

RAAD 2014

23rd International Conference on Robotics in Alpe-Adria-Danube Region

September 3 - 5, 2014, Smolenice Castle, Slovakia

www.raad2014.org

Conference Program

September 2, 2014

- Arrival - Bus transfer from Bratislava to Smolenice Castle
16:00 – 19:00 Registration
19:30 - 21:00 Dinner

September 3, 2014

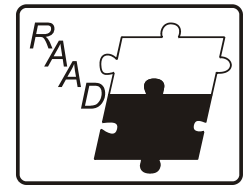
- 08:00 - 09:00 Registration
09:00 - 09:15 Opening session
09:15 - 10:00 Plenary session: **Valery Gradetsky**: *Wall Climbing Robots*
10:00 - 10:20 Coffee break
10:20 - 12:00 Technical session 1:
Modern approaches in robot control Technical session 2:
Mobile robotics
12:00 - 14:00 Lunch
14:00 - 15:40 Technical session 3:
Robot control I. Technical session 4:
Sensory information - control issues
15:40 - 16:00 Coffee break
16:00 - 17:40 Technical session 5:
Robot control II. Technical session 6:
Sensing/perception of robot environment
18:00 - 19:00 Social program
19:30 - 22:00 Dinner - Welcome party

September 4, 2014

- 08:00 - 09:00 Registration
09:00 - 09:40 Plenary session:
Michal Kováč (MicroStep, spol. s.r.o.): *Automation Solutions for High-Volume Manufacturing*
09:40 - 10:00 Coffee break
10:00 - 11:40 Technical session 7:
Novel design and applications of robotic systems Technical session 8:
Medical robotics and artificial hands
11:40 - 14:00 Lunch / ISC meeting
14:00 - 15:30 Technical session 9: *Cognitive and bio- inspired robotics*
15:30 - 17:00 Exhibition of robotic systems / Posters presentation
17:00 - 22:00 Gala dinner (open air party - grill)

September 5, 2014

- 08:00 - 09:00 Registration
09:00 - 09:30 Plenary session:
Ladislav Vargovčík (ZTS VVÚ Košice a. s.): *Mobile searching and rescue robots*
09:30 - 09:50 Coffee break
09:50 - 11:30 Technical session 10:
New robots, small and micro scale robots Technical session 11:
Interfaces, communication and control systems
11:30 - 12:00 Closing session
12:00 - 13:30 Lunch
14:00 Departure - Bus transfer from Smolenice Castle to Bratislava



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Technical session

Plenary session

Session Chair: **Štefan Kozák**

Wednesday September 3, 2014

09:15 – 10:00

Room " Veľká zasadačka"

Valery Gradetsky and Maxim Knyazkov: **Wall Climbing Robots: Mechanics, Control and Adaptation to Environment**

Plenary session

Session Chair: **Peter Hubinský**

Thursday September 4, 2014

09:00 – 09:40

Room " Veľká zasadačka"

Michal Kováč: **Automation Solutions for High-Volume Manufacturing**

Plenary session

Session Chair: **Marco Ceccarelli**

Friday September 5, 2014

09:00 – 09:30

Room " Veľká zasadačka"

Ladislav Vargovčík: **Mobile searching and rescue robots**

1. Modern Approaches in Robot Control

Session Chair: **Nick Andrei Ivanescu**

Wednesday September 3, 2014

10:20 – 12:00

Room " Veľká zasadačka"

20. Štefan Kozák and Slavomír Kajan. **Neural-Genetic Control Algorithm of Robots**

43. Imre J. Rudas, János F. Bitó, József K. Tar and Balázs Kurtán. **Modeling and Low Order Adaptive Control of a DC Motor Driven Electric Cart**

56. Dávid Soós and Mikuláš Huba. **Robustness characteristics and optimal robust tuning of a 2DOF PI control for an uncertain IPDT plant**

48. Štefan Chamraz and Richard Balogh. **Control of the mechatronic systems using an integer arithmetics**

60. Alena Kozáková. **Discrete-Time Asymptotic Reference Tracking for an Industrial Robot**

2. Mobile robotics

Session Chair: **Panagiotis Koustoumpardis**

Wednesday September 3, 2014

10:20 – 12:00

Room "Poľovnícky salón"

11. Sromona Chatterjee, Timo Nachstedt, Florentin Wörgötter, Minija Tamosiunaite, Poramate Manoonpong, Yoshihide Enomoto, Ryo Ariizumi and Fumitoshi Matsuno. **Reinforcement Learning Approach to Generate Goal-directed Locomotion of a Snake-Like Robot with Screw-Drive Units**

18. Martin Florek, František Duchoň, Mikuláš Huba, Ján Šovčík and Martin Kajan. **Comparing Approaches to Quadcopter Control**

