The 1st ACM International Conference on PErvasive Technologies Related to Assistive Environments

PETRA 2008

Conference Program

(posted June 1, 2008)

July 16-18, 2008 Athens, Greece

Organized by

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

With sponsorship from:

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Dear Colleague,

You are cordially welcome to PETRA 2008, the 1st ACM International Conference on PErvasive Technologies Related to Assistive Environments, July 16-19, 2008, in Athens, 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 17 countries, which underwent a thorough reviewing process; 37 of these were accepted as full papers. 17 as short papers and 5 as posters. The Petra Technical Program includes also the 5 following workshops with additional 42 papers.

PETRA WORKSHOPS (JULY 18)

- 1. "Pervasive Technologies in e/m-Learning and Internet based Experiments"
- 2. "Gaming Design and Experience: Design for Engaging Experience and Social Interaction"
- 3. "Ambient Assistive Technologies for Intelligent Healthcare Services"
- 4. "Behaviour Tracking for Adaptive Assistive Environments"
- 5. "Affect-aware Human-Computer and Human-Robot Interaction"

Conference and workshop papers will appear in the PETRA Conference proceedings published by ACM. Poster papers will appear in a special section of the CD proceedings.

	Room 1	Room 2		
09:00- 09:15	<u>Conference Opening</u> Introduction: Fillia Makedon Welcome and Opening Remarks: Dean Bill Carroll, University of Texas at Arlington			
09:15- 11:00	Session A: Ilias Maglogiannis, Greece A1 - Keynote Lecture: Real Time Facial and Body Tracking for Human-Computer Interaction, Dimitris Metaxas, University of Rutgers, USA (45 min) Invited Presentations: A2 - Pervasive Technologies and Pervasive Security, Matt Bishop, UC Davis A3 - Low Power Sensor Technologies in Telemedicine - Dinesh Bhatia, University of Texas at Dallas			
11:00-	Coffee B	reak		
11:30 11:30- 13:15	Session B: Context Aware Healthcare Networks Session chair: Dinesh Bhatia, University of Texas at Dallas B1 - Enabling Human Status Awareness in Assistive Environments based on Advanced Sound and Motion Data Classification Charalampos Doukas, Ilias Maglogiannis B2 - An Ontology-Driven Ambiguous Contexts Mediation Framework for Smart Healthcare Applications Nirmalya Roy, Gautham Pallapa, Sajal Das B3 - Issues in Data Fusion for Healthcare Monitoring HYUN LEE, Kyungseo Park, Byoungyong Lee, Jaesung Choi, Ramez Elmasri B4 - Context-Aware Computing for Assistive Meeting System Peng Dai, Guangyou Xu B5 - Effective Collaboration for Healthcare by Bridging the Reality Gap Across Media-Physical Spaces Kei Hoshi, John Waterworth	Session C: Reasoning systems and Machine Learning for Assistive Environments Session chair: Dimitris Metaxas, USA C1 - Virtual Humans for Assisted Health Care Patrick Kenny, Thomas Parsons, Jonathan Gratch, Albert Rizzo C2 - Translation and Scale-Invariant Gesture Recognition in Complex Scenes Alexandra Stefan, Vassilis Athitsos, Jonathan Alon, Stan Sclaroff C3 - Sensor Experiments to Facilitate Robot Use in Assistive Environments – Invited Presentation Roger Bostelman and James Albus, NIST USA C4 - Design and Evaluation of Haptic Effects for Use in a Computer Desktop for the Physically Disabled Brian Holbert, Manfred Huber C5 - A Framework for Human-Robot Interaction Dimitrios Vogiatzis, Vangelis Karkaletsis		
13:15- 14:30	Lunch Box (Buffet-Lunch provided for registered conference page 1)			
14:30- 16:00	Session D: Transformative Research and Education Session Chair: Grammati Pantziou, Greece D1 - Keynote Lecture: Dynamic Data Driven Applications Systems: a Transformative Paradigm Frederica Darema Senior Science and Technology Advisor, NSF/CISE (30 min) D2 - Keynote Lecture: Beyond Instructionism: OLPC's Laptop and User Interface, Michail Bletsas, MIT Media Lab and OLPC			
16:00- 16:20	Coffee B	reak		

