

The 6th International Conference on PErvasive Technologies
Related to Assistive Environments

PETRA 2013

Conference Program

May 29-31, 2013
Rhodes, Greece

Organized by

The University of Texas at Arlington, Arlington, Texas, USA

With sponsorship from:

HERACLEIA Human Centered Computing Laboratory at UTA, USA

The National Science Foundation (NSF), USA

Computer Science and Engineering Department, UTA, USA

University of Piraeus (Department of Digital Systems), GREECE

University of the Aegean, GREECE

Technological Educational Institution of Athens (Department of Informatics) GREECE

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Conference Proceedings

ACM - Association for Computing Machinery



Dear Colleague,

We cordially welcome you to PETRA 2013 Conference, the 6th ACM International Conference on Pervasive Technologies Related to Assistive Environments, May 29-31 2013 in Rhodes, Greece.

Conference Theme

The PETRA Conference brings together different types of technology to address an important social and healthcare issue: as the world's population ages, there is a growing interest in solutions for the in-home care of the elderly as well as for the care of people with Alzheimer's, Parkinson's and other disabilities or traumas. PETRA (which means "stone" in Greek) reflects the needs of the domestic environment, or "Oikos" as it was known in ancient Greece, but from a technological perspective. People's living environments are particularly important in an increasingly crowded and complex world where the need for inclusiveness and connectivity with the rest of the world is key. PETRA addresses the fact that, as people grow older; they will increasingly rely on technology to be able to stay in their homes.

The conference attracted paper submissions from 16 countries, which underwent a thorough reviewing process; 27 of these were accepted as full papers, 22 as short papers and 9 as posters. The Petra Technical Program includes also the 3 following supported workshops

PETRA WORKSHOPS

W1 RasEnv: Workshop on Robotics in Assistive Environments

W2 ABRA: Affect and Behaviour Related Assistance in Support For the Elderly

W3 PSENSE: Participatory Sensing in Assistive Environments

FIRST DAY: May 29

	Room 1	Room 2
09:00-9:30	<p>Conference Opening</p> <p>Fillia Makedon, Conference Chair</p> <p>Ilias Maglogiannis, University of Piraeus, Department of Digital Systems, Greece (Program Committee Co-Chair)</p>	
09:30-10:30	<p><i>A.I. Keynote Lecture - Creating with socio-emotional agents in serious game applications, Catherine Pelachaud, Director of Research CNRS at TELECOM ParisTech</i></p> <p>Session Chair: Bill Carroll</p>	
10:30-11:00	<p>Coffee Break (PETRA NSF Doctoral Consortium Meeting)</p>	
11:00-13:00	<p><i>Session B: Rehabilitation Robotics and Multimodal Interfaces</i></p> <p>Session Chair: Oliver Korn</p> <p>B1 A Smart Wheelchair Based on Ubiquitous Computing, João Tavares, Jorge Barbosa, Cristiano Costa, Adenauer Yamin, Rodrigo Real</p> <p>B2 Toward a 3D Body Part Detection Video Dataset and Hand Tracking Benchmark, Christopher Conly, Paul Doliotis, Pat Jangyodsuk, Rommel Alonzo, Vassilis Athitsos</p> <p>B3 An Assistance System for Guiding Workers in Central Sterilization Supply Departments, Stefan Rüther, Thomas Hermann, Maik Mracek, Stefan Kopp, Jochen Steil</p> <p>B4 A Development and Evaluation Platform for Non-Tactile Power Wheelchair Controls, Christopher Mcmurrough, Isura Ranatunga, Alexandros Papangelis, Fillia Makedon, Dan Popa</p> <p>B5 Capacitive Sensor-Based Hand Gesture Recognition in Ambient Intelligence Scenarios, Andreas Braun, Tim Dutz, Felix Kamieth</p>	<p><i>Session C: Pervasive Systems for the Aging Society</i></p> <p>Session Chair: Ilias Maglogiannis</p> <p>C1 Enabling Health Literacy for Older Adults Through Anamorphic Perspective, Robert Ball</p> <p>C2 Activity Recognition in Smart Homes Based on Electrical Devices Identification, Belley Corinne, Gaboury Sebastien, Bouchard Bruno, Bouzouane Abdenour</p> <p>C3 Go-myLife: A context-aware Social Networking Platform Adapted to the Needs of Elderly Users, Maria Haritou, Athanasios Anastasiou, Ioannis Kouris, Sergio Garcia Villalonga, Idoia olalde gancedo</p> <p>C4 Assistive Technology for Older Adults: Psychological and Socio-Emotional Design Requirements, Aimee Bright, Lynne Coventry</p> <p>C5 Assistive Living Robot: A Remotely Controlled Robot for Older Persons Living Alone, Sebastian Hening, Peter Cottrell, Mircea Teodorescu, Sri Kurniawan, Pat Mantey</p> <p>C6 Location-independent Fall Detection with Smartphone, Stefan Mehner, Ronny Klauck, Hartmut Koenig</p>
13:00-14:00	<p>Lunch Break</p>	

