

# **2007 RO-MAN: The 16<sup>th</sup> IEEE International Symposium on Robot and Human Interactive Communication**

**Jeju, Korea  
26-29 August 2007**

**Pages 1-397**



**IEEE Catalog Number:  
ISBN 10:  
ISBN 13:**

**CFP07RHC-PRT  
1-4244-1634-5  
978-1-4244-1634-9**

# Table of Contents

<b>Haptics For And By Hydraulics</b> .....	1
<i>Wayne J. Book</i>	
<b>Electrotactile Display for Integration with Kinesthetic Display</b> .....	3
<i>Katsunari Sato, Hiroyuki Kajimoto, Naoki Kawakami, Susumu Tachi</i>	
<b>Pen-like Haptic Interface and Its Application on Touch Screen</b> .....	9
<i>Ki-Uk Kyung, JunYoung Lee, Jun-Seok Park</i>	
<b>System Design and Evaluation of the Robot Tactile Sensor Using the Microbending Fiber Optic Sensors</b> .....	14
<i>Jin-Seok Heo, Cheol-Hee Han, Jung-Ju Lee</i>	
<b>Sound Generation For The Haptic Perception Using An Irregular Primitive Function</b> .....	19
<i>Seung-Chan Kim, Sung-Chul Kang, Dong-Soo Kwon</i>	
<b>An Artificial Neural Network Approach For Haptic Discrimination In Minimally Invasive Surgery</b> .....	25
<i>Nicola Sgambelluri, Gaetano Valenza, Marcello Ferro, Giovanni Pioggia, Enzo P. Scilingo, Danilo De Rossi, Antonio Bicchi</i>	
<b>Human-Entrained Embodied Interaction and Communication Technology for Advanced Media Society</b> .....	31
<i>Tomio Watanabe</i>	
<b>An Embodied Avatar Mediated Communication System with VirtualActor for Human Interaction Analysis</b> .....	37
<i>Yutaka Ishii, Tomio Watanabe</i>	
<b>Analysis by Synthesis of an Information Presentation Method of Embodied Agent Based on the Time Lag Effects of Utterance to Communicative Actions</b> .....	43
<i>Michiya Yamamoto, Tomio Watanabe</i>	
<b>Virtual Facial Image Synthesis with Facial Color Enhancement and Expression under Emotional Change of Anger</b> .....	49
<i>Takashi Yamada, Tomio Watanabe</i>	
<b>Development of an Embodied Virtual Group Walking Support System</b> .....	55
<i>Masashi Okubo, Kumi Ozaki, Tatsuki Fujiwara</i>	
<b>Multi-Aspect Approach to Robotic Anticipation for Supporting Human's Multiple-Intelligence in Natural Scene</b> .....	61
<i>Kohji Kamejima</i>	
<b>Multi-Aspect Model for Human-Robot Interaction - Mutual Understanding and Entrainment</b> .....	69
<i>Mutsuo Sano, Kenzaburo Miyawaki, Toshiki Yokote, Ryouji Nishimura, Yutaka Kimura</i>	
<b>Cognitive Human-Computer Communication by means of Haptic Interfaces</b> .....	75
<i>Carlo Alberto Avizzano</i>	
<b>Providing for Social Acceptance in Task Modelling for Robots</b> .....	81
<i>Lars Oestreicher</i>	
<b>Multi-Aspect User Interaction Models for Distributed Robotic Systems: Collaborative Activity Generation</b> .....	87
<i>Keiichi Sato, Ralph Bruder</i>	
<b>Mediators Versus Isolators - The Effect Of Robots On Children With Autism And Other User-Groups</b> .....	93
<i>Ben Robins</i>	
<b>Methodological Issues in Facilitating Rhythmic Play with Robots</b> .....	95
<i>Marek P. Michalowski, Hideki Kozima</i>	
<b>Eliciting Requirements for a Robotic Toy for Children with Autism - Results from User Panels</b> .....	101
<i>Ben Robins, Nuno Otero, Ester Ferrari, Kerstin Dautenhahn</i>	

