

The 3rd International Conference on PErvasive Technologies
Related to Assistive Environments

PETRA 2010

Conference Program

(posted June 10th, 2010)

June 23-25, 2010

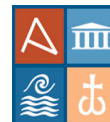
Pythagorion, Samos, Greece

Organized by

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Conference Proceedings

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Dear Colleague,

You are cordially welcomed to PETRA 2010 Conference, the 3rd ACM International Conference on Pervasive Technologies Related to Assistive Environments, June 23-25, 2010, in Samos, 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 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 15 countries, which underwent a thorough reviewing process; 45 of these were accepted as full papers and 7 as posters. The Petra Technical Program includes also the 3 following workshops with additional 17 papers.

PETRA WORKSHOPS

- W1 ABRA** - Affect and Behaviour Related Assistance in Support for the Elderly
- W2 SIGPROCESSING** – Light-weight Signal Processing for Computationally Intensive BSN Applications
- W3 EVENTANALYSIS** - Multimedia Event Analysis For Assistive Environments

FIRST DAY: JUNE 23

DAY ONE – JUNE 23		Room 1	Room 2
	09:30-10:00	Conference Opening Fillia Makedon, Conference Chair Bill Carroll, Dean, College of Engineering, University of Texas at Arlington Ilias Maglogiannis, University of Central Greece (Program Committee CoChair) Sarantos Kapidakis, Ionio University (Program Committee Co-Chair) Matt Bishop, University of California, Davis (Program Committee CoChair)	
	10:00-10:50	<u>Session A: Plenary</u> Session chair: Ilias Maglogiannis, University of Central Greece, Greece (Program Committee Co-Chair) A1. Keynote Lecture - Assistive Environments that Empower Individuals with Severe Disabilities <i>Professor Margrit Betke, Boston University, USA</i>	
	10:50-11:20	Coffee Break (PETRA NSF Doctoral Consortium Meeting)	
	11:20-13:00	<u>Session B: Usability and HCI Issues, Multimodal Interfaces</u> Session Chair: Margrit Betke B.1. Assistive Technologies for the Blind: A Digital Ecosystem Perspective <i>David Calder</i> B.2. Haptic Emulation of Games: Haptic Sudoku for the Blind <i>René Gutschmidt, Maria Schiewe, Francis Zinke, Helmut Jürgensen</i> B.3. Voice Commands for a Mobile Reading Device for the Visually Impaired <i>Robefrt Keefer, Sundaram Narayanan, Nikolaos Bourbakis</i> B.4. Identification of Static and Dynamic Muscle Activation Patterns for Intuitive Human/Computer Interfaces <i>Fred Clark jr., Dan Nguyen, Gutemberg Guerra filho, Manfred Huber</i> B.5. Acoustical Implicit Communication in Human-Robot Interaction <i>Yong Lin, Zhengyi Le, Eric Becker, Fillia Makedon</i>	<u>Session C: Cognitive Systems and Machine Learning for Assistive Environments</u> Session Chair: Peter Christian C.1. Cognitive Optimization in the Development of Assistive Living Systems <i>Alan Bowling</i> C.2. Emotion Detection via Discriminative Kernel Facial Expression Recognition <i>Hua Wang, Heng Huang, Yanzi Hu</i> C.3. Heart Murmurs Identification Using Random Forests in Assistive Environments <i>Euripidis Loukis, Manolis Maragkoudakis</i> C.4. Abnormal Human Behavioral Pattern Detection in Assisted Living Environments <i>Kyungseo Park, Yong Lin, Vangelis Metsis, Zhengyi Le, Fillia Makedon</i> C.5. Activity Monitoring Using an Intelligent Mobile Phone – A Validation Study <i>Yan Huang, Huiru Zheng, Chris Nugent, Paul Mccullagh, Suzanne Mcdonough</i>
13:00-14:00	Lunch Break		

