The 11th ACM International Conference on PErvasive Technologies Related to Assistive Environments

PETRA 2018

Conference Program

June 26 - 29, 2018
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Organized by

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Dear Colleagues,

Welcome to the *11th ACM International Conference on PErvasive Technologies Related to Assistive Environments*, **June 26-29, 2018 in Corfu, Greece.**

PETRA is an interdisciplinary conference with focus on pervasive technologies that improve the quality of life and enhance human performance. Results presented range from basic research in computer vision, machine learning, data mining and big data, to engineering applications, sensors, devices and software solutions that address physical, cognitive, mental and communication abilities and performance. The conference addresses the needs of both healthy individuals and persons with special needs, such as providing safe in-home care for the elderly, or persons with Dementia, Alzheimer's, Parkinson's, chronic arthritis, PTSD, low vision, and other conditions. PETRA's computer-based methods can help people build, stone by stone (PETRA means stone in Greek), new ways of life to survive in an increasingly challenging world. The conference will award four types of awards: *Best Technical Paper, Best Paper for Novelty, Best Student Paper, and Best Poster Paper.*

Invited Speakers

Dr. Markus Funk is a Human-Computer Interaction researcher and area head at the Technical University of Darmstadt. He is an expert in Augmented Reality and Virtual Reality and holds a Ph.D. in Human-Computer Interaction from the University of Stuttgart where he worked under the supervision of Prof. Albrecht Schmidt. Dr. Funk has worked on research projects while at the Fluid Interfaces group at the MIT Media Lab in Cambridge, MA, at Yahoo!-Labs in Sunnyvale, CA, and at Siemens Research in Berkeley, CA. He has served as a regular reviewer for peer-reviewed conferences and journals and is a PC member of several academic conferences.

Dr. Margrit Betke is a Professor of Computer Science at Boston Univ., where she co-leads the Image and Video Computing Research Group. She conducts research in computer vision, in particular, the development of methods for detection, segmentation, registration, and tracking of objects in visible-light, infrared, and x-ray image data. She has published over 140 original research papers. She earned her Ph.D. degree in Computer Science and Electrical Engineering at the Massachusetts Institute of Technology in 1995. She co-invented the "Camera Mouse," an assistive technology used by children and adults with severe motion impairments. Recently she led a $2.8 million NSF research project to develop intelligent tracking systems that reason about group behavior of people, bats, birds, and cells.

Dr. Morris Bell is a Professor Emeritus and a Senior Research Scientist in the Dept. of Psychiatry at Yale University School of Medicine and Senior Research Career Scientist for the Dept. of Veterans Affairs Rehabilitation Research and Development Service. Trained as a clinical and neuropsychologist, Dr. Bell's career as clinician and researcher has been devoted to exploring interventions to restore cognitive and work function for people with severe and persistent mental disorders. Dr. Bell directs the VA/Yale Learning Based Recovery Center. He also directs the Veterans Integration to Academic Leadership (VITAL) program. The American Psychological Association has recognized Dr. Bell with a national award for Distinguished Contributions to Science in Public Service.

Franco Amalfi is the Director of Innovation for Oracle Public Sector North America. He leads a team of experts responsible for market strategies for education & research, health & human services, revenue management and Smart Government. Franco and his team guide government officials at every level to effectively use modern cloud-based solutions and emerging technologies to help government organizations deliver on their mission. He also publishes papers and articles on leveraging technology to drive business value for governments, and he is a frequent speaker at government conferences.

Manuel Martin Marquez is a CERN openlab Senior Research Fellow and a member of the "Soft Computing and Intelligent Information Systems" (SCI2S) research group and the "Distributed Computational Intelligence and Time Series" research lab (DICITS). In 2007 he joined the Beam department of the European Centre for Nuclear Research (CERN). Manuel's main activities as a CERN openlab Senior Research Fellow, in the CERN IT department, focus on the development of new techniques and approaches for Big Data Analytics and the implementation of the CERN's Data Analytics as a Service infrastructure – DAaaS. His current areas of interest are time series analysis and modelling, distributed/parallel computational intelligence, data mining, and learning theory.