# Table of Contents

<b>Robot Therapy In A Care House - Change Of Relationship Among The Residents And Seal Robot During A 2-Month Long Study.....</b>	<b>107</b>
<i>Kazuyoshi Wada, Takanori Shibata</i>	
<b>Robot Assistant "PlayROB" - User Trials and Results.....</b>	<b>113</b>
<i>Gernot Kronreif, Barbara Prazak, Martin Kornfeld, Andreas Hochgatterer, Martin Fürst</i>	
<b>Speech/Music Discrimination for Robust Speech Recognition in Robots.....</b>	<b>118</b>
<i>Mu Yeol Choi, Hwa Jeon Song, Hyung Soon Kim</i>	
<b>Age And Gender Classification For A Home-Robot Service .....</b>	<b>122</b>
<i>Hye-Jin Kim, Kyungsuk Bae, Ho-Sub Yoon</i>	
<b>Sound Source Localization Methods with Considering of Microphone Placement in Robot Platform .....</b>	<b>127</b>
<i>Byounggho Kwon, Gyeonggho Kim, Youngjin Park</i>	
<b>Bats ' Auditory Pathway Modeling for Multiple Targets Localization.....</b>	<b>131</b>
<i>J. Gwan Lim, Soo-Young Lee, Dong-Soo Kwon</i>	
<b>Minimal Representation of Speech Signals for Generation of Emotion Speech and Human-Robot Interaction .....</b>	<b>137</b>
<i>Heyoung Lee, Z. Zenn Bien</i>	
<b>Omni-Directional Audio-Visual Speaker Detection for Mobile Robot .....</b>	<b>141</b>
<i>Thatsaphan Suwannathat, Jun-ichi Imai, Masahide Kaneko</i>	
<b>Development of an Intelligent Wheelchair with Visual Oral Motion.....</b>	<b>145</b>
<i>Takeshi Saitoh, Noriyuki Takahashi, Ryosuke Konishi</i>	
<b>Effective Head Gestures for Museum Guide Robots in Interaction with Humans.....</b>	<b>151</b>
<i>Yoshinori Kuno, Kazuhisa Sadazuka, Michie Kawashima, Sachie Tsuruta, Keiichi Yamazaki, Akiko Yamazaki</i>	
<b>A Run-time Estimate Method of Measurement Error Variance for Kalman Estimator .....</b>	<b>157</b>
<i>Jae-gu Kang, Bum-jae You</i>	
<b>Hand Gesture Recognition To Understand Musical Conducting Action.....</b>	<b>163</b>
<i>Hongmo Je, Jiman Kim, Daijin Kim</i>	
<b>Real-time 3D Head Tracking and Head Gesture Recognition.....</b>	<b>169</b>
<i>Wooju Ryu, Daijin Kim</i>	
<b>Connecting the Physical World and Events Schedule of User Calendar for Symbiotic Systems .....</b>	<b>173</b>
<i>Sidiq S. Hidayat, Bong Keun Kim, Tamio Tanikawa, Kohtaro Ohba</i>	
<b>A Spoken Dialogue System for Electronic Program Guide Information Access.....</b>	<b>178</b>
<i>Seokhwan Kim, Cheongjae Lee, Sangkeun Jung, Gary Geunbae Lee</i>	
<b>RoboMaidHome: A Sensor Network-based Smart Home Environment for Service Robots.....</b>	<b>182</b>
<i>Seung-Ho Baeg, Jae-Han Park, Jaehan Koh, Kyung-Wook Park, Moon-Hong Baeg</i>	
<b>Application of Contact-Based Sensors for Self-Localization and Object Recognition in Humanoid Robot Navigation Tasks.....</b>	<b>188</b>
<i>Hanafiah Yussof, Masahiro Ohka, Junpei Takata, Mitsuhiro Yamano, Yasuo Nasu</i>	
<b>Human-Robot Interactive Guiding System's Application in Sonar Quick Mapping .....</b>	<b>194</b>
<i>Yu-Cheol Lee, Sangik Na, Hyo-Sung Ahn, Wonpil Yu</i>	
<b>Analysis of Resampling Process for the Particle Depletion Problem in FastSLAM.....</b>	<b>200</b>
<i>Nosan Kwak, In-Kyu Kim, Heon-Cheol Lee, Beom-Hee Lee</i>	
<b>Tele-Operation of a Mobile Robot Using a Force Reflection Joystick with a Single Hall Sensor.....</b>	<b>206</b>
<i>Soonshin Han, JangMyung Lee</i>	

# Table of Contents

<b>Visual Servoing of a Wheeled Mobile Robot using Unconstrained Optimization with a Ceiling Mounted Camera .....</b>	<b>212</b>
<i>Gon-Woo Kim, Kyung-Tae Nam, Sang-Moo Lee</i>	
<b>Autonomous Navigation Of A Mobile Robot Based On Passive RFID .....</b>	<b>218</b>
<i>Sunhong. Park, Ryo Saegusa, Shuji Hashimoto</i>	
<b>Multi-Arm Path Generation Method for Humanoid Robots .....</b>	<b>224</b>
<i>S. U. Ryu, C. J. Kim, K. H. Choi</i>	
<b>Navi-Guider: An Intuitive Guiding System for the Mobile Robot .....</b>	<b>228</b>
<i>Sangik Na, Hyo-Sung Ahn, Yu-Cheol Lee, Wonpil Yu</i>	
<b>A Study on the Improved Localization of a Mobile Robot by using Scale Invariant Feature and Odometry.....</b>	<b>234</b>
<i>Chul-Woong Jang, Ki-Ho Jung, Dae-Seop Jung, Je-Goon Ryu, Jung-Shik Kong, Jae-Hong Shim, Eung-Hyuk Lee</i>	
<b>Walking Mechanism of 3D Passive Dynamic Motion with Lateral Rolling.....</b>	<b>240</b>
<i>Tomoo Takeguchi, Minako Ohashi, Jaeho Kim</i>	
<b>A Navigation System with a Self-Drive Control for an Autonomous Robotin Indoor Environment .....</b>	<b>246</b>
<i>Eiji Hayashi</i>	
<b>The Internal Sensor aided Asynchronous Wireless Localization System .....</b>	<b>252</b>
<i>SangYoung Park, Hyo-Sung Ahn, Wonpil Yu</i>	
<b>Discrimination and Remembrance Experiments Research on Softness Haptic Perception.....</b>	<b>258</b>
<i>Jia Liu, Aiguo Song</i>	
<b>Design and Analysis of a New Six-DOF Haptic Device for Dental Training .....</b>	<b>263</b>
<i>Yonggang Cao, Yuru Zhang, Yunzhong Ma, Dangxiao Wang</i>	
<b>Classification Of High-Level Command And Translator System Architecture Of CCSLR As A Scripting Language For Network-Based Robot.....</b>	<b>268</b>
<i>Il-Gu Lee, Dong To Nguyen, Doik Kim</i>	
<b>Human-Robot Interactive Communication Using Semantic Web Tech. in Design and Implementation of Collaboratively Working Robots.....</b>	<b>273</b>
<i>A. Elçi, B. Rahnama</i>	
<b>Lightweight Middleware for Robot.....</b>	<b>279</b>
<i>Bum Hyeon Baek, Vitaly Li, Seong Hoon Kim, Gwang Kuk Lee, Yong Soon Choi, Hong Seong Park</i>	
<b>Applying Dynamic Software Architecture Management to Home Service Robot Software.....</b>	<b>285</b>
<i>Dongsun Kim, Sooyong Park, Mun-Taek Choi, Munsang Kim</i>	
<b>Using Haptic Communications with the Leg to Maintain Exercise Intensity.....</b>	<b>291</b>
<i>Aaron R. Ferber, Michael Peshkin, J. Edward Colgate</i>	
<b>A Quantitative Evaluation Method of Handedness Using Haptic Virtual Reality Technology .....</b>	<b>297</b>
<i>Tsuneo Yoshikawa, Masanao Koeda, Munetaka Sugihashi</i>	
<b>A Preliminary Test for Bilateral Teleoperation Using Energy Bounding Algorithm.....</b>	<b>303</b>
<i>Jong-Phil Kim, Changhoon Seo, Jeha Ryu</i>	
<b>Perceptually Transparent Vibration Rendering Using a Vibration Motor for Haptic Interaction.....</b>	<b>309</b>
<i>Jonghyun Ryu, Jaehoon Jung, Sejoon Kim, Seungmoon Choi</i>	
<b>A Hybrid Approach for a Real-time Haptic and Graphic Simulator in Virtual Environment .....</b>	<b>315</b>
<i>Sang-Youn Kim, Segil Park, Dong-Soo Kwon, Jinah Park</i>	
<b>A Glass Substrate Transducer for Surface Acoustic Wave Tactile Display .....</b>	<b>319</b>
<i>Masaya Takasaki, Hiroyuki Kotani, Takeshi Mizuno</i>	
<b>Realization and Evaluation of Realistic Nod with Receptionist Robot SAYA.....</b>	<b>325</b>
<i>Takuya Hashimoto, Sachio Hiramatsu, Toshiaki Tsuji, Hiroshi Kobayashi</i>	