FIRST DAY: JUNE 23

		Room 1	Room 2
DAY ONE – JUNE 23	14:00-16:00	<p><u>Session D: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments I</u> Session Chair: Dimitris Gunopulos and Vana Kalogeraki</p> <p>D.1. Optimizing Pervasive Sensor Data Acquisition utilizing Missing Values Substitution <i>Michael Michalopoulos, Chris Anagnostopoulos, Charalampos Doukas, Ilias Maglogiannis, Stathes Hadjiefthymiades</i></p> <p>D.2. An Agent-based Application of Personal Health Record in Homecare <i>Vassiliki Koufi, Flora Malamateniou, George Vassilacopoulos</i></p> <p>D.3. Pervasive Technology to Facilitate Wellness <i>Paul Mccullagh, Mark Beattie, Chris Nugent</i></p> <p>D.4. Sensor Placement and Coordination via Distributed Multi-Agent Cooperative Control <i>Alexandros Papangelis, Vangelis Metsis, John Shawe – Taylor, Fillia Makedon</i></p> <p>D.5. A Mobile Robot for Self-selected Gait Velocity Assessments in Assistive Environments <i>Melina Brell, Jochen Meyer, Thomas Frenken, Andreas Hein</i></p> <p>D.6. Fun to Develop Embodied Skill: How Games Help the Blind to Understand Pointing <i>Francisco Oliveira, Heidi Cowan, Bing Fang, Francis Quek</i></p>	<p><u>W1 - Workshop on Affect and Behaviour Related Assistance for the Elderly</u> Workshop Chair: Peter Christian / Kostas Karpouzis / Gerald Bieber</p> <p>W1.1. A System for Affect and Behaviour Related Assistance for Families in the Home Environment <i>Christian Peter, Gerald Bieber, Bodo Urban</i></p> <p>W1.2. Assessing Accelerometer Based Gait Features to Support Gait Analysis for People with Complex Regional Pain Syndrome <i>Mingjing Yang, Huiru Zheng, Haiying Wang, Sally Mcclean, Jane Hall</i></p> <p>W1.3. Human-Computer Interaction and the Older Adult: An Example Using User Research and Personas <i>Francisco Nunes, Paula alexandra Silva, Filipe Abrantes</i></p> <p>W1.4. Mobile physical activity recognition of Stand-Up and Sit-Down Transitions for User Behavior Analysis <i>Gerald Bieber, Philipp Koldrack, Christopher Sablowski, Christian Peter, Bodo Urban</i></p> <p>W1.5. A Deterministic Large-Scale Device-Free Passive Localization System for Wireless Environments <i>Moustafa Seifeldin, Moustafa Youssef</i></p> <p>W1.6. Requirements and Specifications Analysis for a Monitoring System to Support the Self-management of Dementia Patients at Home <i>Stefanos Xefteris, Maria Haritou, Konstantinos Tserpes, Alessandro Seretti, Josep ramon Llopart</i></p>
	16:00-16:20	Coffee Break	
	16:20-18:20	<p><u>Session E: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments II</u> Session Chairs: Jim Storer</p> <p>E.1. A New Tourist Audio Guide Service for Elderly People Integrated in the Mobile Phone: Preliminary Results <i>Unai Díaz, Alvaro García, Alejandro De felipe</i></p> <p>E.2. A privacy-preserving protocol for finding the nearest doctor in an emergency <i>Georgios Drosatos, Pavlos Efraimidis</i></p> <p>E.3. Health Monitoring Using Gait Phase Effects <i>Richard Byrne, Parisa Eslambolchilar, Andrew Crossan</i></p> <p>E.4. Sensor Based Micro-Context for Mild Dementia Assistance <i>Jit Biswas, Kelvin Sim, Weimin Huang, Andrei Tolstikov, Aung Aung</i></p> <p>E.5. Computer based cognitive training for patients with mild cognitive impairment (MCI) <i>Stavros c. Zafeiropoulos</i></p> <p>E.6. ConstructFinder – Web Site Interaction Made Easier <i>Thomas Beer, Martina Weicht, Ilvio Bruder</i></p>	<p><u>Session G: Healthcare Privacy and Data Security</u> Session Chairs: Anagnostopoulos Ioannis</p> <p>G.1. The Security and Privacy Implications of Using Social Networks to Deliver Healthcare <i>Carrie Gates, Matt Bishop</i></p> <p>G.2. An Authentication Model for Delegation, Attribution and Least Privilege <i>Ebrima n. Ceesay, William r. Simpson, Coimbatore Chandrasekaran</i></p> <p>G.3. Threat Analysis of Online Health Information System <i>Azadeh Nematzadeh, Jean Camp</i></p> <p>G.4. Misco: A MapReduce Framework for Mobile Systems <i>Adam Dou, Vana Kalogeraki, Dimitrios Gunopulos, Taneli Mielikainen, Ville Tuulos</i></p> <p>G.5. Applying Data Warehousing Technique in Pervasive Assistive Environment <i>Shahina Ferdous, Leonidas Fegaras, Fillia Makedon</i></p>
21:00	Welcome cocktail party		

