



Open Conference
on Future Trends
in Robotics

RoboCity2030 Madrid's Robotics Hub
Madrid, May 26-27th 2016

Technical Program at a Glance

Thursday 26 May 2016			
09:30-10:00	Arrival and Registration (Venue: Sala de la Máquina / ETSII Main Hall)		
10:00-10:30	Opening (Room: <i>Salón de Actos</i>)		
10:30-11:30	Plenary talk 1: Alin Albu-Schäffer (DLR, Germany) (Room: <i>Salón de Actos</i>)		
11:30-12:00	Coffee Break		
Time	Aula C	Aula D	Aula Puig Adam
12:00-13:30	<u>Technical session 1</u> Assistive and Rehabilitation Robotics	<u>WS1</u> Government involvement in Robotics	Robotize your idea 1
13:30-15:00	Lunch		
15:00-16:30	<u>Technical session 2</u> Telerobotics and Remote Handling	<u>Technical session 3</u> Computer Vision and Image Processing - 1	Robotize your idea 2
16:30-17:00	Coffee Break		
17:00-18:30	<u>WS2</u> Robotics, arts and culture	<u>WS3</u> Educational robots	Educational robotics trials

Friday 27 May 2016			
09:30-10:30	Plenary talk 2: Javier Minguez (Bit Brain Technologies, Spain) (Room: <i>Salón de Actos</i>)		
Time	Aula C	Aula D	Aula Puig Adam
10:30-12:00	<u>Technical session 4</u> Computer Vision and Image Processing - 2	<u>WS4</u> Robotics innovation (HispaRob)	<u>WS5</u> Safety in collaborative robot applications
12:00-12:30	Coffee Break		
12:30-14:00	<u>Technical session 5</u> Humanoid Robotics	<u>Technical session 6</u> Human Robot Interaction	<u>WS6</u> Entrepreneurship in robotics
14:00-15:30	Lunch		
15:30-17:00	<u>Technical session 7</u> Localization, mapping and navigation	<u>WS7</u> Societal aspects of robotics	Brokerage event 1
17:00-17:30	Coffee Break		
17:30-19:00	<u>Technical session 8</u> Multirobot systems Swarm robotics Locomotion and actuation	<u>Technical session 9</u> New mechanism design Tactile & haptics devices	Brokerage event 2

Technical Programme

Program on Thursday 26 May 2016

Room: Aula C

Technical session 1: Assistive and Rehabilitation Robotics	
Session Chair: Dolores Blanco	
Venue: Aula C	
Time: 12:00-13:30	
Time	Presentation
12:00-12:18	DEVELOPMENT OF A BRAIN-COMPUTER INTERFACE, BASED ON EMOTIONS FOR THE CONTROL OF ROBOTICS APPLICATIONS <i>D. PEÑA, A. VERONESI, G. LIBERT, R. SALTAREN, R. ARACIL and A. RODRÍGUEZ</i>
12:18-12:36	KINEMATIC AND KINETIC SIMULATION OF UPPER BRACHIAL PLEXUS INJURY IN THE ARM ROTATION <i>M.A. DESTARAC, C.E. GARCÍA, R. SALTARÉN and R. ARACIL</i>
12:36-12:54	A PILOT STUDY ON THE DESIGN CONSIDERATIONS AND USER IMPRESSIONS OF AN ASSISTIVE AFFORDABLE DEVICE <i>E. OÑA, A. JARDÓN, C. BALAGUER, A. MARTÍNEZ, P. SÁNCHEZ-HERRERA, J.C. MIANGOLARRA</i>
12:54-13:12	MODELLING AND SIMULATION OF SERVOMOTORS FOR A REHABILITATION EXOSKELETON <i>L. J. MONGE, M.A. DESTARAC, C.E. GARCIA and S. HERNÁNDEZ</i>
13:12-13:30	SHOULDER EXOSKELETON FOR REHABILITATION ACTUATED WITH SHAPE MEMORY ALLOY <i>D. COPACI, A. FLORES, D. BLANCO and L. MORENO</i>
13:30-15:00	LUNCH
Technical session 2: Telerobotics and Remote Handling	
Session Chair: Manuel Ferre	
Venue: Aula C	
Time: 15:00-16:30	
Time	Presentation
15:00-15:18	VISION DRIVEN CONTROL OF ROBOTS: REVIEW FOR FUTURE APPLICATIONS IN CERN ACCELERATORS HARSH ENVIRONMENTS <i>M. DI CASTRO, M. FERRE and A. MASI</i>
15:18-15:36	COMPARISON BETWEEN A HYBRID RATEPOSITION CONTROL AND OTHER METHODS IN A LARGE WORKSPACE TELEMANIPULATION TASK <i>L.E. RUBIO, J.M. BREÑOSA, F.J. SUAREZ, M. FERRE and R. ARACIL</i>
15:36-15:54	GRAPHICAL USER INTERFACES FOR ROBOTIC SYSTEMS IN HAZARDOUS FACILITIES <i>G. LUNghi, M. DI CASTRO, R. MARIN PRADES, A. MOSCA</i>
15:54-16:12	A MODULAR PASSIVITY FRAMEWORK FOR MULTILATERAL TELEOPERATION APPLICATIONS <i>M. PANZIRSCH, J. ARTIGAS and M. FERRE</i>
16:12-16:30	ANALYSIS OF HAPTIC RESOLUTION ON TORSO FOR THERMAL AND VIBROTACTILE ACTUATORS IN A VIRTUAL REALITY VEST <i>G. GARCIA, J.C. RAMOS, J.M. BREÑOSA and M. FERRE</i>
16:30-17:00	Coffee break

