

The 4th ACM International Conference on PErvasive
Technologies Related to Assistive Environments

PETRA 2011

Conference Program

May 25-27, 2011
Heraklion, Crete, Greece

Organized by

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

With sponsorship from:

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Conference Proceedings

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Dear Colleague,

We cordially welcome you to PETRA 2011 Conference, the 4th ACM International Conference on Pervasive Technologies Related to Assistive Environments, May 25-27 2011 in Crete, 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 18 countries, which underwent a thorough reviewing process; 37 of these were accepted as full papers, 7 as short papers and 6 as posters. The Petra Technical Program includes also the 5 following supported workshops

PETRA WORKSHOPS

W1 ABRA: Affect and Behaviour Related Assistance in Support For the Elderly

W2 AlzAACFAM: Alzheimer's Disease - Computer-assisted Early Diagnosis and the Use of Augmentative Alternative Communication (AAC) for Families and Patients

W3 PSPAE: Privacy and Security in Pervasive e-Health and Assistive Environments Workshop

W4 RasEnv: Workshop on Robotics in Assistive Environments

W5 HappyAgeing: HAPPY AGEING Project Overview. Solutions for Independent Living and Technology Acceptance

FIRST DAY: May 25

		Room 1	Room 2
		<p>Conference Opening</p>	
09:00-10:30		<p align="center"> Fyllia Makedon, Conference Chair Margit Betke Boston University (Program Committee Co-Chair) Ilias Maglogiannis, University of Central Greece (Program Committee Co-Chair) Grammati Pantziou, Technological Educational Institute of Athens (Program Committee Co-Chair) </p> <p><i>A1. Keynote Lecture - Security challenges of the Personal Health Record</i> Sokratis K. Katsikas, General Secretary for Communications Ministry of Infrastructures, Transport and Networks <i>Professor of the Dept. of Digital Systems of the University of Piraeus, Greece</i></p>	
10:30-10:50		<p align="center">Coffee Break (PETRA NSF Doctoral Consortium Meeting)</p>	
	<p><u>Session B: Usability and HCI Issues, Multimodal Interfaces</u> <i>Session Chair: Vassilis Athitsos</i></p> <p>B.1. Setting the Table for the Blind, Mechnet Chiousenoglou, Helmut Jirgensen</p> <p>B.2. Menu Controller: Making Existing Software More Accessible for People with Motor Impairments, Isaac Paquette, Christopher Kwan, Margrit Betke</p> <p>B.3. Linklights: A Modular, User Adaptable System to Support Rehabilitation Practices, Erik Grönvall, Gunnar Kramp</p> <p>B.4. Design Dimensions of Ambient Information Systems to Facilitate the Development of AAL Environments, Marcela Rodriguez, Juan Pablo Garcia, Angel Andrade</p> <p>B.5. A Prototype Obstacle Navigation Device For The Blind, David Calder</p> <p>B.6. Design For All: Towards A Social Platform for Integrating Distributed Open-Access Repositories, Cleo Sgouroupoulou, Petros Belis, Anastasios Koutoumanos</p>	<p><u>Session C: Cognitive Systems and Pattern Analysis Tools for Assistive Environments</u> <i>Session Chair: Bieber Gerald</i></p> <p>C.1. A Recommender System For Assistive Environments, Alexandros Papangelis, Georgios Galatas, Fyllia Makedon</p> <p>C.2. Probabilistic Search of Human by Autonomous Mobile Robot Syed arif Mehdi, Karsten Berns</p> <p>C.3. Can Cognitive And Functional Measures Explain Interactions Between Elderly People With Different Levels of Cognitive Decline And An Avatar On TV? Unai Diaz, Aitziber Etxaniz, Mari Jeli González, Cristina Buiza, Elena Urdaneta, Javier Yanguas</p> <p>C.4. Recognition of Sleep Patterns Using A Bed Pressure Mat, Vangelis Metis, Georgios Galatas, Alexandros Papangelis, Dimitrios Kosmopoulos, Fyllia Makedon</p> <p>C.5. Community Detection In Collaborative Environments: A Comparative Analysis, Andreas Kalatzakis, Harris Papadakis, Costas Panagiotakis, Paraskevi Fragopoulou</p> <p>C.6. Real-Time Path Planning For A Robotic Arm, Kavita Krishnaswamy, Jennifer Sleeman, Tim Oates</p>	
12:50-14:00		<p align="center">Lunch Break</p>	
DAY ONE – – MAY 25			