09:00-10:00	**Industrial Workshops & Conference Registration**
	Invited Lecture *Room 1*

10:00-10:40	**Invited Lecture**
	
	          Presenter: Markus Funk, *Technical University of Darmstadt, Germany*
	
	          Title: *Cognitive Learning Support Using Augmented and Virtual Reality*
	Session Chair: Oliver Korn

	IW-1 : Assistive Technologies For Seniors *Room 1*

10:40-12:40	**Topic:** *Assistive Technologies For Seniors*
	Session Chair: Jean D. Hallewell Haslwanter
	
	Fearless: An Intelligent, Contactless Fall Sensor that Not Only Detects Falls, but also Helps to Prevent Them
	          Presenter: Martin Kampel, *Cogvis Software und Consulting GmbH, Austria*
	
	What Companies Want and Need from Researchers
	          Presenters: Jean D. Hallewell Haslwanter, *University of Applied Sciences Upper Austria*
	                    Markus Garschall, *AIT Austrian Institute of Technology, Center for Technology Experience, Austria*
	
	Ways Research Can Support Companies - A Multi-Step Workshop

12:40-14:00	**Lunch Break ***
	IW-2 : Industry Perspectives on Assistive Systems for Manual Assembly Tasks: **Instructive Systems & Human-Robot Collaboration** *Room 1*

14:00-15:00	**Topic:** *Instructive Systems*
	Session Chair: René Lindorfer
	
	User-Centered Design of Instructive Assistance Systems for Manual Assembly Tasks
	          Presenter: Jean D. Hallewell Haslwanter, *University of Applied Sciences Upper Austria*
	
	Application Areas for Mixed and Virtual Reality-Supported Assistive Systems
	          Presenter: Josef Wolfartsberger, *University of Applied Sciences Upper Austria*
	
	Chances and Limitations of Novel Approaches for Supporting Manual Assembly Tasks
	          Presenter: Josef Wolfartsberger, *University of Applied Sciences Upper Austria*
	
	Requirements for Tracking Technologies in Industrial MR Applications
	          Presenter: Josef Wolfartsberger, *University of Applied Sciences Upper Austria*

15:00-15:15	**Coffee Break**
	IW-2 : Industry Perspectives on Assistive Systems for Manual Assembly Tasks: **Instructive Systems & Human-Robot Collaboration** *(Continued)* *Room 1*
15:15-16:00	**Topic:** *Human-Robot Collaboration* **Session Chair:** Josef Wolfartsberger **Framework for Educating Users for Industrial Human-Robot Collaboration (HRC)** **Presenter:** Doris Wahlmüller, *BRP-Rotax / Regional Innovation Center, Austria* **Modeling Workflows Considering Human-Robot-Collaboration** **Presenter:** René Lindorfer, *University of Applied Sciences Upper Austria* **Gesture Control of an Industrial Robot Using a Smartphone** **Presenter:** René Lindorfer, *University of Applied Sciences Upper Austria*
	Hands-on Technology Demos of Industrial Assistive Systems *Room 2*

16:00-17:00	**Session Chair:** Josef Wolfartsberger
	
	The Demos will allow participants to:
	    - Test an industrial virtual reality training application based on Unity3D and native CAD data.
	    - Gain experience in assistive mixed reality systems with Microsoft HoloLens and image-based tracking.
	    - Gain experiences in programming a robot by using the programming environment of a simulated robot.
	    - Try out the gesture control of an industrial robot simulation using a smartphone.
	    - Model a workflow of a LEGO assembly use case where a robot program is generated & executed in a simulation environment.

16:00-18:00	**Conference Registration**
19:00-21:00	**Welcome Reception** *Location: Nausica Room (close to registration desk)*

* Lunches during the conference are free for participants staying at the venue hotel. For those participants staying at other hotels, the cost for lunch is €15 for students and €20 for others. Lunch tickets can be obtained at the hotel front desk.