Workshop 2: Robotics, arts and culture

Venue: Aula C


Time: 17:00-18:30

 <p>Belinda Washington Actriz y presentadora</p>	 <p>Carlos Salgado Ilustrador</p>	<p>WS2: Robotics, arts and culture (May 26th, 2016)</p> <ul style="list-style-type: none"> - Belinda Washington, actress and presenter - Carlos Salgado, concept artist - Rosa Montero, writer and journalist - Ricardo Dominguez, ROS Film Festival Director <div data-bbox="703 689 1275 792" style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Open Conference on Future Trends in Robotics RoboCity2030 Madrid's Robotics Hub Madrid, May 26-27th 2016</p> </div>
 <p>Rosa Montero Escritora y periodista</p>	 <p>Ricardo Dominguez Comunicador científico</p>	

Technical Programme

Program on Thursday 26 May 2016

Room: Aula D

Workshop 1: Government involvement in Robotics	
Venue: Aula D	Time: 12:00-13:30
 <p>WS1: Government involvement in robotics</p> <ul style="list-style-type: none"> - Raul Marín, Sección nuevas tecnologías, Ayuntamiento de Leganés - Fernando Herrero, Subdirector General de Innovación y Ciudad Inteligente, Ayuntamiento de Madrid - Fermín Montero, Subdirector General de Innovación y Promoción Empresarial, Comunidad de Madrid - Enrique Pelayo, CDTI, Directorate of international programs - José Ignacio Pradas Poveda, Secretaría General de Ciencia, Tecnología e Innovación, MINECO - Carlos Toledo, CDTI, Directorate of promotion and cooperation <p>RoboCity16 Robots for citizens</p> <p>Open Conference on Future Trends in Robotics RoboCity2030 Madrid's Robotics Hub Madrid, May 26-27th 2016</p>	

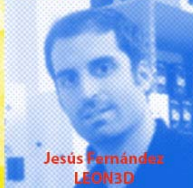
13:30-15:00	LUNCH
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Technical session 3: Computer vision and image - 1	
Session Chair: Carlos Cerrada	
Venue: Aula D	Time: 15:00-16:30
Time	Presentation
15:00-15:18	PEOPLE POSITIONING SYSTEM WITH LOW COST 3D CAMERAS AND WIRELESS DEVICES FOR INDOOR ENVIRONMENTS <i>J. DUQUE, C. CERRADA and E. VALERO</i>
15:18-15:36	VISUAL ODOMETRY CORRECTION BASED ON LOOP CLOSURE DETECTION <i>L. CARAMAZANA, R. ARROYO and L.M. BERGASA</i>
15:36-15:54	OBJECT PERCEPTION APPLIED TO DAILY LIFE ENVIRONMENTS FOR MOBILE ROBOT NAVIGATION <i>A.C. HERNÁNDEZ, C. GÓMEZ, J. CRESPO and R. BARBER</i>
15:54-16:12	3D OBJECT RECOGNITION AND POSE ESTIMATION USING VFH DESCRIPTORS <i>A. LÁZARO, J. MORIANO, L.M. BERGASA, R. BAREA and E. LOPEZ</i>
16:12-16:30	INERTIAL-VISUAL ODOMETRY ON MOBILE DEVICES <i>R.S. NUÑEZ CRUZ and J.M. IBARRA ZANNATHA</i>
16:30-17:00	Coffee break