# Table of Contents

<b>Development of Power Assist System for Manual Worker by Muscle Suit</b> .....	331
<i>Hiroshi Kobayashi, H. Suzuki, H. Nozaki, Toshiaki Tsuji</i>	
<b>Collaborative Task Casting for Multi-Task Communication Robots</b> .....	337
<i>Kentaro Ishii, Kazuhiro Takasuna, Michita Imai</i>	
<b>Challenges on the Development of Robotic Intelligence</b> .....	343
<i>Munsang Kim</i>	
<b>Combining Local and Global Motion Estimators for Robust Face Tracking</b> .....	344
<i>Jaewon Sung, Daijin Kim</i>	
<b>Emotion Interaction System for a Service Robot</b> .....	350
<i>Dong-Soo Kwon, Yoon Keun Kwak, Jong C. Park, Myung Jin Chung, Eun-Sook Jee, Kyung-Sook Park, Hyoung-Rock Kim, Young-Min Kim, Jong-Chan Park, Eun Ho Kim, Kyung Hak Hyun, Hye-Jin Min, Hui Sung Lee, Jeong Woo Park, Su Hun Jo, Soon-Young Park, Kyung-Won Lee</i>	
<b>A Data-Centered Integration Framework for Intelligent Service Robots</b> .....	356
<i>Jaeho Lee</i>	
<b>Particle Filter Algorithm for Single Speaker Tracking with Audio-Video Data Fusion</b> .....	362
<i>Yoon Seob Lim, Jong-Suk Choi, Munsang Kim</i>	
<b>Is The Uncanny Valley An Uncanny Cliff?</b> .....	367
<i>Christoph Bartneck, Takayuki Kanda, Hiroshi Ishiguro, Norihiro Hagita</i>	
<b>Uncanny Valley of Androids and Its Lateral Inhibition Hypothesis</b> .....	373
<i>Michihiro Shimada, Takashi Minato, Shoji Itakura, Hiroshi Ishiguro</i>	
<b>Effects Of Robotic Agents' Appearances On Users' Interpretations Of The Agents' Attitudes: Towards An Expansion Of "Uncanny Valley" Assumption</b> .....	379
<i>Takanori Komatsu, Seiji Yamada</i>	
<b>Design Guidelines And Tools For Creating Believable Motion For Personal Robots</b> .....	385
<i>Martin Saerbeck, Albert J.N. van Breemen</i>	
<b>How Robots May Evolve Their Own Language</b> .....	391
<i>Luc Steels</i>	
<b>Real-Time Acoustic Source Localization In Noisy Environments For Human-Robot Multimodal Interaction</b> .....	392
<i>Vlad M. Trifa, Ansgar Koene, Jan Morén, Gordon Cheng</i>	
<b>Auditory and Visual Integration based Localization and Tracking of Multiple Moving Sounds in Daily-Life Environments</b> .....	398
<i>Hyun-Don Kim, Kazunori Komatani, Tetsuya Ogata, Hiroshi G. Okuno</i>	
<b>Artificial Robot Ear Design for Sound Direction Estimation</b> .....	404
<i>Youngjin Park, Sungmok Hwang</i>	
<b>A Case study of Edutainment Robot: Applying Voice Question Answering to Intelligent Robot</b> .....	409
<i>Hyo-Jung Oh, Chung-Hee Lee, Yi-Gyu Hwang, Myung-Gil Jang, Jeon Gue Park, Yun Kun Lee</i>	
<b>Improving Speech Recognition Using Semantic and Reference Features in a Multimodal Dialog System</b> .....	415
<i>Kyungduk Kim, Minwoo Jeong, Gary Geunbae Lee</i>	
<b>Finding the Correspondence of Caregiver's Vowel Categories Based on Unconscious Anchoring in Maternal Imitation</b> .....	420
<i>Katsushi Miura, Yuichiro Yoshikawa, Minoru Asada</i>	
<b>RobotMeme -A Proposal of Human-Robot Mimetic Mutual Adaptation</b> .....	426
<i>Daisuke Komagome, Michio Suzuki, Tetsuo Ono, Seiji Yamada</i>	
<b>Co-Embodied Interaction Between Two Persons in Different Situation</b> .....	432
<i>Yugo Takeuchi1, Naoki Tsuchiyal</i>	