	Room 1
09:00-09:20	**Conference Opening** **Fillia Makedon**, **Conference Chair**, *University of Texas Arlington, USA* **Oliver Korn**, **Program Committee Chair**, *Offenburg University, Germany*
09:20-10:20	**Session A:** <u>**Invited Lecture**</u> **Presenter: Margrit Betke**, *Boston University, USA* Title*: Towards Fast and Comfortable Text Entry Using Gaze Paths* **Session Chair:** Vassilis Athitsos
10:20-10:35	**Coffee Break**

	Room 1	**Room 2**
10:35-12:25	**Workshop W1:** <u>**DAEM Workshop**</u> *Designing Assistive Environments for Manufacturing* **Workshop Chair: Markus Funk** **Introduction** **W1-1** *Building Blocks for Identity Management and Protection in Smart Environments.* (20 minutes) Pascal Birnstill and Jürgen Beyerer **W1-2** *Evaluating the Training Transfer of Head-Mounted Display Based Training for Assembly Tasks.* (20 minutes) Stefan Werrlich, Phuc-Anh Nguyen and Gunther Notni **W1-3** *Eyes Are Different Than Hands: An Analysis Of Gaze as Input Modality for Industrial Man-Machine Interactions.* (20 minutes) Florian Jungwirth, Michaela Murauer, Michael Haslgrübler and Alois Ferscha **W1-4** *Assessing TRL of HCI Technologies Supporting Shop floor Workers.* (20 minutes) Francisco José Lacueva Pérez, Peter Brandl, Jayden Khakurel, Lea Hannola, Miguel Ángel Gracia Bandres and Marlene Schafler	**Session B:** *Pattern Recognition and Reasoning Systems* **Session Chair:** Eleni Efthimiou **B-1** *Exploring Epistaxis as an Adverse Effect of Anti-Thrombotic Drugs and Outdoor Temperature.* (15 minutes) Jaakko Hollmen, Lars Asker, Isak Karlsson, Panagiotis Papapetrou, Henrik Boström, Birgitta Norstedt Wikner and Inger Ohman **B-2** *A Framework for Programming a Swarm of UAVs.* (20 minutes) Dimitris Dedousis and Vana Kalogeraki **B-3** *A Web Page Classifier Library Based on Random Image Content Analysis Using Deep Learning.* (15 minutes) Leonardo Espinosa Leal, Kaj-Mikael Björk, Amaury Lendasse and Anton Akusok **B-4** *Analysis of Concise "Average Load" Definitions in Uniformly Random Deployed Wireless Sensor Networks.* (20 minutes) Apostolos Demertzis and Konstantinos Oikonomou **B-5** *A Comparative Study of Matrix Completion and Recovery Techniques for Human Pose Estimation.* (20 minutes) Dennis Bautembach, Iason Oikonomidis and Antonis Argyros **B-6** *Towards Deep Learning Based Hand Keypoints Detection for Rapid Sequential Movements from RGB Images.* (20 minutes) Srujana Gattupalli, Ashwin Ramesh Babu, James Robert Brady, Fillia Makedon and Vassilis Athitsos
12:25-13:40	**Lunch Break**