33. Aris Synodinos and Nikos Aspragathos. **Collision Planner - A probabilistic single stage smooth path planner for mobile robots**

40. Matej Guráň, Tomáš Fico, Anežka Chovancová, František Duchoň, Peter Hubinský and Jozef Dúbravský. **Localization of iRobot Create using inertial measuring unit**

10. František Duchoň, Peter Hubinský, Andrej Babinec, Tomáš Fico and Dominik Huňady. **Real-time path planning for the robot in known environment**

3. Robot control I.

Session Chair: **Imre J. Rudas**

Wednesday September 3, 2014

14:00 – 15:40

Room "Veľká zasadačka"

3. Erik Kučera and Branislav Hruúz. **Modelling of AS/RS Using Hierarchical and Timed Coloured Petri nets**

12. Kassymbek Ozhikenov, Ruslan Utebaev, Erkebulan Tuleshov and Azhar Tuleshova. **Improvement of Manipulating Robot Servo Drives' Control System**

14. Anton Vitko, Andrej Babinec, Martin Dekan, Jana Paulusová and Mária Dúbravská. **Two approaches to improve robot capabilities**

16. Ján Cigánek, Filip Noge, Gabriel Gálik and Roman Gogola. **Fuzzy Tracking Controller for Shape Optimized Robotic System**

19. A. B. Sharkawy, Kamal A.F. Moustafa, H. El-Awady, Anton Vitko, Andrej Babinec and Martin Dekan. **Control of overhead crane based on Lyapunov approach to fuzzy controller synthesis**

4. Sensory information - control issues

Session Chair: **Aleksandar Rodić**

Wednesday September 3, 2014

14:00 – 15:40

Room "Poľovnícky salón"

7. Nejc Likar and Leon Žljajah. **Estimation of Contact Information using Nonlinear Optimization**

34. Aljaž Kramberger. **A comparison of learning-by-demonstration methods for force-based robot skills**

32. Milutin Nikolić, Branislav Borovac and Mirko Raković. **Simulation of foot-ground contact for bipedal robots**

38. Lazher Zaidi, Belhassen-Chedli Bouzgarrou, Sabourin Laurent and Youcef Mezouar. **Modeling and analysis of 3D deformable object grasping**

28. Alexander Ptakhin, Anton Aliseychik, Igor Orlov and Vladimir Pavlovsky. **Anthropomorphic Walking Design for Special Exoskeletons**

5. Robot control II.

Session Chair: **Leon Žlajpah**

Wednesday September 3, 2014

16:00 – 17:40

Room " *Veľká zasadačka*"

5. Andrej Gams and Tadej Petrič. **Adapting periodic motion primitives to external feedback: modulating and changing the motion**

21. Klemens Springer, Hubert Gattlinger and Christoph Stöger. **A Real-Time Nearly Time-Optimal Point-To-Point Trajectory Planning Method Using Dynamic Movement Primitives**

35. David Baiden and Oleg Ivlev. **Independent Torque and Stiffness Adjustment of a Pneumatic Direct Rotary Soft-Actuator for Adaptable Human-Robot-Interaction**

51. Matteo Verotti and Nicola P. Belfiore. **Isotropic Compliance in RRP Planar Manipulators**

6. Sensing/perception of robot environment

Session Chair: **Anton Vitko**

Wednesday September 3, 2014

16:00 – 17:40

Room " *Poľovnícky salón*"

55. Ryuichi Shimoyama and Reo Fukuda. **Room Volume Estimation Based on Statistical Properties of Binaural Signals Using Humanoid Robot**

9. Oto Haffner and František Duchoň. **Making a map for mobile robot using laser rangefinder**

13. Petros Vasileiou and Emmanouil Psarakis. **A New Depth Camera Calibration Algorithm**

30. Peter Beňo, František Duchoň, Michal Tölgyessy, Peter Hubinský and Martin Kajan. **3D map reconstruction with sensor Kinect**

7. Novel design and applications of robotic systems

Session Chair: **Marco Ceccarelli**

Thursday September 4, 2014

10:00 - 11:40

Room " *Veľká zasadačka*"

4. Theodor Borangiu, Silviu Raileanu, Nick Ivanescu, Octavian Stocklosa and Octavian Morariu. **Multitasking Robot-Vision for Supply Holon Execution in Intelligent Manufacturing**

29. Mirko Raković, Marko Jovanović, Branislav Borovac, Bojan Tepavčević, Milutin Nikolić and Mladen Papović. **Design and Fabrication with Industrial Robot as Brick-laying tool and with Custom Script Utilization**

47. Marco Ceccarelli et al. **Design constraints and features for a robotic system cutting pipelines in nuclear vessels**