# Table of Contents

<b>Learning Reward Modalities for Human-Robot-Interaction in a Cooperative Training Task</b> .....	438
<i>Anja Austermann, Seiji Yamada</i>	
<b>Action Sloping as a Way for Users to Notice a Robot's Function</b> .....	444
<i>Kazuki Kobayashi, Yasuhiko Kitamura, Seiji Yamada</i>	
<b>"Display Robot" - Interaction between Humans and Anthropomorphized Objects</b> .....	450
<i>Hiroataka Osawa, Jun Mukai, Michita Imai</i>	
<b>Experiments To Clarify Whether The "Gain And Loss Of Esteem" Could Be Observed In Human-Robot Interaction</b> .....	456
<i>Takanori Komatsu, Kota Yokoyama</i>	
<b>Evolutionary Robot Vision for Multiple Human Heads Tracking of A Partner Robot</b> .....	462
<i>Indra Adji Sulistijono, Naoyuki Kubota</i>	
<b>Virtual Space Construction Based on Contact Constraints Using Robot Vision Technology for 3D Graphics Applications</b> .....	468
<i>Naoto Nakamura, Yoshiaki Akazawa, Shigeru Takano, Yoshihiro Okada</i>	
<b>Client/Server Framework for Providing Context-Aware Services to Network Based Robots</b> .....	474
<i>Hyun Kim, Kang-Woo Lee, Young-Ho Suh, Jun-Myon Cho, Young-Jo Cho</i>	
<b>Wireless Localization Network for Ubiquitous Robotic Space: Approaches and Experimental Test</b> .....	480
<i>Hyo-Sung Ahn, Wonpil Yu, JaeYeong Lee</i>	
<b>Interacting with a Robot Ecology using Task Templates</b> .....	486
<i>Mathias Broxvall, Amy Loutfi, Alessandro Saffiotti</i>	
<b>Human-Robot Interaction with Indoor Virtual Model</b> .....	492
<i>Sangwoo Jo, Jeongseok Ki, Kyeong-Won Jeon, Yong-Moo Kwon, Sang Chul Ahn</i>	
<b>Building Semantic Robot Space Based on the Semantic Web</b> .....	498
<i>Minsu Jang, Joo-Chan Sohn, Youngjo Cho</i>	
<b>The HRI Experiment Framework for Designer</b> .....	504
<i>Myungsuk Kim</i>	
<b>Towards the Design and Development of Future Robotic Products and Systems</b> .....	505
<i>Jodi Forlizzi</i>	
<b>Robot Designer or Robot Creator</b> .....	506
<i>Tomotaka Takahashi</i>	
<b>Styling in Robot Platform Design</b> .....	507
<i>Wonsup Kim</i>	
<b>Humanoid Robot: A Machine That Walks</b> .....	508
<i>Jun Ho Oh</i>	
<b>High School Educational Program using a Simple and Compact Stereo Vision Robot</b> .....	509
<i>Takeshi Morishita, Tetsuro Yabuta</i>	
<b>Planar Patch based 3D Environment Modeling with Stereo Camera</b> .....	515
<i>Eunyoung Kim, Gérard Medioni, Sukhan Lee</i>	
<b>Robust Real-Time Vision for a Personal Service Robot in a Home Visual Sensor Network</b> .....	521
<i>Kwangsu. Kim, Gérard Medioni</i>	
<b>Estimation of Robot's and User's Views and Blind Regions in Occlusion Environments</b> .....	527
<i>Jun-ichi Imai, Masahide Kaneko</i>	
<b>Shaping Naive Users' Models of Robots' Situation Awareness</b> .....	533
<i>Kerstin Fischer, Manja Lohse</i>	