	Room 1	Room 2
13:40-15:00	**Workshop W1:** _DAEM Workshop_ (continued) _Designing Assistive Environments for Manufacturing_ **Workshop Chair: Markus Funk** **W1-5** _Development of an Instrument for The Assessment of Scenarios of Work 4.0 Based on Socio-Technical Criteria._ (20 minutes) Sascha Jenderny, Marc Foullois, Anna-Lena Kato-Beiderwieden, Michael Bansmann, Lars Wöste, Josefine Lamß, Günter W. Maier and Carsten Röcker **W1-6** _The EU General Data Protection Regulation and Its Effects on Designing Assistive Environments._ (20 minutes) Erik Krempel and Jürgen Beyerer **W1-7** _Insights into the Introduction of Digital Interventions at the Shop Floor._ (20 minutes) Marlene Schafler, Francisco José Lacueva-Pérez, Lea Hannola, Stelios Damalas, Jan Nierhoff and Thomas Herrmann **W1-8** _Exploring Audio, Visual, and Tactile Cues for Synchronous Remote Assistance._ (20 minutes) Sebastian Günther, Sven Kratz, Daniel Avrahami and Max Mühlhäuser	**Workshop W2:** _RobAssist Workshop_ _Robotic Assistive Systems for People with Disabilities_ **Workshop Chairs:** Danijela Ristić-Durrant, Maria Kyrarini & Axel Gräser **W2-1** _Simulating a Telerobot Interface with Gaze and Head Interaction._ (20 minutes) Katsumi Minakata, Martin Thomsen and John Paulin Hansen **W2-2** _Head Gesture-based Control for Assistive Robots._ (20 minutes) Muhammad Abdul Haseeb, Maria Kyrarini, Shuo Jiang, Danijela Ristic-Durrant and Axel Gräser **W2-3** _Automatic Classification of Gait Patterns Using a Smart Rollator and the BOSS Model._ (20 minutes) Maribel Ojeda, Atia Cortés, Javier Béjar and Ulises Cortés **W2-4** _RGB-D Camera Based 3D Human Mouth Detection and Tracking Towards Robotic Feeding Assistance._ (20 minutes) Qinyuan Fang, Maria Kyrarini, Danijela Ristić-Durrant and Axel Gräser
15:00-15:20	**Coffee Break**	
15:20-17:00	**Workshop W1:** _DAEM Workshop_ (continued) _Designing Assistive Environments for Manufacturing_ **Workshop Chair: Markus Funk** **W1-9** _CaMea: Camera-Supported Workpiece Measurement for CNC Milling Machines._ (20 minutes) Florian Müller, Maximilian Barnikol, Markus Funk and Max Mühlhäuser **W1-10** _An Analysis of Language Impact on Augmented Reality Order Picking Training._ (20 minutes) Nela Murauer, Florian Müller, Sebastian Günther, Dominik Schön, Nerina Pflanz and Markus Funk **W1-11** _Transferring Expert Knowledge through Video Instructions._ (20 minutes) Michael Haslgrübler and Alois Ferscha **W1-12** _Augmented Health and Safety: Exploring Future Scenarios through Design Fiction._ (20 minutes) Sara Colombo, Yihyun Lim and Federico Casalegno	**Workshop W3:** _Social Robots Workshop_ _A Workshop on the Past, the Present and the Future of Digital Companions_ **Workshop Chair: Oliver Korn** **W3-1** _What Makes People Accept or Reject Companion Robots? A Research Agenda._ (20 minutes) Astrid Weiss and Glenda Hannibal **W3-2** _The Big-Five Personality Dimensions and Attitudes Towards Robots: A Cross-Sectional Study._ (15 minutes) Anja Richert and Sarah Müller **W3-3** _Social Telepresence Robots – The Role of Gesture for Collaboration Over a Distance._ (20 minutes) Christoph Stahl and Dimitra Anastasiou **W3-4** _Touchless Heart Rate Recognition by Robots to Support Natural Human-Robot Communication._ (20 minutes) Gerald Bieber, Niklas Antony and Marian Haescher **W3-5** _AMIGO – Towards Social Robot Based Motivation for Playful Multimodal Intervention in Dementia._ (20 minutes) Lucas Paletta, Maria Fellner, Sandra Schüssler, Julia Zuschnegg, Josef Steiner, Alexander Lerch, Lara Lammer and Dimitrios Prodromou
17:00-18:00	**1st Doctoral Consortium Session** _Room 1: DC & REU Students Only_	

	Room 1
09:00-10:00	**Session C:** <u>Invited Lecture</u> **Presenter: Morris Bell**, *Yale University, USA* **Title:** *Minds in Motion: Assessing Embodied Cognition through a Collaboration of Neuroscience and Computational Research* **Session Chair:** Fillia Makedon
10:00-10:20	**Coffee Break**