DAY ONE -- MAY 25		Room 1	Room 2
		<p>Session D: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments I <i>Session Chair: George Alexandrakis</i></p> <p>D.1. Active RFID for Medical Aware Environments, Dimitris Agouridis, Muid Mufti, Adeel Mukhtar</p> <p>D.2. AMICA, A Versatile Telemedical Platform for Self-Management of COPD Patients, Ioannis Kouris, Kostas Giokas, Dimitris Koutsouris</p> <p>D.3. Towards Global Aerobic Activity Monitoring Atila Reiss, Didier Stricker</p> <p>D.4. Assessment of Assistive Technologies Based On the PSA-BI Model, Stuart Moran, Lawrence Chidambwa, Keitichi Nakata</p> <p>D.5. A Configurable Telecare System Claire Maternaghan, Kenneth Turner</p>	<p>W1: Workshop On Affect and Behaviour Related Assistance in Support For the Elderly: <i>Workshop chairs: Peter Christian, Bieber Gerald, Karpozis Kostas</i></p> <p>W1.1. KOPAL Appointment User-interface - An Evaluation With Elderly, Sebastian Fudickar, Sebastian Faerber, Bettina Schmor</p> <p>W1.2. Non-Manual Cues In Automatic Sign Language Recognition George Caridakis, Stylianos Asteriadis, Kostas Karpozis</p> <p>W1.3. The Hearing Trousers Pocket – Activity Recognition By Alternative Sensors, Gerald Bieber, Andre Luthardt, Christian Peter, Bodo Urban</p> <p>W1.4. Towards Effective, Efficient and Elderly-friendly Multimodal Interaction, Cui Jian, Hui Shi, Carsten Raehuy, Frank Schaffmeister, Nadine Sasse</p>
15:40-16:00	<p>Session E: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments II <i>Session Chair: Heng Huang</i></p> <p>E.1. Designing A Multi-Purpose Capacitive Proximity Sensing Input Device, Andreas Braun, Pascal Hamisu</p> <p>E.2. MCMC Bayesian Inference for Heart Sounds Screening in Assistive Environments, Manolis Maragoudakis, Euripides Loukis</p> <p>E.3. Exploring Community Building With An Awareness Display Dhaval Vyas, Anton Eliens, Wim Poelman</p> <p>E.4. Use of RSSI and Time-of-Flight Wireless Signal Characteristics for Location Tracking, Joshua Davies, Farhad Kamangar, Gergely Zamba, Manfred Huber, Vassilis Athitsos</p> <p>E.5. Quality of Life Information Services Based On Participatory Environmental Sensing, Kostas Karatzas, Victor Epiropou, Anastassios Bassoukos</p>	<p>W2: Workshop on Alzheimer's Disease - Computer-Assisted Early Diagnosis and the Use of Augmentative Alternative Communication (AAC) for Families and Patients</p> <p><i>Workshop Chair: Chariklia Tziraki, Tzvi Dwolatzky</i></p> <p>W2.1. Augmentative Alternative Communication for Alzheimer's Patients and Families' using SAVION, Rakef Berenbaum, Yehudit Lange, Lech Abramowitz</p> <p>W2.2. Enabling Risk Assessment and Analysis by Event Detection in Dementia Patients Using a Reconfigurable Rule Set, Stefanos Xefteris, Aggelos Androulidakis, Maria Haritou, Audrey Baboshin, Yuri Glickman</p> <p>W2.3. Personalized Reminiscence Therapy for Patients With Alzheimer's Disease Using A Computerized System, Vardit Sarne-fleischmann, Noam Tractinsky, Tzvi Dwolatzky, Inbal Rief</p> <p>W2.4. Savion: An Interactive Cognitive Enhancement Software for The Elderly, Emmanouil Papastefanakis, Andriani Kyriklaki, Simeon Panagiotakis, Miliotis Theodoros, Gargeraki Anastasia</p> <p>W2.5. The Mindstreams Computerized Assessment Battery for Cognitive Impairment and Dementia, Tzvi Dwolatzky</p>	
16:00-17:40			
21:00		Welcome cocktail party	