# Table of Contents

<b>Situation-Aware Interpretation, Planning and Execution of User Commands by Autonomous Robots</b> .....	539
<i>Michael Brenner</i>	
<b>Interaction Awareness for Joint Environment Exploration</b> .....	545
<i>Thorsten Spexard, Shuyin Li, Britta Wrede, Marc Hanheide, Elin A. Topp, Helge Hüttenrauch</i>	
<b>The Need for a Model of Contact and Perception to Support Natural Interactivity in Human-Robot Communication</b> .....	551
<i>Anders Green</i>	
<b>Cognitive, Social, Sociable or Just Socially Acceptable Robots?</b> .....	557
<i>Lars Oestreicher</i>	
<b>Living with Robots: Investigating the Habituation Effect in Participants' Preferences During a Longitudinal Human-Robot Interaction Study</b> .....	563
<i>Kheng Lee Koay, Dag Sverre Syrdal, Michael L. Walters, Kerstin Dautenhahn</i>	
<b>Issues and Implementation of a URC Home Service Robot</b> .....	569
<i>Seung-Ik Lee, Choul Soo Jang, Sung Hoon Kim, Myung Chan Roh, Beom-Su Seo</i>	
<b>Picking Instruction with Task Model for a Robot in a Daily life Environment</b> .....	575
<i>Yujin Wakita, Kazuyuki Nagata, Tsukasa Ogasawara</i>	
<b>A Knowledge-Based Service Approach for Human-Centered Robots</b> .....	581
<i>M. Omar Faruque Sarker, Jung-Min Park, ChangHwan Kim, Bum-Jae You</i>	
<b>Online Affect Detection and Adaptation in Robot Assisted Rehabilitation for Children with Autism</b> .....	587
<i>Changchun Liu, Karla Conn, Nilanjan Sarkar, Wendy Stone</i>	
<b>WearCam: A Head Mounted Wireless Camera For Monitoring Gaze Attention And For The Diagnosis Of Developmental Disorders In Young Children</b> .....	593
<i>Lorenzo Piccardi, Babilio Noris, Olivier Barbey, Aude Billard, Giuseppina Schiavone, Flavio Keller, Claes von Hofsten</i>	
<b>Social Interaction Facilitated By A Minimally-Designed Robot: Findings From Longitudinal Therapeutic Practices For Autistic Children</b> .....	598
<i>Hideki Kozima, Yuriko Yasuda, Cocoro Nakagawa</i>	
<b>Human-Robot Interaction in Autism: FACE, an Android-based Social Therapy</b> .....	604
<i>G. Pioggia, M.L. Sica, M. Ferro, R. Igliozzi, F. Muratori, A. Ahluwalia, D. De Rossi</i>	
<b>Reflex and Emotion-based Behavior Selection for Toy Robot</b> .....	612
<i>Dong-Hyun Lee, Ki-Baek Lee, Jong-Hwan Kim,</i>	
<b>A Linear Dynamic Affect-Expression Model: Facial Expressions According to Perceived Emotions in Mascot-Type Facial Robots</b> .....	618
<i>Hui Sung Lee, Jeong Woo Park, Su Hun Jo, Myung Jin Chung</i>	
<b>The Development of Humanoid Robot for Human Robot Interaction</b> .....	624
<i>Chang Gu Kim, Mun-Taek Choi, Hak jong Noh, Jonghoon Kim, Sangyong Lee, Changhyun Cho, Munsang Kim</i>	
<b>A Low-Cost Humanoid Robot with Human Gestures Imitation Capabilities</b> .....	630
<i>Jacopo Aleotti, Stefano Caselli</i>	
<b>Composition of Musical Sound Expressing an Emotion of Robot Based on Musical Factors</b> .....	636
<i>Eun-Sook Jee, Chong Hui Kim, Soon-Young Park, Kyung-Won Lee</i>	
<b>Pen-type Sensor for Surface Texture Perception</b> .....	641
<i>Xianming Ye, Byungjune Choi, Hyoukryeol Choi, Sungchul Kang</i>	
<b>Chew On This: Design Of A 6DOF Anthropomorphic Robotic Jaw</b> .....	647
<i>Edgar Flores, Sidney Fels, Eric Vatikiotis-Bateson</i>	
<b>Pen-like Haptic Interface and Its Application on Touch Screen</b> .....	653
<i>Ki-Uk Kyung, JunYoung Lee, Jun-Seok Park</i>	

# Table of Contents

<b>PanoVIX-Mini: Tiny And Compact, Multi-Sensor Based 360° Panoramic Camera System For Mobile Robotic Applications .....</b>	<b>658</b>
<i>Jeong-Hun Jang, Suk-Pil Ko</i>	
<b>Field Trial Approach For Communication Robots.....</b>	<b>660</b>
<i>Takayuki Kanda</i>	
<b>Integrating Evidences of Independently Developed Face and Speaker Recognition Systems by Using Discrete Probability Density Function .....</b>	<b>662</b>
<i>Jaeyeon Lee, DoHyung Kim, Keun-Chang Kwak, Hye-Jin Kim, Ho-Sub Yoon</i>	
<b>Reliable Speaker Identification Using Multiple Microphones in Ubiquitous Robot Companion Environment.....</b>	<b>668</b>
<i>Mikyong Ji, Sungtak Kim, Hoirin Kim, Keun-Chang Kwak, Young-Jo Cho</i>	
<b>Efficient Articulated Model Fitting on a Single Image or a Sequence .....</b>	<b>673</b>
<i>Matheen Siddiqui, Gérard Medioni</i>	
<b>Enhanced Speech Recognition with Blind Equalization For Robot "WEVER-R2".....</b>	<b>679</b>
<i>Donglin Wang, Henry Leung, Keun-Chang Kwak, Hosub Yoon</i>	
<b>Speech Emotion Recognition Using Eigen-FFT in Clean and Noisy Environments .....</b>	<b>684</b>
<i>Eun Ho Kim, Kyung Hak Hyun, Soo Hyun Kim, Yoon Keun Kwak</i>	
<b>An Object Recognition Scheme Based on Visual Descriptors for a Smart Home Environment .....</b>	<b>690</b>
<i>Seung-Ho Baeg, Jae-Han Park, Jaehan Koh, Kyung-Wook Park, Moon-Hong Baeg</i>	
<b>Employing Ideomotor Theory as the basis of a Robot Tutoring System .....</b>	<b>696</b>
<i>Joe Saunders</i>	
<b>Active Teaching in Robot Programming by Demonstration.....</b>	<b>697</b>
<i>Sylvain Calinon, Aude Billard</i>	
<b>Issues in Human/Robot Task Structuring and Teaching .....</b>	<b>703</b>
<i>Joe Saunders, Nuno Otero, Chrystopher L. Nehaniv</i>	
<b>Understanding Rules in Human-Robot Instructions .....</b>	<b>709</b>
<i>Joerg C. Wolf, Guido Bugmann</i>	
<b>Asymmetric Interpretations of Positive and Negative Human Feedback for a Social Learning Agent.....</b>	<b>715</b>
<i>Andrea L. Thomaz, Cynthia Breazeal</i>	
<b>Proactive Robot Task Selection Given a Human Intention Estimate.....</b>	<b>721</b>
<i>Andreas J. Schmid, Oliver Weede, Heinz Wörn</i>	
<b>Survey of Psychophysiology Measurements Applied to Human-Robot Interaction.....</b>	<b>727</b>
<i>Cindy L. Bethel, Kristen Salomon, Robin R. Murphy, Jennifer L. Burke</i>	
<b>A Formal Method of Measuring Interactivity in HRI.....</b>	<b>733</b>
<i>Jung-Hoon Hwang, KangWoo Lee, Dong-Soo Kwon</i>	
<b>What Does it Do?": HRI Studies with the General Public.....</b>	<b>739</b>
<i>Douglas A. Few, Christine M. Roman, David J. Bruemmer, William D. Smart</i>	
<b>A Neuroergonomic Approach for the Investigation of Cognitive Processes in Interactive Assembly Environments .....</b>	<b>745</b>
<i>S. Stork, C. Stöfel, H. J. Müller, M. Wiesbeck, M. F. Zäh, A. Schubö</i>	
<b>Hiding the System from the User: Moving from Complex Mental Models to Elegant Metaphors .....</b>	<b>751</b>
<i>Curtis W. Nielsen, David J. Bruemmer</i>	
<b>Research Trends on Musical Performance Robots.....</b>	<b>757</b>
<i>Atsuo Takanishi, Jorge Solis</i>	