	Room 1	**Room 2**
10:20-12:00	**Workshop W4:** <u>PEARL Workshop</u> *Patient Data Acquisition, Analysis, Profiling and Personalized Care Plan* **Workshop Chairs: Petros Daras, Dimitrios Tzovaras, Federico Alvarez & Stelios Asteriadis** **W4-1** *Acceptance of Cognitive Games through Smart TV Applications in Patients with Parkinson's Disease.* **(20 minutes) Juan Pedro Lopez Velasco, Mayca Marín, David Martín, Francisco Moreno, Gustavo Hernández-Peñaloza, Federico Álvarez, Laura Carrasco and Marta Burgos** **W4-2** *Fat Droplets Identification in Liver Biopsies using Supervised Learning Techniques.* **(20 minutes) Alexandros Arjmand, Alexandros Tzallas, Markos Tsipouras, Roberta Forlano, Pinelopi Manousou, Nikolaos Katertsidis and Nikolaos Giannakeas** **W4-3** *COSMOS: A Web-Based, Collaborative Knowledge System Using Ontologies and Managing Uncertainty.* **(20 minutes) Michael Giannoulis, Haridimos Kondylakis and Emmanouil Marakakis** **W4-4** *Two Examples of Online eHealth Platforms For Supporting People Living With Cognitive Impairments and Their Caregivers.* **(20 minutes) Vassilios Solachidis, Ioannis Paliokas, Nicholas Vretos, Konstantinos Votis, Ulises Cortés and Dimitrios Tzovaras** **W4-5** *A Novel Approach for Movement Evolution Tracking in Parkinson's Disease using Data Analysis and Fuzzy Logic.* **(20 minutes) David Martín, Mirela Popa, Jennifer Jiménez, Federico Álvarez, Stylianos Asteriadis and Laura Carrasco**	**Session D:** *Multimodal Interfaces and Human-Computer Interaction* **Session Chair: Konstantinos Tsiakas** **D-1** *COIN-O-RAMA: Designing an Interactive Exhibit for Exploring and Engaging with Coin Exhibitions.* **(20 minutes) Dimitris Grammenos, Xenophon Zabulis, Antonis Chatziantoniou, Zinovia Stefanidi, Ilia Adami and Vassiliki Neroutsou** **D-2** *Experiences with an Assistive System for Manual Assembly.* **(15 minutes) Jean D. Hallewell Haslwanter and Boban Blazevski** **D-3** *Programming Intelligent Environments in Natural Language: An Extensible Interactive Approach.* **(20 minutes) Evropi Stefanidi, Maria Korozi, Asterios Leonidis and Margherita Antona** **D-4** *A Digital Sleep Restriction System Based on Sleep Window Shift Negotiation.* **(15 minutes) Begum Erten-Uyumaz, Sebastiaan Overeem, Loe Feijs, Mili Docampo Rama and Jun Hu** **D-5** *LASIMUP: Large Scale Multi-Touch Support Integration Across Multiple Projections on Arbitrary Surfaces.* **(20 minutes) Antonis Dimopoulos, Emmanouil Zidianakis and Constantine Stephanidis**
12:00-13:20	**Lunch Break** **&** **2nd Doctoral Consortium Session** *(DC & REU Students Only, Room 1)*	