Workshop 3: Educational Robots

Venue: Aula D

Time: 17:00-18:30



WS3: Educational robots

- José María Sánchez Echave, Deputy director of in-service teacher training, Community of Madrid
- Víctor Gallego, head of Robocampeones association
- Félix Rodríguez Cañadillas, CREA Robotica Educativa (spin-off of RoboCity2030), CEO
- Jesús Fernández, LEON3D, CEO



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Technical Programme
Program on Thursday 26 May 2016
Room: Puig Adam

<u>Robotize your idea</u>	
Venue: Aula Puig Adam	Time: 12:00-13:30
ROBOTIZE YOUR IDEA - 1	

13:30-15:00	LUNCH
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<u>Robotize your idea</u>	
Venue: Aula Puig Adam	Time: 15:00-16:30
ROBOTIZE YOUR IDEA - 2	

16:30-17:00	Coffee break
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<u>Robotize your idea</u>	
Venue: Aula Puig Adam	Time: 17:00-18:30
EDUCATIONAL ROBOTICS TRIALS	

Technical Programme
Program on Friday 27 May 2016
Room: Aula C

Technical session 4: Computer Vision and Image Processing - 2	
Session Chair: José María Cañas	
Venue: Aula C	Time: 10:30-12:00
Time	Presentation
10:30-10:48	A NEW GENERATION OF ENTERTAINMENT ROBOTS ENHANCED WITH AUGMENTED REALITY <i>D. ESTEVEZ, J.G. VICTORES and C. BALAGUER</i>
10:48-11:06	COMPARISON OF COLOR-BASED AND DEPTHBASED VISION TECHNIQUES IN SURFACE DETECTION FOR HAND TRACKING <i>D. BAUTISTA, V. GARCÍA, J.M. COGOLLOR, J.M. SEBASTIÁN, M. FERRE and R. ARACIL</i>
11:06-11:24	WEB TECHNOLOGIES IN JDEROBOT FRAMEWORK FOR ROBOTICS AND COMPUTER VISION <i>A. MARTÍNEZ and J.M. CAÑAS</i>
11:24-11:42	STEREOVISION MATCHING BASED ON COMBINING NEURAL NETWORKS FOR OUTDOOR IMAGES <i>P.J. HERRERA, F. MONTES and G. PAJARES</i>
11:42-12:00	MINI EYE-IN HAND VISION SYSTEM FOR LANDMINES DETECTION TASKS <i>J. GAVILANES, R. FERNÁNDEZ, H. MONTES and M. ARMADA</i>
12:00-12:30	Coffee break
Technical session 5: Humanoid Robotics	
Session Chair: Cecilia E. García.	
Venue: Aula C	Time: 12:30-14:00
Time	Presentation
12:30-12:48	NEW TRENDS AND CHALLENGES IN THE AUTOMATIC GENERATION OF NEW TASKS FOR HUMANOID ROBOTS <i>R. FERNANDEZ-FERNANDEZ, J.G. VICTORES and C. BALAGUER</i>
12:48-13:06	HUMANOID ROBOTS FOR UNDERWATER WORKS <i>G. EJARQUE, R. SALTAREN, R. ARACIL, G. POLETTI and C.E. GARCIA</i>
13:06-13:24	CABLE DRIVEN ROBOT TO SIMULATE LOW GRAVITY AND ITS APLICATION IN UNDERWATER HUMANOID ROBOTS <i>M. BAYAS, A. BARROSO, D. PEÑA, R. SALTARÉN, R. ARACIL, A. VERONESI, G. LIBERT</i>
13:24-13:42	WAITER ROBOT: ADVANCES IN HUMANOID ROBOT RESEARCH AT UC3M <i>J. LORENTE, J.M. GARCÍA, S. MARTÍNEZ, J. HERNÁNDEZ, C. BALAGUER</i>
13:42-14:00	MANIPULATION BALANCE CONTROL SYSTEM BY COMPUTER VISION TOOLS <i>J. HERNÁNDEZ, J.M. GARCÍA, S. MARTÍNEZ, J. LORENTE, C. BALAGUER</i>
14:00-15:30	Lunch