# Table of Contents

<b>Toward Developing a Violin Playing Robot - Bowing by Anthropomorphic Robot Arm and Sound Analysis</b> .....	758
<i>Koji Shibuya, Shoji Matsuda, Akira Takahara</i>	
<b>The Design of a Perceptual and Improvisational Robotic Marimba Player</b> .....	764
<i>Gil Weinberg, Scott Driscoll</i>	
<b>Integration of Percussion Robots "RobotMusic" with the Data-Suit "BodySuit": Technological Aspects and Concepts</b> .....	770
<i>Suguru Goto, Fuminori Yamasaki</i>	
<b>Towards An Expressive Performance Of The Waseda Flutist Robot: Production Of Vibrato</b> .....	775
<i>Jorge Solis, Koichi Taniguchi, Takeshi Ninomiya, Atsuo Takanishi</i>	
<b>Emotional Behavior Decision Model Based on Linear Dynamic Systems for Intelligent Service Robots</b> .....	781
<i>Ho Seok Ahn, Jin Young Choi</i>	
<b>Bayesian-Based Inference of Dialogist's Emotion for Sensitivity Robots</b> .....	787
<i>Jangsik Cho, Shohei Kato, Hidenori Itoh</i>	
<b>Emotion Recognition for Affective User Interfaces using Natural Language Dialogs</b> .....	793
<i>Cheongjae Lee, Gary Geunbae Lee</i>	
<b>Emotional Feature Extraction Based On Phoneme Information for Speech Emotion Recognition</b> .....	797
<i>Kyung Hak Hyun, Eun Ho Kim, Yoon Keun Kwak</i>	
<b>Optimizing Neural Oscillators for Rhythmic Movement Control</b> .....	802
<i>W. Yang, N. Y. Chong, C. Kim, B. J. You</i>	
<b>Multiple Script-based Task Model and Decision/Interaction Model for Fetch-and-carry Robot</b> .....	810
<i>Yo C. Kim, Wan C. Yoon, Hyuk T. Kwon, Geun Y. Kwon</i>	
<b>A Service Recommendation Using Reinforcement Learning for Network-based Robots in Ubiquitous Computing Environments</b> .....	816
<i>Aekyung Moon, Taegun Kang, Hyoungsun Kim, Hyun Kim</i>	
<b>Designing a Cognitive Case-Based Planning Framework for Home Service Robots</b> .....	822
<i>Yuchul Jung, Hogun Park, Yoonjung Choi, Sung-Hyon Myaeng</i>	
<b>Global Synchronization of General Complex Dynamical Networks with Time-Varying Delay</b> .....	828
<i>Zhi Li, Ju-Jang Lee</i>	
<b>A Bayesian Network Framework for Vision Based Semantic Scene Understanding</b> .....	834
<i>Seung-Bin Im, Keum-Sung Hwang, Sung-Bae Cho</i>	
<b>Speech Act Classification Based on Individual Statistical Models in a Multi-Domain</b> .....	840
<i>Sangwoo Kang, Donghyun Kim, Harksoo Kim, Jungyun Seo</i>	
<b>Evolving Personality of a Genetic Robot in Ubiquitous Environment</b> .....	843
<i>Jong-Hwan Kim, Chi-Ho Lee, Kang-Hee Lee, Naveen S. Kuppaswamy</i>	
<b>Context-Based Interaction Using Pointing Movements Recognition For An Intelligent Home Service Robot</b> .....	849
<i>Eri Sato, Shoichiro Sakurai, Aika Nakajima, Yuichi Yoshida, Toru Yamaguchi</i>	
<b>Towards Safe Human-Robot Interaction: Joint Impedance Control of a New Teleoperated Robot Arm</b> .....	855
<i>Dzmitry Tsetserukou, Riichiro Tadakuma, Hiroyuki Kajimoto, Naoki Kawakami, Susumu Tachi</i>	
<b>The Development of Easy Interaction Room</b> .....	861
<i>Sangseok Yun, Changho Kim, Jonghoon Kim, Mun-Taek Choi, Munsang Kim</i>	
<b>Embodiment and Human-Robot Interaction: A Task-Based Perspective</b> .....	867
<i>Joshua Wainer, David J. Feil-Seifer, Dylan A. Shell, Maja J. Matarić</i>	