	Room 1	Room 2
13:20-15:00	**Workshop W4:** *PEARL Workshop* *(continued)* **W4-6** *Health Recommender System Design in the Context of CAREGIVERSPRO-MMD Project.* (20 minutes) Luis Oliva-Felipe, Cristian Barrué, Atia Cortés, Emma Wolverson, Marco Antomarini, Konstantinos Votis, Ioannis Paliokas and Ulises Cortés **W4-7** *A Review of Air Quality Sensing Technologies and Their Potential Interfaces with IoT For Asthma Management.* (20 minutes) Fatmah Bamashmoos, Pete Woznowski and Theo Tryfonas **W4-8** *Designing a Gamified Social Platform for People Living with Dementia and Their Live-In Family Caregivers.* (20 min) Alexandros Tzallas, Nikolaos Katertsidis, Konstantinos Glykos, Sofia Segkouli, Konstantinos Votis, Dimitrios Tzovaras, Cristian Barrué & Ulises Cortés **W4-9** *A Gamification Engine Architecture for Enhancing Behavioral Change Support Systems.* (20 minutes) Evdokia Eirini Lithoxoidou, Ioannis Paliokas, Ioanni Gotsos, Stelios Krinidis, Athanasios Tsakiris, Konstantinos Votis and Dimitrios Tzovaras **W4-10** *Temporal Modification of Apriori to find Seasonal Variations between Symptoms and Diagnoses.* (20 minutes) Aashara Shrestha, Leonidas Fegaras and Dimitrios Zikos	**Session E:** *Activity Recognition, Human Tracking and Localization* **Session Chair:** Eric Becker **E-1** *Modeling Human Activities Using Behavior Trees in Smart Homes.* (20 minutes) Bruno Bouchard, Sebastien Gaboury, Kevin Bouchard and Yannick Francillette **E-2** *Activity Segmentation and Identification based on Eye Gaze Features.* (20 minutes) Sabrina Amrouche, Benedikt Gollan, Alois Ferscha and Josef Heftberger **E-3** *PISS-IoT: Person Identification and Spotting System in an Internet-of-Things Way.* (20 minutes) Harish Ram Nambiappan and Sajib Datta **E-4** *Multidimensional Trajectory Similarity Estimation via Spatial-Temporal Key Frame Selection and Signal Correlation Analysis.* (20 minutes) Eftychios Protopapadakis, Athanasios Voulodimos and Nikolaos Doulamis **E-5** *Enabling Early Gesture Recognition by Motion Augmentation.* (15 minutes) Rohit Agrawal, Ajjen Joshi and Margrit Betke
15:00-16:00	**Session F: Posters** *(see page 10)*	
16:00-16:20	**Coffee Break**	
16:20-18:00	**Workshop W5:** *SmartCity Workshop* *Accessibility and Smart City Technologies* **Workshop Chairs:** Eleni Efthimiou & Eleni Christopoulou **W5-1** *Sign Language Technologies in View of Future Internet Accessibility Services.* (20 minutes) Eleni Efthimiou, Stavroula-Evita Fotinea, Theodore Goulas, Anna Vacalopoulou, Kiki Vasilaki and Athanasia-Lida Dimou **W5-2** *The HealthSign Project: Vision and Objectives.* (20 minutes) Dimitrios Kosmopoulos, Antonis Argyros, Christos Theoharatos, Venetta Lambropoulou, Christos Panagopoulos and Ilias Maglogiannis **W5-3** *AmITV: Enhancing the Role of TV in Ambient Intelligence Environments.* (20 minutes) Nikolaos Anyfantis, Evangelos Kalligiannakis and Achilleas Tsiolkas **W5-4** *Smart Tourism in Cities: Exploring Urban Destinations with Audio Augmented Reality.* (20 min) Costas Boletsis & Dimitra Chasanidou **W5-5** *Market Research and Concept Study for a Smart Pedestrian Network Application.* (20 minutes) George Papageorgiou, Demetris Demetriou, Eudokia Balamou and Athanasios Maimaris	**Session G:** *Telepresence, Virtual and Augmented Reality* **Session Chair:** Nikolaos Doulamis **G-1** *FeelVR: Haptic Exploration of Virtual Objects.* (15 minutes) Julian Kreimeier and Timo Götzelmann **G-2** *Design Thinking: Using Photo Prototyping for a User-Centred Interface Design for Pick-by-Vision Systems.* (20 minutes) Nela Murauer **G-3** *In-Situ Instructions Exceed Side-by-Side Instructions in Augmented Reality Assisted Assembly.* (20 minutes) Jonas Blattgerste, Patrick Renner, Benjamin Strenge and Thies Pfeiffer **G-4** *A Proposed Game for Promoting Physical Activities among People with Low Back Pain using Virtual Reality.* (15 minutes) Amal Alazba, Hend Al-Khalifa and Hana Alsobayel
20:30-22:30	**GALA Dinner, BBQ, Greek Folk Dancing and Entertainment by Hotel Main Pool**	

Room 1

08:00-09:00	**3rd Doctoral Consortium Session** *Room 1: DC & REU Students Only*
9:00-10:00	**Session H:** <u>Invited Lecture</u> **Presenters:** **Franco Amalfi,** *Oracle Public Sector North America, USA* **Manuel Martin Marquez,** *CERN openlab, Switzerland* **Title:** *Enable Enterprise Research at Scale with Cloud Technologies* **Session Chair:** Jim McDowell
10:00-10:20	**Coffee Break**