SECOND DAY : MAY 26

		Room 1	Room 2
		<p><u>Session E: Signal and Image Processing for Ambient Intelligence and Pervasive Computing</u> Session Chair: Leonidas Fegaras</p> <p>F.1. Audiovisual Speech Recognition In Noisy Visual Environments <i>Georgios Galatas, Gerasimos Potamianos, Alexandros Papangelis, Fililia Makedon</i></p> <p>F.2. Comparing Gesture Recognition Accuracy Using Color and Depth Information, Paul Doltiois, Alexandra Stefan, Chris Memurrough, David Eckhard, Vassilis Athitsos</p> <p>F.3. Experiments With Computer Vision Methods for Hand Detection, Zhong Zhang, Rommel Alonzo, Vassilis Athitsos</p> <p>F.4. Swallow Sound Analysis for Automated Ingestion Detection, William Walker, Dinesh Bhatia</p> <p>F.5. Watering The Flowers: Virtual Haptic Environments for Training of Forearm Rotation In Persons With Central Nervous Deficits, Tom De weyer, Karin Koninx, Sofie Notelaers, Richard Geers, Peter Feys</p>	<p><u>Session G: Pervasive Systems for the Aging Society</u> Session Chair: Eric Becker, Dimitrios Kosmopoulos</p> <p>G.1. A TV Platform to Improve Older People's Quality of Life: Lessons Learned From the Evaluation of The VITAL Project with Spanish Elderly Users, Unai Diaz, Aitziber Etxaniz, Elena Urdaneta, Gorka Epelde, Xabier Valencia</p> <p>G.2. Abnormal Behaviours Identification for An Elder's Life Activities using Dissimilarity Measurements, Sawwan Mahmoud, Ahmad Lofii, Caroline Langensiepen</p> <p>G.3. Elderly Daily Activity Habits or Lifestyle in Their Natural Environments, Marie Chan, Daniel Estève, Eric Campo</p> <p>G.4. An Adaptable Card Game for Older Users, Michalis Foukarakis, Asterios Leonidis, Iliadami, Margherita Antona, Constantine Stephanidis</p> <p>G.5. Usability Assessment of a Pervasive System to Assist Caregivers in Dealing with Repetitive Behaviors of Patients with Dementia, Rene Navarro, Jesus Favella</p>
DAY TWO -- MAY 26			
11:10-11:30		Coffee Break (PETRA NSF Doctoral Consortium Meeting)	
11:30-12:50		<p><u>Session H: Plenary - Invited Lectures</u></p> <p>Session Chair: Margit Betke, Boston University USA (Program Committee Co-Chair)</p> <p>H1. Technology Applications in Rehabilitation and Wellness - Maura Iversen <i>Professor and Chairperson Department of Physical Therapy, Northeastern University</i></p> <p>H2. Ambient Assisted Living using a Multi-purpose Robotic Platform - Dietwig Lowet <i>Philips Research Eindhoven</i></p>	
12:50-14:00		Lunch Break	

SECOND DAY : MAY 26

Room 1		Room 2
DAY TWO – – MAY 26		
<p>Session I: Internet and Networking Technologies for Pervasive Health <i>Session Chair: Papapetrou Panagiotis</i></p> <p>I.1. Context-Aware Delivery of Information in Assistive Environments Utilizing Future Internet Technologies, Charalampos Doukas, Nikos Fotiou, George Polyzos, Ilias Maglogiannis</p> <p>I.2. A Semantic Wiki for User Training in ePrescribing Processes, Despina Papakonstantinou, Flora Malamationou, George Vassiliacopoulos</p> <p>I.3. A Tool For Sensor Placement and System Monitoring in Assistive Environments, Alexandros Papangelis, Fyllia Makedon</p> <p>I.4. Energy Consumption Measurement and Analysis in Wireless Sensor Networks for Biomedical Applications, Alexandros Karagiannis, Dimosthenes Vouyioukas, Philippos Constantinou</p> <p>I.5. Usability of Caching Approaches in Pervasive Ad-Hoc, Andre Peters, Andreas Heuer</p> <p>I.6. ER Designer Toolkit: A Graphical Event Definition Authoring Tool, Pythagoras Karampiperis, Giannis Mouchakis, George Paliouras, Vangelis Karkaletsis</p>	<p>W3: Workshop on Privacy and Security in Pervasive Environments <i>Workshop Chairs: Grammati Pantziou, Petros Belis, Tassos Dimitriou</i></p> <p>Invited Talk: <i>Security and Privacy Issues with Health Care Information Technology Noushin Ashtaft, Professor, The University of Massachusetts-Boston, USA</i></p> <p>W3.1. A Privacy-Aware Localization Service for Healthcare Environments, Thomas Scheffler, Sven Schindler, Marcus Lewerenz, Bettina Schnor</p> <p>W3.2. Access Controls for Privacy Protection in Pervasive Environments, Hauke Vagts, Erik Krempel, Yvonne Fischer</p> <p>W3.3. Security Aspects of Cyber-Physical Device Safety in Assistive Environments, Steven Templeton</p> <p>W3.4. Trust of Medical Devices, Applications, and Users in Pervasive Healthcare, Michael Clifford, Matt Bishop</p> <p>W3.5. Protecting Anonymity in Wireless Medical Monitoring Environments Petros Belis, Grammati Pantziou</p>	
<p>16:00-17:00</p>	<p align="center">Poster Session Combined with Coffee Break</p>	
<p>20:30</p>	<p align="center">Gala Dinner</p>	

