-1, pav. 7, Lenexpo Exhibition Complex			
13:30 – 15:00	Plenary session. Conference-Hall 7-1, pav. 7, Lenexpo Exhibition Complex			
15:00 – 15:30	Coffee-break			
15:30 – 17:30	Plenary session (Continue), Conference-Hall 7-1, pav. 7, Lenexpo Exhibition Complex			
17:30 – 18:30	Drinks and buffet			
October 3, 2013 (Thursday), RTC				
10:00 – 11:00	Sections sessions			
	Section 1. 3014 Room, Second floor	Section 2. 3017 Room, Second floor	Section 3. 4003 Room, Third floor	Section 4. Conference-Hall, Second floor
11:00 – 11:30	Coffee-break			
11:30 – 13:00	Sections sessions (Continue)			
	Section 1. 3014 Room, Second floor	Section 2. 3017 Room, Second floor	Section 3. 4003 Room, Third floor	Section 4. Conference-Hall, Second floor
13:00 – 14:00	Break for lunch			
14:00 – 15:30	Sections sessions (Continue)			
	Section 1. 3014 Room, Second floor	Section 2. 3017 Room, Second floor	Section 3. 4003 Room, Third floor	Section 4. Conference-Hall, Second floor
15:30 – 16:00	Coffee-break			
16:00 – 17:00	Sections sessions			
	Section 1. 3014 Room, Second floor	Section 2. 3017 Room, Second floor	Section 3. 4003 Room, Third floor	Section 4. Conference-Hall, Second floor
17:00 – 17:30	Workshop closing. Conference-Hall, Second floor			

**THE PRELIMINARY PROGRAM
OF 7th IARP INTERNATIONAL WORKSHOP ON ROBOTICS FOR RISKY
ENVIRONMENT -EXTREME ROBOTICS
7th IARP RISE-ER'2013**

OCTOBER 2, 2013 (WEDNESDAY)

12:30 – 13:00

Workshop opening

**Conference-Hall 7-1,
pav. 7, Lenexpo
Exhibition Complex**

Welcoming addresses for Workshop participants:

*Director and Chief Designer of RTC, doctor **Alexander Lopota***

*Chairman of Committee on Science and the Higher Education of the Government of St. Petersburg
Andrey Maksimov*

*Vice-President of Public Organization “Union of Industrialists and Entrepreneurs of St. Petersburg”
Nikoly Kovalev*

*Director for projects of Skolkovo information technologies cluster **Al'bert Efimov***

*Rector for National Research University of Information Technologies, Mechanics and Optics,
RAS correspondent-member **Vladimir Vasiliev***

*Deputy Chief of All-Russian Research and Development Institute for Fire-fighting of EMERCOM,
professor **Sergey Tsarichenko***

*Executive Head of the UVC of Belgium Royal Military Academy, Head of IARP Working Group on Robotics
for HUDEM, General Chair of the International Program Committee
of Workshop 7th IARP RISE-ER'2013, professor **Yvan Baudoin***

*Chief Researcher of Institute for Problems in Mechanics of the RAS, representative of IARP in Russia,
professor **Valery Gradetsky***

*Honorary Chief Designer of RTC, professor **Eugeny Yurevich***

13:00 – 17:30

Plenary Session

**Conference-Hall 7-1,
pav. 7, Lenexpo
Exhibition Complex**

Co-chairmen:

*professor **Eugeny Yurevich***

*professor **Sergey Tsarichenko***

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

1. **S.G. Tsarichenko (All-Russian Research and Development Institute for Fire-fighting of EMERCOM, Balashikha, Moscow Region, Russia)** Directions of Extreme Robotics development for EMERCOM of Russia basing on experience of application
2. **V.G. Gradetsky, M.M. Knyazkov (IPMech of the RAS, Moscow, Russia)** Present and Future Trends of Wall Climbing Robot's Development for Extreme Conditions
3. **F. Schneider (FGAN FKIE/EFS/MMRS, Germany EURATHLON)** A Land robot Trial competition improving the effectiveness of their performance
4. **A.S. Yuschenko (MSTU n.a. N. Bauman, Moscow, Russia)** Human – robot: compatibility and cooperation
5. **E.I. Yurevich (RTC, Saint-Petersburg, Russia)** Groups of robots as fundamental basis for further development of artificial intelligence
6. **V.P. Noskov, I.V. Rubtsov (MSTU n.a. N. Bauman, Moscow, Russia)** Keypoints of intelligent mobile robotic systems design
7. **Y. Baudoin, G.De Cubber (RMA, Brussels, Belgium)** FP7 Projects TIRAMISU, challenges for Robotics
8. **G. De Cubber, D. Doroftei, Y. Baudoin (RMA), D. Serrano (ASCAMM), K. Berns, C. Armbrust (UKL), K. Chintamani (SPACE), R. Sabino (ESRI), S. Ourevitch (STP)** FP7 Projects ICARUS project, challenges for Robotics
9. **Pawel Musialik, Karol Majek, Igor Ostrowski, Andrzej Maslowski (Institute of Mathematical Machines, Poland)** Semantic reasoning tools for ICARUS project
10. **Andre Samberg (Sec-Control Group Helsinki, Finland)** Unmanned robotics cyber network and its modern security challenges