	Room 1	Room 2
10:20-12:30	**Workshop W6:** <u>*NOTION Workshop*</u> *Human Behaviour Monitoring, Interpretation and Understanding* **Workshop Chair:** Ahmad Lotfi **W6-1** *Video Based Fall Detection using Features of Motion, Shape and Histogram.* (20 minutes) Suad Albawendi, Ahmad Lotfi, Heather Powell and Kofi Appiah **W6-2** *Unsupervised Learning Fuzzy Finite State Machine for Human Activities Recognition.* (20 minutes) Gadelhag Mohmed, Ahmad Lotfi, Caroline Langensiepen and Amir Pourabdollah **W6-3** *Empowering Persons with Deafblindness: Designing an Intelligent Assistive Wearable in the SUITCEYES Project.* (20 minutes) Oliver Korn, Raymond Holt, Efstratios Kontopoulos, Astrid M.L. Kappers, Nils-Krister Persson and Nasrine Olson **W6-4** *A Hierarchical Approach in Food and Drink Intake Recognition Using Wearable Inertial Sensors.* (20 minutes) Dario Ortega Anderez, Ahmad Lotfi and Caroline Langesiepen **W6-5** *Adaptive Deep Learning for a Vision-Based Fall Detection.* (20 minutes) Anastasios Doulamis and Nikolaos Doulamis **W6-6** *Identification of Post-Meditation Perceptual States Using Wearable EEG and Self-Calibrating Protocols.* (15 minutes) Thrasyvoulos Karydis, Samuel Langer, Simmie Foster & Andreas Mershin **W6-7** *v-CAT: A Cyberlearning Framework for Personalized Cognitive Skill Assessment & Training.* (15 minutes) Michalis Papakostas, Konstantinos Tsiakas, Maher Abujelala, Morris Bell & Fillia Makedon	**Session I:** *Accessibility Tools, Methods and Applications* **Session Chair:** Panagiotis Papapetrou **I-1** *Exploiting the Open Innovation Model in Assistive Technologies.* (20 minutes) Bruno Bouchard, Sebastien Gaboury and Kevin Bouchard **I-2** *An Assistive Haptic System Towards Visually Impaired Computer Science Learning.* (20 minutes) Alisson Renan Svaigen, Lailla Milainny Siqueira Bine and Linnyer Beatrys Ruiz Aylon **I-3** *Automata Classification with Convolutional Neural Networks for Use in Assistive Technologies for the Visually Impaired.* (20 minutes) Lailla Milainny Siqueira Bine, Yandre Maldonado E Gomes Da Costa and Linnyer Beatrys Ruiz Aylon **I-4** *Tactile Sheets: Using Engraved Paper Overlays to Facilitate Access to a Digital Document's Layout and Logical Structure.* (20 minutes) Mauro Avila Soto, Francisco Kiss, Ismael Rodriguez, Albrecht Schmidt and Tonja Machulla **I-5** *Skim-reading Strategies in Sighted and Visually-Impaired Individuals: A Comparative Study.* (20 minutes) Tonja Machulla, Mauro Avila, Dillon Montag, Pawel Wozniak and Albrecht Schmidt **I-6** *Error Analysis on Harvesting Data Over the Internet.* (20 minutes) Sarantos Kapidakis
12:30-13:45	**Lunch Break**