16:20- 18:00	Session E: Tools, Infrastructures, Architectures and Techniques for Deploying Pervasive Applications in Assistive Environments Session chair: Leonidas Fegaras, USA E1 - Conceptual Modelling of Service-Oriented Programmable Smart Assistive Environments Yiannis Verginadis, Panagiotis Gouvas, Thanassis Bouras, Gregoris Mentzas E2 - Towards An Evaluation Framework for Assistive Environments Vangelis Metsis, Zhengyi Le, Yu Lei, Fillia Makedon E3 - Requirements for Implementation of Localization into Real-World Assistive Environments Eric Becker, yurong xu, Heng Huang, Fillia Makedon E4 - Medication intake assessment Ilias Sachpazidis, Georgios Sakas E5 - A Scalable and Self-Adapting Notification Framework for Healthcare Information Systems Anthony Okorodudu, Leonidas Fegaras, David Levine	Session F: Mobile Technologies for Healthcare Information Storage, Transmission, Processing and feedback Session chair: Leonardo Estevez, USA F1 - PINE-guided Cache Replacement Policy for Location-Dependent Data in Mobile Environment Mary Magdalene Jane F, R. Parameswaran, R. Nadarajan, Maytham Safar F2 - A Performance Monitoring Method for Wireless Sensor Networks Thomas Lindh, Ibrahim Orhan, Antonio Gonga F3 - Wireless Patient Monitoring for the e-Inclusion of Chronic Patients and the Elderly Konstantinos Perakis, Maria Haritou, Radovan Stojanovic, Dimitris Koutsouris F4 - Power Efficient Multi-band Contextual Activity Monitoring for Assistive Environments A L Praveen Aroul, Achutan Manohar, Dinesh Bhatia, Leonardo Estevez F5 - Simplifying Home Health Monitoring By Incorporating a Cell Phone in Weight Scale Thomas Zimmerman
	Transportation to Hellenic Cosmos (Buses depart from in front Divani Caravel Hotel exactly at 6:30 pm)	
19:00- 20:30	Introduction by Dimitrios Efraimoglou, I Ancient Agora of Athens 3D Presentation. (THOLOS of Heller	
	Transportation to Di	vani Caravel Hotel
21:00	Cocktail Welcome Reception,	Divani Caravel Roof Garden

	Room 1	Room 2	
09:00- 10:45	Nikos Pananikolonojilos Tiniversity of Minnesofa TINA (43 min)		
10:45- 11:15	Coffee Break & Poster Session (See List of Poster Papers below)*		
11:15- 13:15	Session H: Networking technologies for healthcare information storage, transmission, processing, and feedback Session chair: Agis Iliades, Greece H1 - Hazard Monitoring for Visually Impaired People Enabled by Wireless Sensor Networking Technology Aristides Mpitziopoulos, Charalampos Konstantopoulos, Damianos Gavalas, Grammati Pantziou H2 - PLASMA: Personalized, Location Aware Services over Mobile Architectures Charalampos Patrikakis, Athanasios Voulodimos, Ioannis Nikolakopoulos H3 - A Pervasive Architectural Framework for Providing Remote Medical Treatment Dimitris Vassis, Petros Belsis, Christos Skourlas, Grammati Pantziou H4 - Feasibility Study of a Joint E-Health Mobile High-Speed and Wireless Sensor System Dimitris Komnakos, Demosthenes Vouyioukas, Ilias Maglogiannis, Philip Constantinou H5 - A Wireless Sensor Network Architecture and Its Application in An Assistive Environment Eric Becker, Yurong Xu, Fillia Makedon H6 - Distinct Value Estimation on Peer-to-Peer Networks Zubin Joseph, Gautam Das, Leonidas Fegaras	Session I: Signal and Image Processing for Ambient Intelligence and Pervasive Computing Session chair: Dimitrios Kosmopoulos, Greece 11 - Preserving Visual Information in Low Resolution Images During Navigation of Visually Impaired Dimitrios Dakopoulos, Nikolaos Bourbakis 12 - Using Robust Audio and Video Processing Technologies to alleviate the Elderly Cognitive Decline Vasileios Mylonakis, John Soldatos, Aristodemos Pnevmatikakis, Lazaros Polymenakos, Alex Sorin 13 - Extracting Spatiotemporal Human Activity Patterns in Assisted Living using a Home Sensor Network Dimitrios Lymberopoulos, Athanasios Bamis, Andreas Savvides 14 - Nearest Neighbor Search Methods for Handshape Recognition Michalis Potamias, Vassilis Athitsos 15 - Continuous Camera-based Monitoring for Assistive Environments Guanling Chen, Prabhu Govindaswamy, Nan Li, Jie Wang 16 - Monitoring Human Behavior in an Assistive Environment using multiple Views D. Kosmopoulos, P. Antonakaki, K. Valasoulis, D. Katsoulas	
13:15- 14:30	Lunch Br (Buffet-Lunch provided for registered conference particles)		
14:30- 16:15	Session J: Usability and HCI issues, Multimodal Interfaces Session chair: Lynne Bailie, Austria J1 - Towards iTV Accessibility: The MPEG-21 Case Evangelos Vlachogiannis, Damianos Gavalas, Christos Anagnostopoulos, G. Tsekouras J2 - Objective Comparison of Speech Enhancement Algorithms under real-world conditions Stavros Ntalampiras, Todor Ganchev, Ilyas Potamitis, Nikos Fakotakis J3 - CAMILE: Controlling AmI Lights Easily Dimitris Grammenos, Sokratis Kartakis, Ilia Adami, Constantine Stephanidis J4 - Human Evaluation of the LOGOS' Spoken Dialogue System A. Lazaridis, T. Kostoulas, I. Mporas, T. Ganchev, N. Katsaounos J5 - A Multimodal Communication with A Haptic Glove: On the Fusion of Speech and Deixis Over a Raised Line Drawing Francisco Oliveira, Francis Quek	Session K: Privacy, security, trust and Interoperability in Assistive Environments Session chair: Heng Huang, USA K1 - A Holistic Anonymity Framework for Web Services Spyridon Papastergiou, Giorgos Valvis, Despina Polemi K2 - Providing Location Privacy in Assisted Living Environments Yi Ouyang, Yurong Xu, Zhengyi Le, Guanling Chen, Fillia Makedon K3 - Enhance the Interoperability of the Library Search Systems with zSAPN Michalis Sfakakis, Sarantos Kapidakis K4 - Mobile Device Protection against Lose and Capture Zhengyi Le, yi ouyang, Yurong Xu, Fillia Makedon K5 - Maximum Supported Network Coverage Area and Cost Evaluation of Key Pre-distribution Schemes Yuan Xue, Helmut Jurgensen	