10:00 – 17:00

I. Section

Developments and Projects

**3014 Room,
Second floor, RTC**

Co-chairmen:

professor Arkady Yuschenko

professor Vladimir Pavlovsky

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

1. **A.R. Nabiyullin, M.V. Kavalerov (Perm National Research Polytechnic University)** High-passable multi-purpose wheeled platform
2. **E.S. Briskin, V.V. Chernyshev, A.V. Maloletov, N.G. Sharonov (Volgograd State Technical University, Russia)** Comparative analysis of wheeled, tracked and walking machines
3. **A.P. Aliseychik, I.A. Orlov, V.E. Pavlovsky (IPM n.a. M. Keldysha, Moscow, Russia)** Wheel-walking robot with pneumatic drives
4. **V.S. Balbarov (East-Siberia State University of Technology and Management, Ulan-Ude)** Mechanics of walking chassis with propulsors based on regulated hinged mechanism
5. **S.G. Chuprov, A.A. Ivanov (RTC, Saint-Petersburg, Russia)** Modeling the dynamics of characteristic modes for RVP functioning on the basis of wheeled platform with four independent drives.
6. **S.I. Tulupov, S.L. Zenkevich (MSTU n.a. N. Bauman, Moscow, Russia)** Lower-Extremity Exoskeleton Design
7. **K.S. Sholanov (Kazakh National Technical University)** Research of capabilities of two legs walking in providing of static stability
8. **V.B. Sychkov (JSC «Android technology», Moscow, Russia)** The use of anthropomorphic robotic systems (RS) to work in a hazardous environment
9. **V.I. Shiryayev, A.A. Bragina (South Ural State University, Chelyabinsk, Russia)** Control of manipulation robot in conditions of uncertainty
10. **N.V. Kim, N.E. Bodunkov, A.V. Lebedev (Moscow Aviation Institute (National Research University), Russia)** Robot action planning in emergency situations based on the assessment of the behavioral signs
11. **S.F. Jatsun, L.Yu. Volkova, A.V. Vorochaev (South-West State University, Russia)** The jumping robot for carrying out search works
12. **Y.V. Ilyukhin, S.A. Arfikyan (MGTU «Stankin», Moscow, Russia)** Research of high-speed electropneumatic drives for vertical movement's mobile robots with high smoothness of motion
13. **R.A. Munasyrov, S.S. Moskvichev (Ufa State Aviation Technical University, Russia)** Multipurpose mobile robotic system for telepresence and remote monitoring
14. **I.A. Nesmiyanov, V.M. Gerasun (Volgograd State Agricultural University, Russia)** Trends and prospects of agricultural robotics
15. **Yu.M. Osipov, O.Yu. Osipov (LLC «EMC», Tomsk, Russia)** Creation of products of an extreme robotics on the basis of «active» kardanny transfer
16. **I.M. Samohvalov, K.P. Golovko, M.V. Sokhranov, A.A. Pichugin, A.I. Rozov (Military-medical academy of S.M. Kirov, Saint-Petersburg, Russia)** The perspectives in implementation of distant robot surgery as a concept in modern military medicine
17. **I.M. Samohvalov, K.P. Golovko, M.V. Sokhranov, A.O. Rikun, A.I. Rozov (Military-medical academy of S.M. Kirov, Saint-Petersburg, Russia)** The development of an exercise complex for preparation of military field surgeons
18. **V.A. Polsky, B.A. Vanin (MSTU n.a. N. Bauman, Moscow, Russia)** Research stand for servo controlled drives testing
19. **A. Schwandt, A.S. Yuschenko (Broetje-Automation GMBH, Wiefelstede, Germany; MSTU n.a. N. Bauman, Moscow, Russia)** Industrial robot application for advanced mechanical shaping technologies
20. **Eu.I. Denikin, V.A. Dyachenko (Saint-Petersburg State Polytechnical University, Russia)** Manipulation system of protective curtains for plane and ship slips
21. **A.I. Timofeev, V.A. Dmitrieva (JSC «National institute of aviation technologies», Moscow, Russia)** The Model of Artificial «Intellectual» Hand is the possible basis of the intellectual manipulating robotics
22. **M.B. Ignatev, G.M. Gerasimov, Ya.A. Lipinsky, P.I. Makin (St. Petersburg State University of Aerospace Instrumentation, Russia)** Autonomous adaptive walking robot for gas pipelines diagnostics