FIRST DAY: May 29

	Room 1	Room 2
14:00-16:00	<p><i>Session D: Networking and Communication for Assistive Environments</i> Session Chair: Eric Becker</p> <p>D1 A General Conformance Testing Framework for IEEE 11073 PHD's Communication Model, Linbin Yu, Yu Lei, Raghu N. Kacker, D. Richard Kuhn</p> <p>D2 Building Reliable Wearable Body Sensor Communication, Dinesh Bhatia, A. L. Praveen Aroul</p> <p>D3 Latency and Congestion Control Improvements Supporting Distributed Healthcare Services, John Waclawsky, Zhengyi Le</p> <p>D4 Smartphone Application Approach to a Multi-Modal Seizure Detection Platform, David Wang, Sai Gouravajhala, Lunal Khuon</p> <p>D5 NFC-triggered IMS Flow Mobility Across Different Devices, Vassilis Zafeiris, Petros Belsis, Christos Skourlas</p> <p>D6 Detecting Intrusive Activities from Insiders in a Wireless Sensor Network Using Game Theory, Ioanna Kantzavelou, Panagiotis Tzikopoulos, Sokratis Katsikas</p>	<p><i>W1: Workshop on Robotics in Assistive Environments</i> Workshop Chairs: Gian-Luca Mariottini, Dan Popa</p> <p>W11 Developing Visual Competencies for Socially Assistive Robots: the HOBBIT Approach, K. Papoutsakis, P. Paderis, A. Ntelidakis, S Stefanou, X. Zabulis, D. Kosmopoulos, A. Argyros</p> <p>W12 Evaluating the Accuracy of a Mobile Kinect-based Gait-Monitoring System for Fall Prediction, Aaron Staranowicz, Gian-Luca Mariottini</p> <p>W13 Adding Obstacle Avoidance to a Robotic Platform for Human Robot Interaction, Christopher Abrego, Panos Shiakolas</p> <p>W14 Development of An Omniwheel-based Holonomic Robot Platform for Rough Terrain, Christopher Mcmurrough, Harris Enotiades, Scott Phan, Stephen Savoie, Fillia Makedon</p> <p>W15 Physical Human-Robot Interaction with a Mobile Manipulator Through Pressure Sensitive Robot Skin, Joe Sanford, Isura Ranatunga, Dan Popa</p> <p>W16 An Assistive Object Manipulation System, Alexandros Papangelis, Isura Ranatunga, Christopher Mcmurrough, Fillia Makedon</p>
16:00-17:30	Poster Session Combined with Coffee Break	
19:00	Welcome cocktail party	