# Table of Contents

<b>On-Line Speaker Enrollment using Rhythmical Voices for Human Robot Interaction .....</b>	<b>873</b>
<i>Kyungsook Bae, Hyejin Kim, Keunchang Kwak, Hosub Yoon</i>	
<b>Quantitative Analysis of Leg Movement and EMG Activity in Expert Japanese Traditional Dancer .....</b>	<b>877</b>
<i>Woong Choi, Tadao Isaka, Mamiko Sakata, Hidemitsu Morioka, Seiya Tsuruta, Kohei Furukawa, Kozaburo Hachimura</i>	
<b>Evaluating The Surgeon's Stress When Using Surgical Assistant Robots.....</b>	<b>883</b>
<i>Kazuhiro Taniguchi, Atsushi Nishikawa, Hiroaki Nakagoe, Tomohiro Sugino, Mitsugu Sekimoto, Kazuyuki Okada, Shuji Takiguchi, Morito Monden, Fumio Miyazaki</i>	
<b>New Methodology and Evaluation of Micro Parallel Robots for Optimal Design .....</b>	<b>889</b>
<i>Sergiu-Dan Stan, Vistrian Maties, Radu Balan</i>	
<b>Evaluation of a 3D Motion Sensor including Accelerometer and Geomagnetic sensor.....</b>	<b>895</b>
<i>Kyoung-Soo Chae, Ho-Joon Park</i>	
<b>A Design of the Mental Model of a Cognitive Robot .....</b>	<b>900</b>
<i>Kyung-Sook Park, Dong-Soo Kwon, Mignon Park</i>	
<b>A Study Of Interaction Between Dialog And Decision For Human-Robot Collaborative Task Achievement.....</b>	<b>907</b>
<i>Aur�lie Clodic, Rachid Alami, Vincent Montreuil, Shuyin Li, Britta Wrede, Agnes Swadzba</i>	
<b>EmotiRob: Companion robot Project.....</b>	<b>913</b>
<i>S�bastien Saint-Aime, Brigitte Le-Pevedic, Dominique Duhaut, Takanori Shibata</i>	
<b>Robust Self-Deployment for a Swarm of Autonomous Mobile Robots with Limited Visibility Range.....</b>	<b>919</b>
<i>Geunho Lee, Nak Young Chong, Xavier Defago</i>	
<b>BuildBot: Robotic Monitoring of Agile Software Development Teams .....</b>	<b>925</b>
<i>Ruth Ablett, Ehud Sharlin, Frank Maurer, J�rg Denzinger, Craig Schock</i>	
<b>Classes of Applications for Social Robots: A User Study.....</b>	<b>931</b>
<i>Frank Hegel, Manja Lohse, Agnes Swadzba, Sven Wachsmuth, Katharina Rohlfing, Britta Wrede</i>	
<b>Development and Performance Evaluation of a Neural Signal-based Assistive Computer Interface.....</b>	<b>937</b>
<i>Changmok Choi, Hyonyoung Han, Chunwoo Kim, Jung Kim</i>	
<b>Generating Performance Motions of Humanoid Robot for Entertainment .....</b>	<b>943</b>
<i>In-Won Park, Yong-Duk Kim, Bum-Joo Lee, Jeong-Ki Yoo, Jong-Hwan Kim</i>	
<b>Real-Time Face Tracking and Gesture Recognizing Embedded Quadruped Robot with a Tele-operation Server.....</b>	<b>949</b>
<i>H.C. Shin, Y.K. Kim, D.H. Hwang</i>	
<b>Design of a Percussive Massage Robot Tapping Human Backs .....</b>	<b>955</b>
<i>Chul-goo Kang, Bong-ju Lee, Ik-xu Son, Ho-yeon Kim</i>	
<b>Software Robot in a PDA for Human Interaction and Seamless Service .....</b>	<b>961</b>
<i>Ye-Hoon Kim, Se-Hyoung Cho, Seung-Hwan Choi, Jong-Hwan Kim</i>	
<b>Augmented Reality User Interface for Reconnaissance Robotic Missions .....</b>	<b>967</b>
<i>L. Zalud</i>	
<b>Neural Controller for a 5-Link Planar Biped Robot .....</b>	<b>973</b>
<i>Nasser Sadati, Kaveh Hamed</i>	
<b>Bilateral Control with Time Domain Passivity Approach Under Time-varying Communication Delay .....</b>	<b>979</b>
<i>Jee-Hwan Ryu</i>	
<b>Behavior Selection and Memory-based Learning for Artificial Creature Using Two-layered Confabulation .....</b>	<b>985</b>
<i>Se-Hyung Cho, Ye-Hoon Kim, In-Won Park, Jong-Hwan Kim</i>	
<b>BALT &amp; CAST: Middleware for Cognitive Robotics .....</b>	<b>991</b>
<i>Nick Hawes, Michael Zillich, Jeremy Wyatt</i>	