	Room 1	Room 2
13:45-15:05	**Session J:** *Assistive Robotic Systems and Human-Robot Interaction* **Session Chair:** Anastasios Doulamis **J-1** *Perspectives on Social Robots. From the Historic Background to an Experts' View on Future Developments.* **(20 minutes)** Oliver Korn, Gerald Bieber and Christian Fron **J-2** *Automatic Classification and Shift Detection of Facial Expressions in Event-Aware Smart Environments.* **(20 minutes)** Arne Bernin, Larissa Müller and Florian Vogt **J-3** *Basic functionality of a Prototype Wearable Assistive Soft Exoskeleton for People with Gait Impairments – A Case Study.* **(20 minutes)** Eveline S. Graf, Christoph M. Bauer, Valerie Power, Adam De Eyto, Eliza Bottenberg, Tommaso Poliero, Matteo Sposito, Daniel Scherly, René Henke, Carole Pauli, Laura Erkens, Ger Brinks, Leonard O'Sullivan, Markus Wirz, Konrad S. Stadler and Jesús Ortiz **J-4** *A Taxonomy in Robot-Assisted Training: Current Trends, Needs and Challenges.* **(20 minutes)** Konstantinos Tsiakas, Vangelis Karkaletsis and Fillia Makedon	**Session K:** *Human Affect, Physiology and Biosignal Analysis* **Session Chair:** Morris Bell **K-1** *Development of a Mobile Functional Near-Infrared Spectroscopy Prototype and Its Initial Evaluation - Lessons Learned.* **(20 minutes)** Nils Volkening, Anirudh Unni, Sabeth Becker, Jochem W. Rieger, Sebastian Fudickar and Andreas Hein **K-2** *Improving Subject-Independent Human Emotion Recognition Using Electrodermal Activity Sensors for Active and Assisted Living.* **(20 minutes)** Fadi Al Machot, Mouhannad Ali, Suneth Ranasinghe, Ahmad Haj Mosa and Kyandoghere Kyamakya **K-3** *A Survey on Extracting Physiological Measurements from Thermal Images.* **(20 minutes)** Christian Hessler, Mohamed Abouelenien and Mihai Burzo **K-4** *Playful Multimodal Training for Persons with Dementia with Executive Function based Diagnostic Tool.* **(20 minutes)** Lucas Paletta, Alexander Lerch, Christian Kemp, Lara Pittino, Josef Steiner, Manuela Künstner, Mariella Panagl, Martin Pszeida and Maria Fellner
15:10-16:05	**Session L:** *Pervasive Systems for the Aged & Smart Health Devices* **Session Chair:** Dimitrios Zikos **L-1** *Development of an Exergame on Mobile Phones to Increase Physical Activity for Adults with Severe Mental Illness .* **(20 minutes)** Yannick Francillette, Bruno Bouchard, Eric Boucher, Sebastien Gaboury, Paquito Bernard, Ahmed Jérome Romain and Kevin Bouchard **L-2** *Semi-Automated Home-Based Therapy for the Upper Extremity of Stroke Survivors.* **(20 minutes)** Thanassis Rikakis, Aisling Kelliher, Jinwoo Choi, Jia-Bin Huang, Kris Kitani, Setor Zilevu and Steven L Wolf **L-3** *Impact of a Mobile Cycling Application on Cardiac Patients' Cycling Behavior and Enjoyment.* **(15 minutes)** Eva Geurts, Dominique Hansen, Paul Dendale and Karin Coninx	**Session M:** *Wearable Systems and Monitoring Devices* **Session Chair:** Eleni Efthimiou **M-1** *Visually Perceived Relevance of Objects Reveals Learning Improvements and Task Difficulty.* **(15 minutes)** Michael Haslgrübler, Florian Jungwirth, Michaela Murauer and Alois Ferscha **M-2** *Smart Pocket Watch - Exploring the Design Space for Wearable Technology in Healthcare.* **(15 minutes)** Georg Regal, Beatrix Wais-Zechmann, Valentin Gattol, Markus Garschall and Manfred Tscheligi **M-3** *TactileGlove: Assistive Spatial Guidance in 3D Space through Vibrotactile Navigation.* **(20 minutes)** Sebastian Günther, Florian Müller, Markus Funk, Jan Kirchner, Niloofar Dezfuli and Max Mühlhäuser

	Room 1
16:10-16:30	**Conference Closing & Awards Ceremony** *Best Technical Paper; Best Paper for Novelty; Best Student Paper; Best Poster Paper*

Please Take the Online Survey

www.petrae.org/survey

Accepted Posters (Session F)

F1. *An Emotion Recognition System for Monitoring Shopping Experience.* Silvia Ceccacci, Andrea Generosi, Luca Giraldi and Maura Mengoni

F2. *Emotion Recognition from Speech: A Classroom Experiment.* Rozalia Nikopoulou, Ioannis Vernikos, Evaggelos Spyrou and Phivos Mylonas

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