



National Engineering School of Sousse



Royal Military Academy of Brussels

## 8<sup>th</sup> IARP Workshop

Robotics and Mechanical assistance in  
Humanitarian De-mining  
and  
Similar risky interventions

**HUDEM'2010**

10-12 May, 2010

National Engineering School of Sousse  
Tunisia

# PROGRAM



| <b>10 March 2010, Monday</b>  |  |  |
|---|--|--|
| 08.00H-09.15H   | <b>WELCOME - REGISTRATION</b>  |  |
| 09.15H-10.00H   | Opening - Introduction   | Director of the University of Sousse<br>and<br>Director of the National<br>Engineering School of Sousse  |
| 10.00H-10.30H   | HUDEM introduction   | Prof Valery Gradetsky<br>Co-Chairman IARP WS HUDEM   |
| 10.30H-11.00H   | COFFEE BREAK   |  |
| <b>SESSION 1-3 and Round Table<br/>10 March 2010, Monday</b>                            |  |  |
| Session 1. <b>ROBOT DESIGN</b>  |  |  |
| <b>Chairman : Prof. Lotfi ROMDHANE (ENISo - Tunisia)</b>                                |  |  |
| 11.00H-11.30H   | Mobility and stability of robots on<br>rough and soft terrain: Modeling and<br>control | Faïz Ben Amar<br>ISIR Institut des Systèmes Intelligents et<br>de Robotique<br>Université Pierre et Marie Curie UPMC -<br>FRANCE   |
| 11.30H-12.00H   | About a new design of a pneumatic<br>walking robot                                     | Imeddine SIALA<br>Amr BENKHALIFA<br>Military Academy<br>Fondouk Jedid - TUNISIA  |
| 12.00H-12.30H   | A new concept of fast mobile rover with<br>improved stability on tough terrain         | Jean-Christophe Fauroux<br>J. Dakhallah, B.C. Bouzgarrou<br>Clermont University, French Institute for<br>Advanced Mechanics (IFMA), CLERMONT-<br>FERRAND, France                                   |
| 12.30H-14.00H   | Collective Photo and Lunch   |  |
| Session 2. <b>ROBOT – DATA PROCESSING, CONTROL and SIMULATION</b>                       |  |  |
| <b>Chairman: Prof. Munsung KIM (Korea Institute of Science and Technology – Korea )</b> |  |  |
| 14.00H-14.30H   | Securing the AntNet routing<br>protocol for Wireless Sensor<br>Network                 | Ilhem Lengliz, Achraf Karbich,<br>Semeh Ben Salem<br>Military Academy<br>Fondouk Jedid - TUNISIA   |
| 14.30H-15.00H   | e-Training in RISE and HUDEM   | Andrzej MASLOWSKI <sup>1,2</sup><br><sup>1</sup> Warsaw University of Technology,<br>Faculty of Mechatronics, Warsaw, Poland<br><sup>2</sup> Institute of Mathematical Machines,<br>Warsaw, Poland |

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| 15.00H-15.30H  | About Evaluation of Electromagnetic Perturbations Generated by Electronic Converters in Robotics   | Taoufik ZOUAGHI<br>T. Zouaghi <sup>1,3</sup> , I.Mzoughi <sup>2</sup> ,<br>A. Mhamdi <sup>2</sup><br><sup>1</sup> Military Academy - Tunisia,<br>e-mail: t.zouaghi@enit.rnu.tn /<br>zouaghitaoufik@yahoo.fr<br><sup>2</sup> Aviation School of BorjElamri,<br>Tunisia<br><sup>3</sup> Research Laboratory SICISI, ESSTT, 5, Av.<br>T. Hussein, 1008, Tunis, Tunisia   |
| 15.30H-16.00H  | <b>COFFEE BREAK</b>  |   |
| <b>Session 3. ROBOTICS FUNCTIONS</b>   |  |   |
| <b>Chairman: Prof. Andrzej MASLOWSKI (Faculty of Mechatronics, Warsaw, Poland)</b> |  |   |
| 16.00H-16.30H  | Logical solution for design, implementation and manufacture of automated production technology for organic fruits and vegetables for fresh consumption in open and closed areas and Robotic Complexes for demining of minefields | Marin Grudev MIDILEV<br>BULGARIA  |
| 16.30H-17.00H  | Chemical Explosive Detection for Robotic Demining Application  | Sungjun Lee <sup>1</sup> , Junghoon Lee <sup>1,2</sup> ,<br>and Munsang Kim <sup>3</sup><br><sup>1</sup> School of Mechanical and Aerospace<br>Engineering, Seoul National University, Korea<br><sup>2</sup> Interdisciplinary Program of Bioengineering,<br>Seoul National University, Korea<br><sup>3</sup> Center for Intelligent Robotics, 21C Frontier<br>Intelligent Robotics Program,<br>Korea Institute of Science and Technology |
| 17.00H-17.30H  | New technologies to face CBRN-<br>threats  | Yvan BAUDOIN<br>ERM- Belgium  |
| 17.30H-18.00H  | <b>ROUND TABLE on ROBOTS and SENSORS for Humanitarian De-mining</b>  |   |