Co-chairmen:

professor Valentin Pryanichnikov

doctor Sergey Polovko

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

1. *A.N. Timofeev, I.V. Shardyko (RTC, Saint-Petersburg, Russia)* Problems of anthropomorphic robot application in space
2. *B.V. Burdin, M.V. Mihayluk, I.G. Sokhin, M.A. Torgashev (Gagarin Research & Test Cosmonaut Training, Moscow region, Russia)* The usage of virtual 3D models for experimental exercising the flight operations performed with the help of anthropomorphic robots
3. *B.I. Kruchkov, V.M. Usov (Gagarin Research & Test Cosmonaut Training, Moscow region, Russia)* Virtual reality models as a means of cosmonaut training for interaction with a robotic assistant and as a condition of defining potential fields of its application
4. *A.V. Yaskevich, L.N. Ostoukhov, S.N. Egorov, I.E. Chernyshev (Rocket-Space Corporation «Energia», Korolev city, Russia)* An experience of hybrid simulation tests of russian module to iss berthing by using SSRMS
5. *A.P. Alpatov, P.A. Byelonozhko, P.P. Byelonozhko, S.V. Grigoryev, S.V. Tarasov, A.A. Fokov (Institute of technical mechanics of National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Dnipropetrovs'k)* Modeling the dynamics of space manipulators on mobile base
6. *V.A. Dyachenko, A.G. Zubov, M.I. Malenkov, A.N. Timofeev (Saint-Petersburg State Polytechnical University, Russia)* Designconcept-projectsforastronautics
7. *Yu. Artemenko, P.P. Belonozhko, A.P. Karpenko, S.N. Saypin, A.A. Fokov (Institute of technical mechanics of National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Dnipropetrovs'k; MSTU n.a. N. Bauman, Moscow, Russia)* Mechanisms Of Parallel Structure For Mutual Positioning Useful Loading And Space Ship
8. *V.P. Bogomolov, D.V. Bogomolov (TSHIMASH, Korolev, Moscow Region)* Master-slave manipulators with the use of mechanical or magnetic-and-mechanical systems of movement transfer via hermodoor of manned objects
9. *A.V. Bakhshiev, N.A. Kirpan, A.V. Popova (RTC, Saint-Petersburg, Russia)* Software package for determining the spatial orientation of objects by TV picture in the problem space docking
10. *A.V. Bakhshiev, A.M. Korsakov (RTC, Saint-Petersburg, Russia)* Application of the method TLD in the problem of tracking objects on the TV picture in a space docking
11. *D.A. Dobrynin (RosNOU, Moscow, Russia)* Application the small multicopter UAV for local monitoring of environment objects
12. *S.L. Zenkevich, N.K. Galustian (MSTU n.a. N. Bauman, Moscow, Russia)* Quadrocopter control algorithm
13. *M.B. Ignatev, Ya.A. Lipinsky, V.A. Nenashev, A.V. Nikitin, A.P. Shepeta (St. Petersburg State University of Aerospace Instrumentation, Russia)* How to equip the near-Earth space to deal with cosmic threats

Co-chairmen:

doctor Boris Mikhailov

doctor Alexander Ivanov

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

1. *E.A. Devayterikov, B.B. Mikhailov (MSTU n.a. N. Bauman, Moscow, Russia)* Mobile robot movement control with using of visual odometer data
2. *V.N. Gerasimov (MSTU n.a. N. Bauman, Moscow, Russia)* To the Problem of Mobile Robot Motion Control in the Dynamic Environment
3. *V.P. Noskov, A.A. Khanin (MSTU n.a. N. Bauman, Moscow, Russia)* The method of autonomous mobile robot road navigation, based on lidar and video data complexing
4. *K.V. Ermishin (MSTU n.a. N. Bauman, Moscow, Russia)* Control system of the service mobile robot which operates in rapidly changing environment