# Table of Contents

<b>A Task-based Approach to Generate Optimal Software-Architecture for Intelligent Service Robots .....</b>	<b>997</b>
<i>Yu-Sik Park, In-Young Ko, Sooyong Park</i>	
<b>Learning and Recognition of Object Manipulation Actions Using Linear and Nonlinear Dimensionality Reduction.....</b>	<b>1003</b>
<i>Isabel Serrano Vicente, Danica Kragic, Jan-Olof Eklundh</i>	
<b>Incremental On-Line Hierarchical Clustering Of Whole Body Motion Patterns.....</b>	<b>1009</b>
<i>Dana Kulić, Wataru Takano, Yoshihiko Nakamura</i>	
<b>Feature Set Selection and Optimal Classifier for Human Activity Recognition .....</b>	<b>1015</b>
<i>M. Lösch, S. Schmidt-Rohr, S. Knoop, S. Vacek, R. Dillmann</i>	
<b>Human-Robot Interactions as a Cognitive Catalyst for the Learning of Behavioral Attractors.....</b>	<b>1021</b>
<i>C. Giovannangeli, P. Gaussier</i>	
<b>Behavior Coordination of Socially Interactive Robot using Sentiment Relation Model .....</b>	<b>1027</b>
<i>Young-Min Kim, Jong-Chan Park, Dong-Soo Kwon</i>	
<b>Learning about, from, and with Robots: Students' Perspectives .....</b>	<b>1033</b>
<i>Namin Shin, Sangah Kim</i>	
<b>A Study on External Form Design Factors for Robots as Elementary School Teaching Assistants.....</b>	<b>1039</b>
<i>HyeJin Ryu, Sonya S. Kwak, MyungSuk Kim</i>	
<b>Implications on Humanoid Robots in Pedagogical Applications from Cross-Cultural Analysis between Japan, Korea, and the USA.....</b>	<b>1045</b>
<i>Tatsuya Nomura, Takayuki Kanda, Tomohiro Suzuki, Jeonghye Han, Namin Shin, Jennifer Burke, Kensuke Kato</i>	
<b>A Robot In A Playroom With Preschool Children: Longitudinal Field Practice.....</b>	<b>1051</b>
<i>Hideki Kozima, Cocoro Nakagawa</i>	
<b>Chew On This: Design Of A 6DOF Anthropomorphic Robotic Jaw .....</b>	<b>1053</b>
<i>Edgar Flores, Sidney Fels, Eric Vatikiotis-Bateson</i>	
<b>Applying Sasang Typology Theory to Robot Appearance Design.....</b>	<b>1059</b>
<i>Whan Oh Sung, Min Jeong Song, Kyung-won Chung</i>	
<b>Fritz - A Humanoid Communication Robot.....</b>	<b>1065</b>
<i>Maren Bennewitz, Felix Faber, Dominik Joho, Sven Behnke</i>	
<b>Characterising Dimensions of Use for Designing Adaptive Dialogues for Human-Robot Communication .....</b>	<b>1071</b>
<i>Anders Green</i>	
<b>A Multi-User Virtual Training System Concept and Objective Assessment of Trainings.....</b>	<b>1077</b>
<i>H. Esen, A. Sachsenhauser, K.Yano, M. Buss</i>	
<b>Networked Human/Robot Cooperative Interface for Tele-Diagnostics of Breast Pathology.....</b>	<b>1083</b>
<i>Yantao Shen, Ning Xi, Nanda Methil-Sudhakaran, Ranjan Mukherjee, Danyu Zhu, Zhiwei Cen, Matt W. Mutka, Carol A. Slomski, Keith N. Apelgren</i>	
<b>Development and User Testing of the Gestural Joystick for Gloves-On Hazardous Environments.....</b>	<b>1089</b>
<i>Jaewook Bae, Amy Larson, Richard M. Voyles, Roy Godzdanker, Jan Pearce</i>	
<b>An Avoidance Method of Singular Configurations in a Master-Slave System Using Intervening Impedance .....</b>	<b>1095</b>
<i>Kouichi Watanabe, Kiyohiro Sogen, Naoki Kawakami, Susumu Tachi</i>	
<b>A Scaled Tele-Operation Powered by Haptic Illusion .....</b>	<b>1101</b>
<i>Hisato Kobayashi, Keisuke Murakawa, Junya Tatsuno, Hiromi Mochiyama, Hiroyuki Kawai</i>	
<b>Action Recognition and Understanding using Motor Primitives.....</b>	<b>1106</b>
<i>Ville Kyrki, Isabel Serrano Vicente, Danica Kragic, Jan-Olof Eklundh</i>	
<b>Application of Biological Signal to the Expressions of Robotic Emotions .....</b>	<b>1112</b>
<i>Dongkyu Lee, Sonya S. Kwak, Myungsuk Kim</i>	

# Table of Contents

<b>Investigating Implicit Cues for User State Estimation in Human-Robot Interaction Using Physiological Measurements .....</b>	<b>1118</b>
<i>Emily Mower, David J. Feil-Seifer, Maja J. Matarić, Shrikanth Narayanan</i>	
<b>Human- and Situation-Aware People Following.....</b>	<b>1124</b>
<i>Hendrik Zender, Patric Jensfelt, Geert-Jan M. Kruijff</i>	
<b>Does Disturbance Discourage People from Communicating with a Robot?.....</b>	<b>1130</b>
<i>Claudia Muhl, Yukie Nagai</i>	
<b>A Personalized Robot Companion? - The Role Of Individual Differences On Spatial Preferences In HRI Scenarios.....</b>	<b>1136</b>
<i>Dag Sverre Syrdal, Kheng Lee Koay, Michael L. Walters, Kerstin Dautenhahn</i>	
<b>Study on Behavioral Personality of a Service Robot to make more Convenient to Customer.....</b>	<b>1142</b>
<i>Jangwon Lee, Dongwook Shin, Hunsue Lee, Sukhan Lee</i>	
<b>Automatic Generation of Conversational Robot Gestures for Human-friendly Steward Robot.....</b>	<b>1148</b>
<i>Heon-Hui Kim, Hyong-Euk Lee, Yong-Hwi Kim, Kwang-Hyun Park, Z. Zenn Bien</i>	
<b>Using Mixed Reality Agents as Social Interfaces for Robots .....</b>	<b>1154</b>
<i>Mauro Dragone, Thomas Holz, G.M.P. O'Hare</i>	
<b>Human-Robot Interaction for Cooperative Manipulation: Handing Objects to One Another .....</b>	<b>1160</b>
<i>Aaron Edsinger, Charles C. Kemp</i>	
<b>Pathological Sit-To-Stand Predictive Models for Control of a Rehabilitation Robotic Device.....</b>	<b>1166</b>
<i>Ludovic Saint-Bauzel, Viviane Pasqui, Bruno Gas, Jean-Luc Zarader</i>	
<b>Flexible Joint Actuator for Patient's Rehabilitation Device.....</b>	<b>1172</b>
<i>Kyoungchul Kong, Masayoshi Tomizuka</i>	
<b>A Wireless Bluetooth Dataglove Based On A Novel Goniometric Sensors.....</b>	<b>1178</b>
<i>O. Portillo-Rodriguez, C.A. Avizzano, E. Sotgiu, S. Pabon, A. Frisoli, J. Ortiz, M. Bergamasco</i>	
<b>Neural Network Control of a New Biped Robot Model with Back Propagation Algorithm .....</b>	<b>1184</b>
<i>Ahmad Forouzan Tabar, Ahmad Reza Khoogar, Ahmad Reza Vali</i>	