8. Serge Platov and Yuriy Turygin. **Railtruck robotic spring end process control system**

57. Andrea Manuello Bertetto, Gianni Niccolini and Roberto Ricciu. **A Portable Light Weight System for Saffron Harvesting**

8. Medical robotics and artificial hands

Session Chair: **Nicola P. Belfiore**

Thursday September 4, 2014

10:00 - 11:40

Room " *Paľovnický salón* "

2. Cesare Rossi, Vincenzo Niola, Sergio Savino and Stefano Troncione. **An Underactuated Mechanical Hand A First Prototype**

50. Panagiotis Koustoumpardis, Kostas Nastos and Nikos Aspragathos. **Underactuated 3-finger robotic gripper for grasping fabrics**

62. Marian Bolboe and Ionel Staretu. **Antropomorphic Gripper with Two Symmetrical Fingers, Designed for Industrial Robots**

6. André Wilkening and Oleg Ivlev. **Estimation of Mass Parameters for Cooperative Human and Soft-Robots as Basis for Assistive Control of Rehabilitation Devices**

9. Cognitive robotics and bio - inspired approaches to control of swarms

Session Chair: **Andrej Gams**

Thursday September 4, 2014

14:00 - 15:30

Room " *Veľká zasadačka* "

59. Aleksandar Rodić, Miloš Jovanović and Danijela Jovanović. **Cognitive robots of human character**

25. Markus Schoeler, Florentin Wörgötter, Mohamad Javad Aein and Tomas Kulvicius. **Automated generation of training sets for object recognition in robotic applications**

1. Ján Zelenka and Tomáš Kasanický. **Outdoor UAV Control and Coordination System Supported by Biologically Inspired Method**

45. Marek Sukop, Mikuláš Hajduk and Rudolf Jánoš. **Strategic behavior of the group of mobile robots for robosoccer (category Mirosoot)**

10. New robot design, small and micro/nano - scale robots

Session Chair: **Cesare Rossi**

Friday September 5, 2014

09:50 - 11:30

Room " *Veľká zasadačka* "

31 Housseem Saafi, Med Amine Laribi, Marc Arsicault and Said Zegloul. **Optimal design of a new Spherical Parallel Manipulator**

49. Štefan Havlík. **Design of Smart Robotic Mechanisms**

52. Nicola P. Belfiore, Giovanni Battista Broggiato, Matteo Verotti, Rocco Crescenzi, Marco Balucani, Alvise Bagolini, Pierluigi Bellutti and Maurizio Boscardin. **Development of a MEMS Technology CSFH based Microgripper**

41. Jaroslav Hricko. **Design of Compliant Micro-Stage Based on Peaucellier–Lipkin Straight-Line Mechanism**

11. Human – Robot Interfaces, Communication and Control Systems

Session Chair: **Ryuichi Shimoyama**

Friday September 5, 2014

09:50 - 11:30

Room "Poľovnícky salón"

24. Michal Kochláň and Michal Hodoň. **Open Hardware Modular Educational Robotic Platform – Yrobot**

26. Pavel Andris and Karol Dobrovodský. **Developing an Embedded System Based on a Real-Time Version of Linux**

42. Juraj Miček and Ondrej Karpiš. **Audio Communication Subsystem of Multi-robotic System YROBOT**

46. Marek Sukop, Mikuláš Hajduk and Marek Vagaš. **Transferring image processing algorithms on application with multi arm robot and mobile phone**

Poster session

Thursday September 4, 2014

15:30 - 17:00

Room "Smolenice Castle"

15. Nayden Chivarov, Stefan Shivarov, Kaloyan Yovchev, Denis Chikurtev and Nedko Shivarov. **Intelligent Modular Service Mobile Robot ROBCO12 for Elderly and Disabled Persons Care**

22. Yuriy Turygin, Yulia Zubkova and René Hartánský. **Assurance of the Electron Beam Positioning Accuracy at Electron Beam Welding**

27. Andreea Dobra. **General classification of robots. Size criteria**

36. Martin Kajan, Ján Šovčík, František Duchoň, Martin Florek, Peter Beňo and Leo Mrafko. **Sensoric subsystem of Automated guided vehicle**

39. Vladimír Popelka, Tomáš Malatinec and Patrik Hudačko. **Development of autonomous sensor based control of flying vehicles**

44. Marek Vagaš, Ján Semjon, Vladimír Baláž and Jozef Varga. **Methodology for the vibration measurement and evaluation on the industrial robot Kuka**

58. Andrea Manuello Bertetto, Gianni Niccolini, Andrea Cadeddu, Lorenza Di Pilla and Roberto Ricciu. **Home Automation Systems and PMV Classification for Moderate Confined Environments**