SECOND DAY: JUNE 24

DAY TWO – JUNE 24		Room 1	Room 2
	9:30-11:30	<p><u>Session F:</u> Signal and Image Processing for Ambient Intelligence and Pervasive Computing</p> <p>Session Chair: Charles B. Owen</p> <p>F.1. Blink and Wink Detection for Mouse Pointer Control <i>Eric Missimer, Margrit Betke</i></p> <p>F.2. Shape Recognition, With Applications To A Passive Assistant <i>Antonella Dilillo, Giovanni Motta, Kevin Thomas, James Storer</i></p> <p>F.3. Experiments with Computer Vision Methods for Fall Detection <i>Zhong Zhang, Eric Becker, Roman Arora, Vassilis Athitsos</i></p> <p>F.4. Development of Holistic Physical Therapy Management System using Multimodal Sensor Network <i>Aung aung Phyo wai, Kenneth Lin jinhong</i></p> <p>F.5. Extending Event-Driven Experiments for Human Activity for an Assistive Environment <i>Eric Becker, Roman Arora, Scott Phan, Jyothi Vinjumer, Fillia Makedon</i></p> <p>F.6. From Dialogue Management to Pervasive Interaction <i>Yong Lin, Fillia Makedon</i></p>	<p><u>W2 - Workshop on Light-weight Signal Processing for Computationally Intensive BSN Applications</u></p> <p>Workshop Chairs: Roozbeh Jafari and Majid Sarrafzadeh</p> <p>W2.1. Applications of Sensing Platforms in Body Sensor Networks <i>Vitali Loseu, Hassan Ghasemzadeh, Sarah Ostadabbas, Nikhil Raveendranathan, Jacques malan</i></p> <p>W2.2. Linear Frequency Estimation Technique for Reducing Frequency Based Signals <i>Jonathan Woodbridge, Alex Bui, Majid Sarrafzadeh</i></p> <p>W2.3. Low Complexity Sensors for Body Area Networks <i>Harinath Garudadri, Pawan Baheti, Somdeb Majumdar</i></p> <p>W2.4. Opportunistic Strategies for Lightweight Signal Processing for Body Sensor Networks <i>Edmund Seto, Eladio Martin, Allen Yang, Posu Yan, Raffaele Gravina</i></p> <p>W2.5. Time-Domain Heart Rate Variability Analysis with the SPINE-HRV Toolkit <i>Alessandro Andreoli, Raffaele Gravina, Roberta Giannantonio, Paola Pierleoni, Giancarlo Fortino</i></p> <p>W2.6. Tracking your Steps on the Track: Body Sensor Recordings of a Controlled Walking Experiment <i>Jefrey Lijffijt, Panagiotis Papapetrou, Jaakko Hollmen</i></p>
	11:30-12:00	Coffee Break (PETRA NSF Doctoral Consortium Meeting)	
	12:00-13:00	<p><u>Session H: Plenary</u></p> <p>Session Chair: Matt Bishop, University of California, Davis, USA (Program Committee Co-Chair)</p> <p>H1. Keynote Lectures - Deformable Models and Sparse Methods for Improved Signal and Cardiac Disease Diagnosis <i>Professor Dimitrios Metaxas, Rutgers University, USA</i></p>	
13:00-14:00	Lunch Break		