SECOND DAY: May 30

	Room 1	Room 2
09:00-10:40	<p><i>Session E: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments I</i> Session Chair: Panagiotis Bamidis</p> <p>E1 Exploiting the universAAL Platform for the Design and Development of a Physical Activity Monitoring Application, <i>Vassilis Kilintzis, Ioannis Moulos, Vassilis Koutkias, Nicos Maglaveras</i></p> <p>E2 Exploring Ambient Assisted Living Job Profiles, <i>Theodor Panagiotakopoulos, Aspasia Theodosiou, Achilles Kameas</i></p> <p>E3 Inconspicuous on-Bed Respiratory Rate Monitoring, <i>Ming-Chun Huang, Wenyao Xu, Jason Liu, Lauren Samy, Nabil Alshurafa</i></p> <p>E4 Liftacube: A Prototype for Pervasive Rehabilitation in A Residential Setting, <i>Marijke Vandermaesen, Tom De weyer, Karin Coninx, Kris Luyten, Richard Geers</i></p> <p>E5 The Visually Pervasive Augmented World, <i>Paul Sassaman, Eric Becker, Fillia Makedon</i></p>	<p><i>Session F: Usability and HCI issues</i> Session Chair: Vangelis Metsis</p> <p>F1 Augmented Manufacturing: A Study with Impaired Persons on Assistive Systems Using In-Situ Projection, <i>Oliver Korn, Albrecht Schmidt, Thomas Hörz</i></p> <p>F2 Lessons from Our Elders: Identifying Obstacles to Digital Literacy through Direct Engagement, <i>Shreya Kumar, Leo Ureel Ii, Harriet King, Charles Wallace</i></p> <p>F3 User Interface for Social Networking Application for the Elderly, <i>Tero Kivimäki, Petra Kölndorfer, Antti-matti Vainio, Harri Pensas, Timo Vuorela</i></p> <p>F4 Preliminary Investigation of the Impact of Visual Feedback on a Camera-based Mouse-replacement System, <i>Wenxin Feng, Ming Chen, Margrit Betke</i></p> <p>F5 A Qualitative Study to Support a Blind Photography Mobile Application, <i>Dustin Adams, Lourdes Morales, Sri Kurniawan</i></p>
10:40-11:10	<p>Coffee Break (PETRA NSF Doctoral Consortium Meeting)</p>	
11:10-12:10	<p><i>Session G. Plenary Keynote Lecture</i> Session Chair: Jeff Lei</p> <p>Time course and Neural Representation of Memorability: faces and places: an alpha-sparse model for classification, <i>Halima Bensmail, Senior Scientist, Qatar Computing Research Institute</i></p>	
12:10-13:40	<p>Lunch Break</p>	

SECOND DAY: May 30

	Room 1	Room 2
13:40-15:40	<p>W2: Workshop on Affect and Behaviour Related Assistance in Support For the Elderly, Workshop co-Chairs: Christian Peter, Gerald Bieber, Kostas Karpouzis</p> <p>W21 A German-Chinese Speech-Gesture Behavioural Corpus of Device Control in a Smart Home, <i>Dimitra Anastasiou, Cui Jian, Christoph Stahl</i></p> <p>W22 Designing a Travel Companion for Mature Age, <i>Ozge Subasi</i></p> <p>W23 Feedback Presentation for Mobile Personalised Digital Physical Activity Coaching Platforms, <i>Randy Klaassen, Rieks Op den Akker, Harm Op den Akker</i></p> <p>W24 Modeling the Effect of Attention Deficit in Game-Based Motor Ability Assessment of Cerebral Palsy Patients, <i>Michael Gardner, Vangelis Metsis, Eric Becker, Fillia Makedon</i></p> <p>W25 MoodWings: A Wearable Biofeedback Device for Real-Time Stress Intervention, <i>Diana Maclean, Mary Czerwinski, Asta Roseway</i></p> <p>W26 Sensor Requirements for Activity Recognition on Smart Watches, <i>Gerald Bieber, Marian Haescher, Matthias Vahl</i></p>	<p>Special Session H: European Projects USEFIL</p> <p>Session Chair: <i>Vangelis Karkaletsis</i></p> <p>H1 Unobtrusive Monitoring for Independent Living: The USEFIL approach, <i>Sergios Petridis, Homer Papadopoulos, Vangelis Karkaletsis</i></p> <p>H2 Event Recognition For Assisted Independent Living <i>Nikos Katzouris, Alexandros Artikis, Fillia Makedon, Vangelis Karkaletsis, George Paliouras</i></p> <p>H3 Towards an hierarchically-structured decision support tool for improving seniors' independent living. The USEFIL Decision Support System, <i>Antonis S. Billis, Elpiniki I. Papageorgiou, Christos Frantzidis, Evdokimos I, Konstantinidis, Alexander Astaras, Panagiotis D. Bamidis</i></p>
		<p>15:00-15:40</p> <p>Tutorial Session: Health Informatics: Issues and Challenges, <i>Dimitrios Zikos</i></p>
15:40-16:00	Coffee Break	
16:00-17:30	<p>W3: Workshop on Participatory Sensing in Assistive Environments</p> <p>Workshop Chair: <i>Vana Kalogeraki</i></p> <p>Invited Talk:</p> <p>Searching and mining large collections of sequential data, <i>Panagiotis Papapetrou, Birkbeck University of London, UK</i></p> <p>W31 Using smart mobile devices for monitoring in assistive environments, <i>Dimitris Kotsakos, Panos Sakkos, Vana Kalogeraki, Dimitrios Gunopulos</i></p> <p>W32 Exploiting social networks for healthcare, <i>Iouliana Litou, Vana Kalogeraki</i></p>	<p>Special Session I: How Ambient Assisted Living influences the job market - a European view</p> <p>Session Chair: <i>Achilles Kameas</i></p> <p>I1 Emerging AAL jobs and competence needs identified by the CompAAL project, <i>Adriana Baer</i> <i>Moderated discussion by Aspasia Theodosiou and Achilles Kameas</i></p> <p>I2 e-Jobs-Observatory: Promoting European standards in qualification for AAL-Jobs, <i>Aikaterini Sylla</i> <i>Moderated discussion by Aspasia Theodosiou and Achilles Kameas</i></p>
21:00	Gala Dinner	