Technical session 7: Localization, mapping and navigation	
Session Chair: Luis Moreno	
Venue: Aula C Time: 15:30-17:00	
Time	Presentation
15:30-15:48	A TOPOLOGICAL NAVIGATION SYSTEM BASED ON MULTIPLE EVENTS FOR USUAL HUMAN ENVIRONMENTS <i>C. GÓMEZ, A.C. HERNÁNDEZ, J. CRESPO and R. BARBER</i>
15:48:16:06	UGV NAVIGATION IN ROS USING LIDAR 3D <i>A. LÁZARO, R. BAREA, L.M. BERGASA and E. LOPEZ</i>
16:06:16:24	PEDESTRIAN MOTION PREDICTION: A GRAPH BASED APPROACH <i>D. GARZÓN-RAMOS, M.A. GARZÓN and A. BARRIENTOS</i>
16:24-16:42	PATH PLANNING ON MARS USING VFM <i>S. GARRIDO, L. MORENO and D. ALVAREZ</i>
16:42-17:00	A CROPS INSPECTION VEHICLE BASED ON A BATTERY-POWERED ELECTRIC CAR <i>J.M. BENGOCHEA-GUEVARA, D. ANDÚJAR, J. CONESA-MUÑOZ and A. RIBEIRO</i>

17:00-17:30	Coffee break
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Technical session 8: Multirobot systems; Swarm robotics; Locomotion and actuation	
Session Chair: Antonio Barrientos	
Venue: Aula C Time: 17:30-19:00	
Time	Presentation
17:30-17:48	“SHOULD I STAY OR SHOULD I GO?” – ENABLING AUTONOMOUS MOBILE DEVICES TO OPTIMIZE DATA COLLECTION PERFORMANCE <i>H. HILDMANN and E. KOVACS</i>
17:48:18:06	A DEVELOPMENT PLATFORM FOR THE EVALUATION AND VALIDATION OF ALGORITHMS FOR SELF-ORGANIZATION IN HYBRID SWARMS <i>M. ALMEIDA and H. HILDMANN</i>
18:06:18:24	MULTIPLE ROBOTS, SINGLE OPERATOR: CONSIDERATIONS ABOUT INFORMATION AND COMMANDING <i>J.J. ROLDÁN, J. DEL CERRO and A. BARRIENTOS</i>
18:24-18:42	DETECTING, LOCALIZING AND FOLLOWING DYNAMIC OBJECTS WITH A MINI-UAV <i>I. BAIRA, M. GARZON and A. BARRIENTOS</i>
18:42-19:00	EXPERIMENTAL EVALUATION OF THE LOCOMOTION OF A HEXAPOD ROBOT <i>L. MENA, H. MONTES, R. FERNÁNDEZ, J. SARRIA, and M. ARMADA</i>