SECOND DAY: JUNE 24

		Room 1	Room 2	
DAY TWO – JUNE 24	14:00-15:20	<p><u>Session I: Plenary</u> Session Chair: Sarantos Kapidakis, Ionian University, Corfu, Greece (Program Committee Co-Chair)</p> <p>II. Keynote Lecture - Ambient Intelligence Environments for the Aging Population <i>Professor Constantine Stephanidis, Foundation for Research and Technology - Hellas (FORTH), Greece (50 min)</i></p> <p>12. Invited Talk - Wireless Health: A Novel Approach to Healthcare Delivery <i>Professor Majid Sarrafzadeh, UCLA, USA (30 min)</i></p>		
	15:20-15:40	Coffee Break		
	15:40-17:20	<p><u>Session J: Pervasive Systems for the Aging Society</u> Session Chair: Roozbeh Jafari</p> <p>J.1. An Exploration of Real-Time Environmental Interventions for Care of Dementia Patients in Assistive Living <i>Lisa Rebenitsch, Charles Owen, Reza Ferrydiansyah, Corey Bohil, Frank Biocca</i></p> <p>J.2. An Interactive User Interface System for Alzheimer’s Intervention <i>Rong Zhang, Georgios Alexandrakis, Charles Owen, Andrew Saykin, Fillia Makedon</i></p> <p>J.3. A Survey of Technology for the Elderly <i>Kush Wadhwa</i></p> <p>J.4. Using Mobile Phones to Improve Medication Compliance and Awareness for cardiac Patients <i>Islam Qudah, Peter Leijdekkers, Valerie Gay</i></p> <p>J.5. Web Based Medicine Intake Tracking Application <i>Jyothi Vinjumur, Eric Becker, Shahina Ferdous, George Galatas, Fillia Makedon</i></p>	15:40-16:40	<p><u>Session K: Data Modeling and Information Management for Pervasive Assistive Environments</u> Session Chair: Pedros Papapetrou</p> <p>K.1. FoodManager: a Cooking, Eating and Appliance Controlling Support System for the Elderly <i>Rosa Iglesias, Ibai Ibarguren, Nuria Gomez-de-segura, Julen Ugalde, Leticia Coello</i></p> <p>K.2. BlueS: Semantic Caching Approaches for Data Reuse in Smart Environments <i>Andre Peters, Dortje Loeper, Andreas Heuer</i></p> <p>K.3. Communicating Through Preferences <i>Nicolas Spyrtatos, Dimitris Kotzinos</i></p>
		<p>PANEL: Samos Community Initiatives Needing Assistive Technologies (60 minutes) Co-Chairs: Loukis Euripides and Stamatis Skoutas</p> <p>(1) The Amfilissos Project: Management of Natural Resources in Remote Villages and Preserving the Equilibrium Between Health and Nature <i>Eirini Skouta (20 minutes)</i></p> <p>(2) The ARCHIPELAGOS Project: Relation Between Man and Sea <i>Anastasia Miliou (20 minutes)</i></p> <p>(3) A (Samean) medical data study <i>Andreas Kostoulas (20 minutes)</i></p>	16:40-17:40	
	21:00	Greek Barbeque		