16:15- 16:45	Coffee Break & Poster Session (See List of Poster Papers below)*			
16:45- 18:10	Session L: Homecare Systems Session chair: Joi L. Roberts, USA L1 - The future of homecare systems in the context of the Ubiquitous Web and its related mobile technologies Carl Taylor, Lubna Dajani L2 - Towards Personalised Home Care Systems Feng Wang, Kenneth Turner L3 - An Integrated Approach to Supporting Interaction Evolution in Home Care Systems Tony McBryan, Marilyn McGee-Lennon, Phil Gray L4 - A Medical Diagnostic and Treatment Advice System for the Provision of Home Care Vassiliki Koufi, Flora Malamateniou, George Vassilacopoulos	Session M: Wearable, ambient and home based health and wellness measurement and monitoring technologies Session chair: Zhengyi Le, USA M1 - Locomotion Monitoring Using Body Sensor Networks Jaime Barnes, Roozbeh Jafari M2 - A wearable wireless platform for fall and mobility monitoring Pepijn Van de Ven, Alan Bourke, John Nelson, Gearoid O'Laighin M3 - Towards Precision Monitoring of Elders for Providing Assistive Service Athanasios Bamis, Dimitrios Lymberopoulos, Thiago Teixeira, Andreas Savvides M4 - Analyzing motoric and physiological data in describing upper extremity movement in the aged Gaurav Pradhan, Navzer Engineer, Mihai Nadin, Balakrishnan Prabhakaran		
20:30	GALA Conference Dinner, DIVAN (Buses will depart from in front Divani Caravel Hotel e			
	* List of Poster Papers	During coffee breaks)		
	Session P: Posters Session chair: Heng Huang - University of Texas at Arlington, USA P1 - Application of a Telemedicine system for the needs of Prehospital Emergency I Athanasios Kessatis, Chrissoula Stathi, Elisseos Mavratzotis, Sofia Papanastasiou P2 - Interactive Doctor-Patient System of the Pain Relief Cabinet General Hospital Elisseos Mavratzotis, Chrissoula Stathi, Sofia Papanastasiou P3 - Identification Technologies to Support Alzheimer Contexts J. Bravo, R. Hervas, R. Gallego, G. Casero, M. Vergara & T. Carmona, C. Fuentes, D. C. P4 - Wireless Sensor Networks supporting Context-aware Reasoning in Assisted Li Alessandra Mileo, Davide Merico and Roberto Bisiani P5 - Keyframe Detection in Visual Lifelogs	of Komotini-Greece Fachet, S. Nava, G. Chavira, V. Villarreal		