THIRD DAY: May 31

	Room 1	Room 2
9:00-11:00	<p><i>Session J: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments II,</i></p> <p>Session Chair: Mark Clements</p> <p>J1 Embodiment and Audio-Visual Perception in Tele-Health Environments, <i>Vangelis Karkaletsis, Stasinou Konstantopoulos</i></p> <p>J2 Evaluation of Respiration Quality Using Smart Phone, <i>Neeraj Gupta, Ram Dantu</i></p> <p>J3 Robust Offline Topological Map Estimation Using Visual Loop Closures, <i>Dimitrios Kosmopoulos, Ilias Maglogiannis, Fillia Makedon</i></p> <p>J4 Using CAVE in Physical Rehabilitation Exercises for Rheumatoid Arthritis, <i>Shawn Gieser, Eric Becker, Fillia Makedon</i></p> <p>J5 A Comprehensive System for Locating Medical Services, <i>David Allen, Ovidiu Daescu</i></p> <p>J6 Design Sketching for Assistive Travel Services, <i>Özge Subasi</i></p>	<p><i>Session K: Signal and Image Processing for Ambient Intelligence and Pervasive Computing</i></p> <p>Session co-Chairs: Gerald Bieber, Robert Ball</p> <p>K1 Multiresolution Similarity Search in Time Series Data: An Application to EEG Signals, <i>Amalia Charisi, Fragkiskos Malliaros, Evangelia Zacharaki, Vasileios Megalooikonomou</i></p> <p>K2 Texture Driven Mathematical Modeling for Brain Tumor Evolution , <i>Nikolaos Doulamis, Maria Papadogiorgaki , Michalis Zervakis</i></p> <p>K3 Kinesiologic Electromyography for Activity Recognition, <i>Maurizio Caon, Francesco Carrino, Antonio Ridi, Yong Yue, Elena Mugellini</i></p> <p>K4 Speech Adventure: Using Speech Recognition for Cleft Speech Therapy, <i>Zachary Rubin, Sri Kurniawan</i></p> <p>K5 Thermal Imaging for Affect Detection, <i>Veronica Perez-rosas, Alexis Narvaez, Mihai Burzo, Rada Mihalcea</i></p> <p>K6 Fisheye Camera Modeling for Human Segmentation Refinement in Indoor Videos, <i>Ilias Maglogiannis, Kostas Delibasis, Theodosios Goudas, Vasilios Plagianakos</i></p>
11:00-11:20	Coffee Break	
11:20-12:10	<p><i>Session L: Plenary Invited Lecture</i></p> <p>Towards Improving the Robustness of Gesture Recognition Systems: Addressing Large Vocabularies and Cluttered Scenes, <i>Vassilis Athitsos, the University of Texas at Arlington</i></p> <p>Session Chair: Ilias Maglogiannis</p>	
12:10-13:30	Lunch Break	

