

MESAS 2018 Scientific Conference Program

| MESAS18 Day 1 - 17 OCT 2018        |          |   |  |
|------------------------------------|----------|---|--|
| Start time                         | Duration | Activity/Presentation   | Presenter/Author(s)  |
| 8:00                               | 1:15     | Registration - at the gate registration area  |  |
| 9:30                               | 0:10     | Welcoming speech  | Director MS COE, prof. Arkin   |
| 9:40                               | 0:10     | MESAS18 Chairman's message  | Adriano FAGOLINI   |
| 9:50                               | 0:20     | Multi-UAV-based Reconnaissance and Assessment of Helicopter Landing Points in Manned-Unmanned-Teaming Missions              | Marc Schmitt, Peter Stuetz   |
| 10:10                              | 0:20     | Analysis of Tensor-Based Image Segmentation using Echo State Networks   | Charles Donkor, Emmanuel Sam, Sebastian Basterrech   |
| 10:30                              | 0:15     | Coffee Break / Poster session   |  |
| Session 1 - Chair: Miroslav Kulich |          |   |  |
| 10:45                              | 0:20     | Approaches to Realise the Potential of Autonomous Underwater Systems in Concept Development and Experimentation             | Thomas Mansfield, Pilar Caamano Sobrino, Robert Been, Arnau Carrera Vinas, Giovanni Luca Maglione, Alberto Tremori   |
| 11:05                              | 0:20     | Distributed Simulation Environment of Unmanned Aerial Systems for a Search Problem  | Stanisław Skrzypecki, Dariusz Pierzchala, Zbigniew Tarapata  |
| 11:25                              | 0:20     | ROS-Gazebo based simulation of co-operative UAVs  | Cinzia Bernardeschi, Adriano Fagiolini, Maurizio Palmieri, Fabio Sofia, Giulio Scrima  |
| 11:45                              | 0:20     | Quantifying the Effects of Environmental Conditions on Autonomy Algorithms for Unmanned Ground Vehicles                     | Phillip Durst, Justin Carrillo   |
| 12:05                              | 0:05     | Discussion  |  |
| 12:10                              | 1:20     | Lunch, exhibition tour, networking  |  |
| 13:30                              | 2:30     | Common Discussion Forum with Multi-domain Advanced Robotic Systems Conference (MARS) – Strategic Approach (PVA Expo Hall 2) | Prof. Ronald C. ARKIN, Prof. Agostino BRUZZONE, Mr. Thomas C. IRWIN, Mr. Thomas KILLION, Mr. Jan KLAS, Mr. Zdeněk KUČERA, NAVY CAPT Vincenzo MILANO, Mr. Kevin MILLS, GEN Petr PAVEL, Prof. Michal PĚCHOUČEK, CDR Joe STRASSBERGER |
| 19:00                              | 5:00     | Ice Breaker - Hangar Party, (Transportation provided by FFF)  |  |