		WORKSHOPS			
	9:00 - 10:00	Session chair: Lynne Bailie, Austria Invited Presentation: MRI of stroke rehabilitation using MR compatible robots, Aria Tzika, MGH and Harvard Medical School Alzheimer's Disease and Pervasive Technologies, Magda Tsolaki & Stavros Zafeiropoulos, Aristotle University, Thessaloniki, Greece			
		Room 1	Room 2	Room 3	Room 4
DAY THREE – JULY 18		Workshop 1: PTLIE "Pervasive Technologies in e/m- Learning and Internet based Experiments" Workshop Chairs: Ioannis Anagnostopoulos, Eleftherios Kayafas	Workshop 2: Games "Gaming Design and Experience: Design for Engaging Experience and Social Interaction" Workshop Chairs: Spiros Sirmakessis, Maria Rigou	Workshop 3: AASTIH08 "Ambient Assistive Technologies for Intelligent Healthcare Services" Workshop Chairs: Dimitrios Vergados, Alevizos Alevizos	Workshop 4: BeTAA "Behavior Tracking for Adaptive Assistive Environments"" Workshop Chairs: Christian Peter, Gerald Bieber, John Waterworth Workshop 5: HCI-HRI "Affect-Aware Human-Computer and Human-Robot Interaction"" Workshop Chairs: Elisabeth Andre, Kostas Karpouzis, Maja Pantic, Catherine Pelachaud
	10:00 - 10:20	Workshop Introduction by Chair			
	10:20 - 11:20	1.1 - Enhanced Individualized Learning Environments, Gheorghe Scutaru, Elena Cocorada, Mariela Pavalache, Massimo Mustica, Dominic Kristaly 1.2 - A Lean Online Approach to Human Factors Research, Kenneth Treharne, Darius Pfitzner, Richard Leibbrandt, David Powers 1.3 - A pervasive Wiki application based on VoiceXML, Constantinos Kolias, Vassilis Kolias, Ioannis Anagnostopoulos, Georgios Kambourakis, Eleftherios Kayafas	2.1 - Language Teaching in a Mixed Reality Games Environment, David Powers, Richard Leibbrandt, Darius Pfitzner, Martin Luerssen, Trent Lewis, Arman Abrahamyan, Kate Stevens 2.2 - The Design of Open Source Educational Games for Secondary Schools, V. Daloukas, V. Dai, E. Alikanioti, S. Sirmakessis 2.3 - Usability and Education of Games through Combined Assessment Methods, Spyridon Papaloukas, Michalis Xenos	3.1 - A pervasive network architecture featuring intelligent energy management of households, Spyridon Tompros, Nikolaos Mouratidis, Michael Caragiozidis, Halid Hrasnica, Anastasius Gavras 3.2 - Online Application for Simulating Intelligent Support for Medicine Intake, Mark Hoogendoorn, Michel C.A Klein, Borre Mosch 3.3 - Wireless Connected Home with Integrated Secure Healthcare Services for Elderly People, Speros/Ross Velentzas, Andy Marsh, Geyong Min	4.1 - Pervasive behavior tracking for cognitive assistance, Sylvain Giroux, Jeremy Bauchet, Helene Pigot, Dany Lussier-Desrochers, Yves Lachappelle 4.2 - Detection of Multiple Human Location and Direction by Integrating Different Kinds of Sensors, Tsuyoshi Shinno, Kazunori Hashizume, Junichi Tajima, Shigeo Kaneda, and Hirohide Haga 4.3 - Detecting mastication by using microwave Doppler sensor, Saeko TANIGAWA, Hideaki NISHIHARA, Shigeo KANEDA, Hirohide HAGA
	11:20 - 11:50	Coffee Break			
	11:50 - 13:10	1.4 - Collaborative e-learning environments enhanced by wiki technologies, Ioannis Giannoukos, Ioanna Lykourentzou, Giorgos Mpardis,	2.4 - The Trial of Galileo,George Kontellis2.5 - Complete, Cinematic andExpressive Presentation in Computer	3.4 - Optimize databases for health monitoring systems, Catalin Bujdei, Sorin-Aurel Morar, Stefan Dan 3.5 - Intelligent services for assisting	4.4 - Automatic Sign Language Recognition: vision based feature extraction and probabilistic recognition scheme from multiple cues, George