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| <b>SESSION 4-8 and Round Table<br/>11 May 2010, Tuesday</b>                                       |   |  |
| <b>Session 4. ROBOT – DATA PROCESSING, CONTROL and SIMULATION</b>                                 |   |  |
| <b>Chairman: Prof Valery GRADETSKY (Institute for Problems in Mechanics - Russian Federation)</b> |   |  |
| 09.00H-09.30H   | Design of Robot's Adaptive Motors Controller Based on Fuzzy Logic using Microcontroller | Adel CHANGUEL<br>Ecole Préparatoire aux Académies<br>Militaire de Sousse - TUNISIE   |
| 09.30H-10.00H   | Field Robot Teleoperation via Vibrotactile User Interface                               | Gi-Hun YANG, Woosub Lee,<br>Sungchul Kang and Munsang Kim<br>Center for Cognitive Robotics Research<br>Korea Institute of Science and Technology,<br>Seoul, Korea          |
| 10.00H-10.30H   | A robot controlled remotely for area radioactivity topography                           | Mounir Zrafi, Mohamed Hèdi Bedoui<br>. UR-08-27-TMI: Technology and Medical<br>Imaging<br>Laboratory of Biophysics<br>Faculty of Medicine, Monastir University,<br>Tunisia |
| 10.30H-11.00H   | <b>COFFEE-BREAK</b>   |  |

| <b>Session 5. ROBOTICS FUNCTIONS</b>  |  |  |
|---|--|--|
| <b>Chairman : Prof. Mohamed Hedi BEDOUI (FMM - Tunisia)</b>                                       |  |  |
| 11.00H-11.30H   | Multi-functional Surveillance Wallclimbing Machine                                   | Prof Valery Gradetsky,<br>M.M.Knyazkov<br>The A.Yu.Ishlinsky Institute for Problems in Mechanics of Russian Academy of Sciences - Russia   |
| 11.30H-12.00H   | Towards a Human-like voice command of robots   | Zied Chtourou, Sahbi Mazlout<br>Military Academy<br>Fondouk Jedid - TUNISIA  |
| 12.00H-12.30H   | Multi-robot collaboration and coordination in a high risk transportation scenario    | Daniela DOROFTEI<br>ERM- Belgium   |
| 12.30H-14.00H   | <b>LUNCH</b>   |  |
| <b>Session 6. ROBOT – DATA PROCESSING, CONTROL and SIMULATION</b>                                 |  |  |
| <b>Chairman : Prof. Mohamed Hedi BEDOUI (FMM - Tunisia)</b>                                       |  |  |
| 14.00H-14.30H   | Basic autonomous robot navigation  | Ali BHAR<br>Military Academy<br>Fondouk Jedid - TUNISIA  |
| 14.30H-15.00H   | An autonomous vehicle localisation system based on multisensor data fusion           | Mounir MANSOUR<br>Ecole Préparatoire aux Académies Militaire de Sousse - TUNISIE   |
| 15.00H-15.30H   | <b>COFFEE-BREAK</b>  |  |
| <b>Session 7. ROBOT DESIGN</b>  |  |  |
| <b>Chairman : Prof. Munsang KIM (Korea Institute of Science and Technology – Korea )</b>          |  |  |
| 15.30H-16.00H   | Modules for ROBOTICS Systems for Humanitarian De-mining: IARP WG HUDEM Contributions | Yvan Baudoin**, Maki K Habib*, et AI**<br><br>*American University of Cairo<br>** Royal Military Academy, Dept Mechanical Engineering – MB07 R&D Team, Brussels-Belgium  |
| 16.00H-16.30H   | A new design for in-pipe inspection robot  | Houbeeb ABID <sup>(1)</sup><br>Abdelfattah MLIKA <sup>(2)</sup><br>Lotfi ROMDHANE <sup>(2)</sup><br><sup>(1)</sup> Institut Supérieur aux Etudes Technologiques de Sousse<br><sup>(2)</sup> Ecole Nationale d'Ingénieurs de Sousse |
| 16.30H-17.00H   | <b>COFFEE-BREAK</b>  |  |
| <b>Session 8. CLOSURE</b>   |  |  |
| <b>Chairman: Prof Valery GRADETSKY (Institute for Problems in Mechanics - Russian Federation)</b> |  |  |
| 17.00H-18.00H   | <b>IARP WS'HUDEM'2011 OBJECTIVES<br/>HUDEM' 2010 Workshop Farewell</b>               |  |
| 19.00H-20.30H   | <b>DINNER, Get together (Touristic restaurant – Sousse)</b>                          |  |

| <b>Wednesday 12 May, 2010</b> |                             |
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| <b>SOCIAL PROGRAM</b>         |                             |
| 08.00H-12.00H                 | Touristic visit to KAIROUAN |
| 12.00H-13.30H                 | <b>LUNCH – (KAIROUAN)</b>   |
| 13.30H-14.30H                 | <b>BACK TO SOUSSE</b>       |