5. **D.N. Bankov (BSTU «Voenmeh», Saint-Petersburg, Russia)** Power influence definition to the hinges of caterpillar behavior transport facility for the units wave creation
6. **A.A. Ivanov, A.V. Rehlov, O.A. Shmakov (RTC, Saint-Petersburg, Russia)** Hardware-software complex to remotely control serpentine robot's motion
7. **O.N. Sukhoruchkina, N.V. Progonniy (International Research and Training Center for Information Technologies and Systems of the National Academy of Sciences of Ukraine and the Ministry of Education and Science of Ukraine, Kiev)** Remote interaction with autonomous robot: the implementation sample
8. **V.Ya. Vilisov (IT-Energy, Ltd., Moscow Region, Korolev city, Russia)** Training robot with incomplete information
9. **V.F. Filaretov, A.Yu. Konoplin (Institute of Automation and Control Processes, Vladivostok, Russia)** System of underwater vehicle stabilization in stationkeeping when multilink manipulator operates
10. **V.F. Filaretov, D.A. Yukhimetc, Eu.Sh. Mursalimov (Institute of Automation and Control Processes of the Far Eastern Branch of RAS, Vladivostok, Russia)** The universal architecture of information-management system of mechatronic object
11. **A.A. Andrakhanov (Tomsk State University of Control Systems and Radioelectronics, Russia)** Technology of autonomous mobile robot control based on the inductive method of self-organization of models
12. **V.V. Titov, I.V. Shardyko, I.Yu. Dalyaev (RTC, Saint-Petersburg, Russia)** Implementation of force/torque control for 2 DoF robot manipulator
13. **I.N. Egorov, Hussein Thena Kadhim, Noor Qasim Faraj (Vladimir State University, Russia; Ministry of Science & Technology, Bagdad, Iraq)** Solidworks simulation of a three-fingered robot hand
14. **Yunafi'atul Aniroh, Hung-Chyun Chou and Chung-Hsien Kuo; Nikolay N. Bolotnik, Vladislav G. Chashchukhin, Valery G. Gradetsky and Felix L. Chernousko (National Taiwan University of Science and Technology Taipei, Taiwan, ROC; The Institute for Problems in Mechanics RAS Moscow, Russia)** Trajectory Tracking of a Wall Climbing Robot Using Adaptive Control Schemes Applicable to Slope Changes
15. **Dirk Schmidt, Gerd Waizmann, Niko Peters (Dialogis UG, proTime GmbH for Informationlogistics, Germany)** BlueBot - navigation and communication capabilities for robots in harsh environments
16. **Kamilo Melo, Juan Leon and Laura Paez (KM-RoBoTa Research Group, Bogota D.C. –Colombia)** Modular Snake Robots. Research on Locomotion and Low Cost Open Hard/Software Platforms Development and Integration
17. **S.L. Zenkevich, E.I. Bolotin (MSTU n.a. N. Bauman, Moscow, Russia)** One problem of clustering of the distributed systems
18. **A.V. Timofeev (Saint-Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences, Russia)** Intellectualization and integration of navigation and control tools for autonomous robots and multi-agent robotic systems for extreme conditions
19. **D.Ya. Ivanov (SFedU Acad. Kalyaev Scientific Research Institute of Multiprocessor Computer Systems, Taganrog, Russia)** Method for solving formation task in a group of quadrotors
20. **A.V. Kostin, Y.V. Poduraev, V.E. Pryanichnikov (MG TU «Stankin», Moscow, Russia)** Development of algorithms of group control of mobile robots in the environments with obstacles
21. **V.V. Glazunov, M.A. Kurochkin, L.M. Kurochkin (SPbSPU, RTC, Saint-Petersburg, Russia)** The simulation environment excessive multiprotocol network of decentralized management of a group robots in extreme conditions
22. **A.A. Dyachenko (SFedU Acad. Kalyaev Scientific Research Institute of Multiprocessor Computer Systems, Taganrog, Russia)** The distribution of tasks and planning for the group of unmanned aerial vehicles
23. **E.P. Dobrinskiy, D.A. Bushuev, V.Z. Magergut, A.G. Bazhanov (Belgorod State Technological University named after V.G.Shoukhov, Belgorod, Russia)** Development of an automated transport and storage systems with group control of the automated guided vehicles
24. **I.N. Egorov (Vladimir State University, Russia)** Control applications robot for diagnostic inside pipelines by applied variable cross-section
25. **D.V. Naumenko (SFedU Acad. Kalyaev Scientific Research Institute of Multiprocessor Computer Systems, Taganrog, Russia)** Agent-based approach for solving the task distribution in the mulrirobots warehouse systems