DAY THREE -- MAY 27		Room 1	Room 2
		<p>Session J: Data Modeling and Information Management for Pervasive Assistive Environments <i>Session Chair: Petros Belis</i></p> <p>J.1. E-EPR: A Cloud-Based Architecture of An Electronic Emergency Patient Record. <i>Mikaela Poulmenopoulou, Flora Malamateniou, George Vassiliacopoulos</i></p> <p>J.2. Model-Based Search in Large Time Series Databases, <i>Alexios Kotsifakos, Vassilis Athissos, Panagiotis Pappapetrou, Jaakko Holmen, Dimitrios Ganopoulos</i></p> <p>J.3. Privacy-Enhanced Management of Ubiquitous Health Monitoring Data, <i>George Prokatos, Pavlos Efrimidis</i></p> <p>J.4. Hefestos: a Model for Ubiquitous Accessibility Support, <i>João Tavares, Jorge Barbosa, Cristiano Costa, Adenauer Yanini, Rodrigo Real</i></p> <p>J.5. Topological Gabor Descriptors: Exploring a Filter Bank Structure for Feature Matching, <i>Vishnukumar Galigeke, Gutemberg Guerra-filho</i></p> <p>J.6. Distance Measure for Querying Arrangements of Temporal Intervals, <i>Orestis Kostakis, Panagiotis Pappapetrou, Jaakko Holmen</i></p>	<p>W4: Workshop on Robotics in Assistive Environments <i>Workshop Chair: Gian-Luca Mariottini</i></p> <p>W4.1. A Survey and Comparison of Commercial and Open-Source Robotic Simulator Software, <i>Aaron Staranowicz, Gian luca Mariottini</i></p> <p>W4.2. Enhanced, Therapeutic Interactivity Using Social Robot Zero, <i>Isura Ranatunga, Jartuwat Rajruangrabin, Dan Popa, Fillia Makedon</i></p> <p>W4.3. eyeDog: An Assistive Guide Robot for the Visually Impaired <i>Georgios Galatas, Christopher Mcmurray, Gian luca Mariottini, Fillia Makedon</i></p> <p>W4.4. Neptune: Assistive Robotic System for Children with Motor Impairments, <i>Pavan Kanjar, Isura Ranatunga, Jartuwat Rajruangrabin, Dan Popa, Fillia Makedon</i></p> <p>W4.5. Speech-to-Speech Translation in an Assisted Living Lab <i>Dimitra Anastasiou</i></p>
11:00-11:30	<p>Poster Session Combined with Coffee Break</p>		
11:30-13:00	<p>Session K: Plenary - Invited Lectures <i>Session Chair: Grammati Pantziou, Technological Educational Institute of Athens (Program Committee Co-Chair)</i></p> <p>K1. Ambient Real-Time Reliable Sensor Middleware for Emergency Response Applications <i>Vana Kalogeraki, Department of Informatics Athens University of Economics and Business, Greece</i></p> <p>K2. Effects of Normal Aging and Alzheimer's Disease on the Causal Interaction among Independent EEG Components <i>Michalis Zervakis Technical University of Crete, Greece</i></p>		
13:00-14:00	<p>Lunch Break</p>		

THIRD DAY: MAY 27

DAY THREE – MAY 27	
14:00- 15:20	<p>W5: HAPPY AGEING (AAL-2008-1-113) Project Overview: Solutions for Independent Living and Technology Acceptance Workshop Chair: Zsuzsa Szeman</p> <p>W5.1. The HAPPY AGEING Project Overview and First Results, <i>Fiorella Marcellini</i></p> <p>W5.2. The HAPPY AGEING Technical Development: Presentation of the System, <i>Virginia Garcia</i></p> <p>W5.3. The Perspective of Older People on Technology and HAPPY AGEING system, <i>Zsuzsa Szeman</i></p>
15:20- 16:00	<p>Special Session K: European Projects: Robots, Software, Methods Session Chair: Vangelis Karkalestis</p> <p>K.1. Visual Human-Robot Interaction, <i>Panos Trahanias, University of Crete</i></p> <p>K.2. Unobtrusive Smart Environments for independent Living <i>Vangelis Karkalestis, NCSR “Demokritos”, Greece</i></p> <p>K.3. Assistive Technologies for Marine Conservation: Collaborative Project, <i>Fyllia Makedon, Anastasia Milliou, Manolis Maragoudakis, Yannis Theodorides</i></p>
16:00	<p>PETRA NSF Doctoral Consortium Meeting – Conclusions -- Leonidas Fegaras (Mentor)</p>
Conference Closing	

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