THIRD DAY: JUNE 25

DAY THREE – JUNE 25		Room 1	Room 2
	9:30-11:30	<p><u>Session L: Networking Technologies for Healthcare Information Storage, Transmission, Processing, and Feedback</u> <i>Session Chair: Grammati Pantziou</i></p> <p>L.1. Context-aware Optimized Information Dissemination in Large Scale Vehicular Networks <i>Yves Vanrompay, Ansar-ul-haque Yasar, Davy Preuveneers, Yolande Berbers</i></p> <p>L.2. A Secure Ubiquitous Healthcare System Based on IMS and the HL7 Standards <i>Vasileios Giotsas, Stefanos Nikolidakis, Emmanouil Georgakakis, Dimitrios Vergados, Christos Douligeris</i></p> <p>L.3. An Overview of Body Sensor Networks in Enabling Pervasive Healthcare and Assistive Environments <i>Charalampos Liolios, Charalampos Doukas, George Fournalas, Ilias Maglogiannis</i></p> <p>L.4. Optimizing Trajectories of Mobile Beacons to Localize Sensor Networks <i>Awais Iqbal, Lanjiang Zhou, Gergely Zaruba</i></p> <p>L.5. Android vs Windows Mobile vs Java ME, A comparative Study of Mobile Development Environments <i>Tor-morten Grønli, Jarle Hansen, Gheorghita Ghinea</i></p> <p>L.6. Modeling Reliability for Wireless Sensor Node Coverage in Assistive Testbeds <i>Zhengyi Le, Eric Becker, Dimitrios Konstantinides, Chris Ding, Fillia Makedon</i></p>	<p><u>W3 - Workshop on Workflow and Event Analysis for Assistive Environments</u> Workshop Chair: Manolis Sardis</p> <p>W3.1. Benchmarking Dynamic Time Warping for Music Retrieval <i>Jefrey Lijffijt, Panagiotis Papapetrou, Jaakko Hollmen, Vassilis Athitsos</i></p> <p>W3.2. Dynamic Background Modeling for a Safe Road Design <i>Anastasios Doulamis</i></p> <p>W3.3. Integrating RFID technologies on event based hemispheric imaging in Internet of Things assistive applications <i>Vassilis Koliass, Ioannis Giannoukos, Christos Anagnostopoulos, Ioannis Anagnostopoulos, Vassili Loumos</i></p> <p>W3.4. Iterative Motion Estimation Constrained by Time and Shape for Detecting Persons' Falls <i>Nikolaos Doulamis</i></p> <p>W3.5. Multi-Modal Sensing Smart Spaces Embedded with WSN Based Image Camera <i>Sun-min Hwang, Kyu-jin Kim, Eui-nam Huh, W. Huang, V. Foo</i></p>
	11:30-12:00	<p>Poster Session Combined with Coffee Break</p>	
	12:00-13:00	<p><u>Session M: Plenary</u> Session Chair: Fillia Makedon, <i>University of Texas at Arlington, USA</i></p> <p>M1. Keynote Lecture - Model-Based Image Analysis and Biomechanical Modeling With Applications to Health <i>Prof. Demetri Terzopoulos, University of California, Los Angeles, USA</i></p>	
13:00-14:00	<p>Lunch Break</p>		

THIRD DAY: JUNE 25

DAY THREE – JUNE 25	14:00-16:00	<p>SPECIAL SESSION: (All NSF Scholars are strongly encouraged to attend)</p> <p>Session Chair: Manolis Sardis, <i>National Technical University of Athens - NTUA, Athens, Greece.</i></p> <p>Event Recognition for Intelligent Resource Management <i>Alexandros Artikis, DEMOKRITOS National Center for Scientific Research (NCSR) Institute of Informatics and Telecommunications</i></p> <p>We will present the PRONTO project that emphasizes the role of event recognition in intelligent resource management, and proposes a methodology for fusing data from various sources, analysing it to extract useful information—in the form of events—and delivering the resulting knowledge for decision making. In this talk we will focus on temporal representation and reasoning techniques for event recognition.</p> <p>Human robot interaction: the INDIGO robot guide <i>Dimitris Vogiatzis, DEMOKRITOS National Center for Scientific Research (NCSR) Institute of Informatics and Telecommunications</i></p> <p>The basic goal of human robot interaction is to establish an effective communication between the two parties. In particular, robot emotion, speech, and facial expressions determine the way humans regard the robot, and they are deemed as essential for a natural form of communication. Addressing those issues is the focal point of this presentation, while as a test-bed we deployed a robot platform in a museum, where it serves as a guide to visitors. This work was performed in the context of the INDIGO R&D project (http://www.ics.forth.gr/indigo/).</p>
	16:00	<p style="text-align: center;">Conference Closing</p>

Steering Committee

Fillia Makedon - University of Texas at Arlington, USA
Ilias Maglogiannis - University of Central Greece, Greece
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Grammati Pantziou - TEI of Athens, Greece
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Mat Bishop - *University of California, Davis, USA*
Sarantos Kapidakis – Ionian University, Greece

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