THIRD DAY: May 31

	Room 1	Room 2
13:30-15:10	<p>Session L: Data Modeling and Information Management for Pervasive Assistive Environments Session Chair: Dimitrios Kosmopoulos</p> <p>L1 Mining Usage Data for Adaptive Personalisation of Smartphone Based Help-on-Demand Services, William Burns, Liming Chen, Chris Nugent, Mark Donnelly, Kerry-louise Skillen L2 Natural Interaction expressivity modeling and analysis, Ilias Maglogiannis, George Caridakis, Kostas Moutselos L3 Application of Data Mining Techniques to Determine Patient Satisfaction, Georgios Galatas, Dimitrios Zikos, Fillia Makedon L4 Remote Smartphone Monitoring for Management of Parkinson’s Disease, Teresa Sanders, Annaelle Devergnas, Thomas Wichmann, Mark Clements L5 Mobile learning for clinical practice guidelines implementation: A medical app for pediatric acute gastroenteritis, Emanuele Nicastro, Alfredo Guarino, Francesco Piccialli, Andrea Lo vecchio, Salvatore Cuomo</p>	<p>Session M: Cognitive Systems and Pattern Analysis Tools for Assistive Environments Session Chair: Vassilis Athitsos</p> <p>M1 Genre Classification of Symbolic Music with SMBGT, Alexios Kotsifakos, Evangelos Kotsifakos, Panagiotis Papapetrou, Vassilis Athitsos M2 mCOPD: Mobile Phone Based Lung Function Diagnosis and Exercise System for COPD, Wenyao Xu, Ming-Chun Huang, Jason Liu, Majid Sarrafzadeh, Xinchun Shen M3 Quantifying Cognitive Impairment Due to Physical or Mental Stress, Neeraj Gupta, Ram Dantu M4 The Role of Dictionary Learning on Sparse Representation-based Classification, Soheil Shafiee, Farhad Kamangar, Vassilis Athitsos, Junzhou Huang M5 Using SWRL and Ontological Reasoning for the Personalization of Context-Aware Assistive Services, Kerry-Louise Skillen, Liming Chen, Chris Nugent, Mark Donnelly, William Burns</p>
15:10-16:00	<p>Coffee Break Poster Session NSF Doctoral Consortium Meeting</p>	
16:00	<p>Conference Closing</p>	
20.30	<p>Disco Night</p>	

Accepted Posters

An Adaptive Dialogue System for Assessing Post Traumatic Stress Disorder

Alexandros Papangelis, Robert Gatchel, Fillia Makedon

Assistive Technologies to Track Ocean Forests: Data Visualization and Clustering for Large Scale Systems

David Paulk

Automatic Extraction of Causal Relations from Medical Documents

Yousef Abuzir

Biomedical Sensor Properties of Flexible PolyVinylidene Flouride

Vasiliki Ikonomidou, Jayadeva, Robert Newcomb, Mona Zaghloul

Exploring Voice User Interfaces for Seniors

Stephan Schlögl, Markus Garschall, Grégory Legouverneur, Gérard Chollet, Manfred Tscheligi

Operational effects of a mobile robot system for cleaning ventilation ducts

Wootae Jeong, Seung-Woo Jeon, Duckshin Park

Patterns of Inquiry in Computer Literacy Help Sessions for the Elderly

Shreya Kumar, Charles Wallace

Study of the Patient Perspective on Dental Care Recommendation Systems

Sojendra Pradhan, Valerie Gay

User Requirements for Navigation Assistance in Public Transit for Elderly People

Stefanie Mueller, Felix Kamieth, Andreas Braun, Tim Dutz, Peter Klein

Steering Committee

Fillia Makedon, *University of Texas at Arlington, USA*
Ilias Maglogiannis, *University of Piraeus, Department of Digital Systems, Greece*
Grammati Pantziou, *Technological Educational Institution of Athens, Greece*
Vangelis Karkaletsis, *National Centre for Scientific Research "Demokritos", Greece*

Conference Chair

Fillia Makedon, *University of Texas at Arlington, USA*

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Matt Bishop - *University of California, Davis, USA*
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Heng Huang - *University of Texas at Arlington, USA*
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Vana Kalogeraki - *College of Arts, Media, and Design Department of Informatics, Athens University of Economics and Business*
Sarantos Kapidakis - *Ionian University, Greece*
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Oliver Korn - *University of Stuttgart, VIS*
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Molly Lopez - *The University of Texas, Austin*
Dimitrios Metaxas - *Rutgers University, USA*
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Christian Peter - *Fraunhofer Institute for Computer Graphics, Rostock, Germany*
Dan Popa - *The University of Texas at Arlington*
Majid Sarrafzadeh - *UCLA, USA*
Li Shen - *Indiana University, USA*
Gergely Zaruba - *UT Arlington, USA*

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Fillia Makedon (Co-Chair) - *University of Texas at Arlington, USA*
Rong Zhang (Co-Chair) - *University of Texas at Arlington, USA*
Vangelis Metsis - *University of Texas at Arlington, USA*
Paul Doliotis – *University of Texas at Arlington, USA*

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Conference Web Support and e-Proceedings

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Vangelis Metsis - *University of Texas at Arlington, USA*
Eric Becker - *University of Texas at Arlington, USA*

NSF Doctoral Consortium Faculty

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