| <b>MESAS18 Day 2 - 18 OCT 2018</b>     |      |  |  |
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| 9:30                                   | 2:30 |  | <b>Common Session with Multi-domain Advanced Robotic Systems Conference (MARS) (PVA Expo Hall 2)</b><br>Mr. Thomas KILLION, Mr. Tomáš PUSTINA, Mr. Thomas C. IRWIN, Prof. Ronald C. ARKIN, BG (Ret.) Ofer TSAFRIR            |
| 12:00                                  | 1:00 |  | <b>Lunch, exhibition tour, networking</b>  |
| <b>Session 2 - Chair: Ludek Zalud</b>  |      |  |  |
| 13:00                                  | 0:20 |  | <b>Battle management language for robotic systems</b><br>Rikke Amilde Seehuus, Kim Mathiassen, Else-Line Malene Ruud, Aleksander Skjerlie Simonsen, Fredrik Hermansen  |
| 13:20                                  | 0:20 |  | <b>Fractional Order Extremum Seeking Controller Design for Autonomous Vehicle</b><br>Ozkan ATAN  |
| 13:40                                  | 0:20 |  | <b>Using Physics-Based M&amp;S for Training and Testing Machine Learning Algorithms</b><br>Justin Carrillo, Burhman Gates, John Monroe, Brent Newell, Phillip Durst  |
| 14:00                                  | 0:15 |  | <b>Coffee Break / Poster session</b>   |
| <b>Session 3 - Chair: Petr Stodola</b> |      |  |  |
| 14:15                                  | 0:20 |  | <b>Industry 4.0 Testbed at Brno University of Technology</b><br>Ludek Zalud, Frantisek Burian, Petra Kalvodova   |
| 14:35                                  | 0:20 |  | <b>Automation in experimentation with constructive simulation</b><br>Jan Hodicky, Dalibor Procházka, Josef PROCHAZKA   |
| 14:55                                  | 0:20 |  | <b>Evaluating a Helicopter Pilot HMI for Rotor Strike Warning in a VBS3-based Simulated Environment</b><br>Markus Kaiser, Axel Schulte   |
| 15:15                                  | 0:20 |  | <b>A versatile visual navigation system for outdoor autonomous vehicles</b><br>Filip Majer, Lucie Halodová, Tomáš Vintr, Martin Dlouhý, Lukáš Merenda, Jaime Pulido Fentanes, David Portugal, Micael Couceiro, Tomas Krajnik |
| 15:35                                  | 0:20 |  | <b>Autonomous Systems and Chinese Strategic Thinking</b><br>Jakub Fucik, Richard Stojar, Libor Frank   |
| 15:55                                  | 0:10 |  | <b>Discussion and closing remarks</b><br>Adriano FAGOLINI  |

| <b>MESAS18 Day 3 - 19 OCT 2018</b> |      |   |
|------------------------------------|------|---|
| 9:30                               | 0:05 | <b>Session 4 - Chair: Dr. Giulio Franzinetti</b>  |
| 9:35                               | 0:20 | <b>Incremental Learning of Travesability Cost for Aerial Reconnaissance Support to Ground Units, Milos Pragr, Petr Cizek, Jan Faigl</b>                             |
| 9:55                               | 0:20 | <b>Information Exchange Diagrams for Information Systems and Artificial Intelligence in the Context of Decision Support Systems, Sebastian Jahnen, Stefan Pickl</b> |
| 10:15                              | 0:20 | <b>Experiment of the Tactical Decision Support System within company defensive operation, Jan Drozd</b>   |
| 10:35                              | 0:20 | <b>Visual odometry for vehicles' undercarriage 3D modelling, Tomáš Pivoňka, Karel Košnar, Martin Dörfler, Libor Přeučil</b>   |
| 10:55                              | 0:15 | <b>Coffee Break / Poster session</b>  |
| 11:10                              | 0:20 | <b>Introducing Intelligence and Autonomy into Industrial Robots to address Operations into Dangerous Area, Agostino Bruzzone, Marina Massei, Riccardo Di Matteo</b> |
| 11:30                              | 0:20 | <b>Visual data simulation for deep learning in robot manipulation tasks, Miroslav Surák, Karel Košnar, Miroslav Kulich, Libor Přeučil</b>                           |
| 11:50                              | 0:20 | <b>LAWS: How to deal with Legal, Ethical and Practical Issue by Using Simulation, Agostino Bruzzone, Marina Massei, Giulio Franzinetti, Riccardo Di Matteo</b>      |
| 12:10                              | 0:15 | <b>Closing remarks, Discussion and MESAS19 way ahead considerations - End of the MESAS18 Conference</b>   |