Co-chairmen:

professor **Victor Andreev**

doctor **Vladimir Pavlov**

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

1. **A.I. Medvedev, V.P. Noskov, I.V. Rubtsov (MSTU n.a. N. Bauman, Moscow, Russia)** Complexing lidar and video sensors information for autonomous mobile robot navigation precision and robustness increase
2. **D.G. Arseniev, N.A. Berkovskiy, (SPbSPU, Saint-Petersburg, Russia)** A new fast method without linearization for Bearing Only SLAM
3. **I.M. Yermeev, M.V. Kavalero, A.A. Yuzhakov (Perm National Research Polytechnic University)** Application of integrated odometry in mobile robotics
4. **K.S. Yakovlev (Institute for Systems Analysis of Russian Academy of Sciences, Moscow, Russia)** Method for finding alternative paths on a plane based on a decomposition approach to pathfinding in 2D
5. **A.V. Nguyen, B.B. Mikhaylov (MSTU n.a. N. Bauman, Moscow, Russia)** Method recognition of polygonal 3D objects
6. **V.I. Shiryayev, E.O. Podivilova (South Ural State University, Chelyabinsk, Russia)** On approximation of feasible sets in minimax filter
7. **T.E. Sokolova, V.I. Shiryayev (South Ural State University, Chelyabinsk, Russia)** About modeling of chaotic components in signal processing tasks
8. **V.P. Makarychev (RTC, Saint-Petersburg, Russia)** Finding the affine-invariant images of tasks for navigation, image recognition and diagnosis autonomous robots
9. **D.G. Arseniev, N.A. Babakina, M.P. Kolesnikov, V.P. Shkodyrev (St.Petersburg State Polytechnical University, Russia)** Design of vector-based environment models for the control problems in mobile robotic systems
10. **D.A. Yudin, V.V. Prochenko, G.G. Postolsky, V.Z. Magergut (Belgorod State Technological University named after V.G. Shukhov, Russia)** Computer vision system for automatic orientation and positioning of mobile robot
11. **V.P. Andreev (International laboratory «Sensorika», Moscow, Russia)** Bionic approach to filtering geometrical noise of matrix photo-sensors in the technical vision systems of mobile robots
12. **K.A. Zhukov (RTC, Saint-Petersburg, Russia)** Algorithm for people detection on video from moving camera for monitoring in emergency zones
13. **V.B. Arkadiyev, A.N. Belyaev, O.E. Lapin, V.G. Mikutcky, I.I. Shishov (RTC, Saint-Petersburg, Russia)** Device for simultaneous registration of beta- and gamma- radiation including separation of gamma-radiation spectrum and radiometry information on beta-radiation for express-analysis of radioactive contamination
14. **José Prado, Gonçalo Cabrita, Lino Marques (ISR-UC, Portugal)** Novel dual-technology hand-held device for mine detection
15. **Daniel Stouch, Andrey Ost, Thomas Moore, Camille Monnier (Sensor Processing & Networking Division, Charles River Analytics Inc.)** Robust Tactical Communications Relay using Visual Object Detection on a Autonomous Mobile Robot
16. **H. Balta, G. De Cubber, D. Doroftei, Y. Baudoin, (RMA, Belgium), H. Sahli (VUB, Belgium)** Terrain Traversability Analysis for Off-road robots using Time-Of-Flight 3D sensing
17. **I.E. Novikov (RTC, Saint-Petersburg, Russia)** The solution of direct and inverse tasks of scintillation gamma-spectrometry to remotely measure the characteristics of radiation source field, emitted with man-made radionuclides
18. **Gonçalo Cabrita, José Prado, Lino Marques (ISR-UC Portugal)** Multi-Sensor robotic approach for autonomous mine clearance робототехнический подход к автономному обнаружению и обезвреживанию мин
19. **V.B. Arkadiyev, O.E. Lapin, A.V. Lopota, A.F. Pervishko, A.A. Putilov (RTC, Saint-Petersburg, Russia)** Gamma-radiation detecting unit to operate as part of light-class UAV
20. **Sebastian Bartsch, Frank Kirchner (DFKI Robotics Innovation Center, 28359 Bremen, Germany)** SpaceClimber: A six-legged Robot for Extraterrestrial Surface Exploration in Unstructured and Steep Terrain
21. **I.S. Dukina, M.V. Koval (RTC, Saint-Petersburg, Russia)** Development of technology for directing robot on a source of ionizing radiation
22. **S.V. Isaenko (RTC, Saint-Petersburg, Russia)** Modelling of vibration influence with ANSYS

Leading:
*professor **Eugeny Yurevich***

*Summarizing the Workshop results: sections co-chairmen addresses.
Workshop conclusions and decisions.*