	Vassilis Nikolopoulos, Vassili Loumos, Eleftherios Kayafas 1.5 - PETA – a Pedagogical Embodied Teaching Agent, David Powers, Richard Leibbrandt, Martin Luerssen, Trent Lewis, Mike Lawson	Games, Nikoletta Mavrogeorgi, Yannis Christodoulou	independent living of elderly people at home, Dimitrios Vergados, Alevizos Alevizos, Anargiros Mariolis, Michael Caragiozidis	Caridakis, Olga Diamanti, and Petros Maragos 4.5 - Bimodal Person-Dependent Emotion Recognition Comparison of Feature Level and Decision Level Information Fusion, M. Mansoorizadeh, M. Charkari
	1.6 - Portal-Type Applications For Web Campus, Massimo MUSTICA, Gabriela MORARU, Costin GRIGORESCU, Dominic Mircea KRISTALY, Eleftherios KAYAFAS 1.7 - Simulation-based UMTS e- Learning Software, Florin SANDU, Szilard CSEREY, Titus Constantin BALAN, Mihai ROMANCA		3.6 - Wireless Tilt Mouse: Providing Mouse-type Access for Computer Users with Spinal Cord Injuries or Disabilities, Ferrol R. Blackmon, M. Weeks 3.7 - Enabling NFC Technology to Support Activities in an Alzheimer's Day Center, J. Bravo, R. Hervas, R. Gallego, G. Casero, M. Vergara & T. Carmona, C. Fuentes, S.W. Nava, G. Chavira, V. Villarreal	4.6 - An Ambient Agent Model For Automated Mindreading By Identifying And Monitoring Representation Relations, Alexei Sharpanskykh And Jan Treur 4.7 - Model-Based Ambient Analysis Of Human Task Execution, Fiemke Both, Mark Hoogendoorn, Jan Treur
13:10 - 14:40	- Lunch Break (Buffet-Lunch provided for registered conference participants. Lunch coupons to be shown at door)			
14:40 - 16:00	1.8 - A Learning Resources Centre for simulation and remote experimentation in electronics, Andrea Bagnasco, Paolo Buschiazzo, Domenico Ponta, Marina Scapolla 1.9 - Newsletter engine application, Sorin-Aurel MORARU, Catalin BUJDEI, Lothar KRUPKA, Ion TRUICAN, Costin GRIGORESCU 1.10 - Web 2.0 technologies in web application development, Dominic Mircea KRISTALY Francisc SISAK, Ion TRUICAN, Sorin-Aurel MORARU, Florin SANDU 1.11 - Predictable Interactive Control of Experiments in a Service-Based Remote Laboratory, Andreas Rasche, Frank Feinbube, Peter Troeger,		3.8 - ECG Signal Recording, Processing and Transmission Using a Mobile Phone, Giannakakis G. and Ivan Buliev 3.9 - Aiding Speech-Impaired People Using Nintendo DS Game Console, Mohammad Shirali-Shahreza 3.10 - Multi-Modal Health and Activity Monitoring Framework for Elderly People at Home, Eric Robert and Jeremy Leguay 3.11 - Power Control Schemes in Wireless Sensor Networks for Homecare e-Health Applications, Nikolaos Pantazis Dimitrios D. Vergados, Nikolaos I. Miridakis and Dimitrios J. Vergados	4.8 - Estimating Emotion Regulation Capabilities, Tibor Bosse and Frank de Lange 4.9 - Using Physical Activity for User Behavior Analysis, Gerald Bieber and Christian Peter 4.10 - Energy Saving of TV By Face Detection, Ryo Ariizumi, Shigeo Kaneda, Hirohide Haga 4.11 Human Computer Interface by EOG tracking, B. Estrany, P. Fuster, A. Garcia, Y. Luo
	Bernhard Rabe, Andreas Polze			

16:30 - 17:30	monitoring, administration and tracking errors for industrial devices, Ion TRUICAN, Stefan DAN, Dominic Mircea KRISTALY, Catalin BUJDEI, Georgiana POPA 1.14 - A Remote Laboratory Environment for Blended Learning, Fernando Coito, Luís Brito Palma	
17:30 - 18:30	Conference Clasing X NNR Dactoral Consortium Meeting	

Steering Committee

Fillia Makedon - University of Texas at Arlington, USA

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Ilias Maglogiannis - University of the Aegean, Greece

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Keynote Speakers

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Dimitris Metaxas - University of Rutgers, USA

Nikolaos Papanikolopoulos -University of Minnesota, USA

Michail Bletsas, MIT Media Lab and OLPC