**Poster Session**

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| <b>Monocular Kinematics Based on Geometric Algebras</b>  | Jaroslav Hrdina, Marek Stodola                                    |
| <b>Note on signature of trident mechanisms with distribution growth vector (4,7)</b>   | Jaroslav Hrdina, Stanislav Frolík                                 |
| <b>Trident snake robot motion simulation in V-Rep</b>  | Roman Byrtus, Petr Vasik, Jana Vechetová                          |
| <b>M&amp;S-based robot swarms prototype</b>  | Fabio Corona, Marco Biagini, Alessandro Massa, Fabrizio Innocenti |
| <b>Increased sensitivity of ultrasonic radars for robotic use</b>  | Karel Hajek   |
| <b>Possibilities of raster mathematical algorithmic models utilization as an information support of military decision making process</b> | Jan Nohel   |
| <b>Development of a crawling platform with foot contact sensors</b>  | Gaël Écorchard, Libor Přeučil                                     |
| <b>Interaction with collaborative robot using 2D and TOF camera</b>  | Aleš Vysocký, Robert Pastor, Petr Novak                           |
| <b>Route planning for teams of unmanned aerial vehicles using Dubins vehicle model with budget constraint</b>                            | David Zahrádka, Robert Pěnička, Martin Saska                      |
| <b>Replacement possibilities of the medium-size truck transport capacities by UAVs in the disturbed</b>                                  | Pavel Foltin, Martin Brunclík                                     |
| <b>Autonomous air defense effectors deployment algorithms for modeling and simulation purposes</b>                                       | Jan Farlik, Miroslav Kratky, Simona Simkova                       |
| <b>Modelling of the Force Protection Process Automation in Military Engineering</b>  | Jaroslav Záleský, Tibor Palasiewicz                               |
| <b>Unmanned autonomous systems tactical team decision support via sensor-based discrete</b>  | Wayne Stilwell  |
| <b>Localization fusion for Aerial Vehicles in partially GNSS denied environment</b>  | Jan Bayer, Jan Faigl  |
| <b>RoScan 2.0 - multispectral hi-resolution scanner</b>  | Ludek Zalud, Petra Kalvodova                                      |
| <b>PΦSS: An Open-source Experimental Setup for Continuous Real-world Implementation of Swarm Robotic Systems</b>                         | Farshad Arvin, Tomas Krajnik, Ali Emre Turgut                     |
| <b>Using Unmanned Aerial Systems in Military Operations for Autonomous Reconnaissance</b>  | Petr Stodola, Jaroslav Kozubek, Jan Drozd                         |
| <b>3D Virtual Path Planning for People with Amyotrophic Lateral Sclerosis through Standing Wheelchair</b>                                | Víctor H. Andaluz   |
| <b>Coordinated and Cooperative Control of Heterogeneous Multi-Mobile Manipulators</b>  | Jessica S. Ortiz  |
| <b>Modelling and Optimization of the Air Operational Manoeuvre</b>   | Jan Mazal, Josef Prochazka, Libor Kutěj, Dalibor Procházka        |
| <b>Cooperative Control of Sliding Mode for Mobile Manipulators</b>   | Víctor H. Andaluz   |
| <b>Dynamic Control Through Linear Algebra for a Car-Like Robot</b>   | Víctor H. Andaluz   |
| <b>Autonomous Assistance Control based on Inattention of the Driver when Driving a Truck Tract</b>                                       | ELVIS ANDRES BUNCES NARANJO                                       |
| <b>Modelling and Simulation in High Level Reasoning (Strategic) Domain</b>   | Josef Prochazka, Jan Mazal  |
| <b>Trajectory Planning for Aerial Vehicles in Area Coverage Problem with Nearby Obstacles</b>  | Jakub Marek, Petr Váňa, Jan Faigl                                 |
| <b>Modelling, simulation, and planning for MoleMOD</b>   | Michaela Brejchová, Miroslav Kulich, Jan Petrš, Libor Přeučil     |
| <b>Information gathering planning with Hermite spline motion primitives for aerial vehicles with limited time of flight</b>              | Alexander Dubeň, Robert Pěnička, Martin Saska                     |