Technical Programme

Program on Friday 27 May 2016

Room: Aula D

Workshop 4: Robotics innovations	
Venue: Aula D	Time: 10:30-12:00
 <p>Lia Garcia Logix5</p>  <p>José de Lara Grupo AID</p>  <p>Jordi Ribatallada ABB</p>  <p>Jorge Gutierrez Drone Tools</p>  <p>Juan C. Llorente GMV</p>  <p>Carmen Pérez TECNATOM</p>  <p>Eduardo Zalama CARTIF</p>	<p>WS4: Robotics innovation (HispaRob)</p> <ul style="list-style-type: none"> - Lía García Pérez, LOGIX 5 (Robótica Educativa) - José de Lara, GRUPO AID (Robótica Marítima) - Jordi Ribatallada, ABB (Robótica Colaborativa) - Jorge Gutiérrez Riego, Drone Tools (Robótica Aérea) - Juan Carlos Llorente, GMV (Robótica Seguridad y Defensa) - Carmen Pérez, TECNATOM (Robótica Industrial) - Eduardo Zalama, CARTIF (Robótica Médica y Asistencial) <div style="text-align: right;">  <p>Open Conference on Future Trends in Robotics RoboCity2030 Madrid's Robotics Hub Madrid, May 26-27th 2016</p> </div>

12:00-12:30	Coffee break
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Technical session 6: Human Robot Interaction	
Session Chair: Miguel Ángel Salichs	
Venue: Aula D	Time: 12:30-14:00
Time	Presentation
12:30-12:48	MOVIDIS: FIRST STEPS TOWARD HELP THE MOBILITY OF PEOPLE WITH VISUAL DISABILITY IN PANAMA <i>H. MONTES, I. CHANG, G. CARBALLEDA, J. MUÑOZ, A. GARCÍA, R. VEJARANO and M. ARMADA</i>
12:48-13:06	FACIAL EXPRESSIONS AND VOICE CONTROL OF AN INTERACTIVE ROBOT <i>P. ENCALADA, B. ALVARADO, F. MATÍA</i>
13:06-13:24	TOWARDS COMPLEX HUMAN ROBOT COOPERATION BASED ON GESTURE CONTROLLED AUTONOMOUS NAVIGATION <i>J. DE LEÓN, M.A. GARZÓN, D.A. GARZÓN, J. DEL CERRO and A. BARRIENTOS</i>
13:24-13:42	A REVIEW ON HOW TO EASILY PROGRAM ROBOTS AT HIGH SCHOOL <i>V. GÓNZALEZ, F.R. CAÑADILLAS, R. PÉRULA-MARTÍNEZ, M.A.SALICHS, and C. BALAGUER</i>
13:42-14:00	TOWARDS A TELEOPERATED SYSTEM BASED ON ELECTRONIC NOSE FOR ODORS TRACKING: FIRST PROTOTYPE <i>C.D. GALÁN, J.M. COGOLLOR and R. GALÁN</i>

14:00-15:30	Lunch
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Workshop 7: Societal aspects of robotics

Venue: Aula D

Time: 15:30-17:00



WS7: Societal aspects of robotics (May 27th, 2016)

- Migle Laukyte, CONEX experienced fellow in AI and Law, UC3M
- Antonio López, catedrático en trabajo social y servicios sociales, UNED
- Jesús R. Mercader, catedrático de derecho del trabajo, UC3M
- Antonio Rodríguez de las Heras, catedrático de historia contemporánea, UC3M



17:00-17:30

Coffee break

Technical session 9: New mechanism design; Tactile & haptics devices

Session Chair: Luis M. Bergasa

Venue: Aula D

Time: 17:30-19:00

Time	Presentation
17:30-17:48	FUTURE TRENDS IN PERCEPTION AND MANIPULATION FOR UNFOLDING AND FOLDING GARMENTS <i>D. ESTEVEZ, J.G. VICTORES and C. BALAGUER</i>
17:48-18:06	HYBRID CONNECTOR DESIGN FOR MODULAR ROBOTS TITLE <i>S. SEGOVIA, A. BRUNETE and E. GAMBAO</i>
18:06-18:24	CASCADE CONTROL OF THE PUMA 560 MOTORS USING SIMULINK AND ARDUINO <i>D. BLANCO, S. ALONSO and M. DOMÍNGUEZ</i>
18:24-18:42	GRABBING OBJECTS THROUGH A ROBOTIC ARM AND HAND IN A SAFETY WAY <i>A. LÁZARO, J. MORIANO, L.M. BERGASA, R. BAREA and E. LOPEZ</i>
18:42-19:00	ELECTROMECHANICAL DESIGN OF A HUMANOID ROBOTIC HAND <i>C. MORILLO, M. HERNANDO and A. BRUNETE</i>