**CVHI 2007**

**EURO-ASSIST-VHI-5**

*Conference and Workshop on Assistive Technologies for People with Vision and Hearing Impairments*

**Assistive Technology for All Ages**

**28th – 31st August, 2007**
**Granada, Spain**

**BIOGRAPHIES**

## Tutorial 1: Neuro-Cognitive Processing and Sensory Impairment : Lessons for the Design of Assistive Technology

**Professor Edwige Pissaloux, University of Paris 6 and CNRS FRE, France**

**Professor Edwige Pissaloux,** has been a full professor at Rouen University, France since 2001. She works at the Laboratoire de Robotique de Paris, Paris 6 University in cooperation with the Collège de France, French hospitals and the National Nuclear Agency (CEA). Her main research interests include visual perception of space and its integration into assistive systems for visually impaired people, seniors and patients with neuro-cognitive space processing impairments.

Prof Pissaloux is the European Editor-in-Chief of the IJIG and the REE journals; she is an expert referee on several regional, national, European and international research and university boards; she chaired the HANDICAP 2006 national conference. In her free time she gives violin classes for blind people

## Tutorial 2: Assistive Technology for Deafblind People : Current State-of-the-Art, Design and End-User Issues

**Dr Marion Hersh, University of Glasgow, Scotland**

**Dr. Marion Hersh** is currently a Senior Lecturer in the Department of Electronics and Electrical Engineering at the University of Glasgow. Her research interests include assistive technology for people with sensory impairments, technology and ethics and universal and sustainable design.

She is coauthor and coeditor of a series of books on assistive technology published by Springer Verlag, of which two books entitled Assistive Technology for the Hearing Impaired, Deaf and Deafblind, and Blind and Visually Impaired people have been published. She is also the author of a book entitled Mathematical Modelling for Sustainable Development.

Dr Hersh is convenor of the International Federation of Automatic Control (IFAC) Working Group on Ethics and co-chair of the IFAC Technical Committee on Supplementary Ways of Improving International Stability. She is also the chair of the CVHI Conference Series.

## Tutorial 3: Assistive Listening for Hearing Impaired People : Fundamentals, Technology and Algorithms

**Prof Dr Hans-Heinrich Bothe**

**Prof Dr Hans-Heinrich Bothe** is currently an associate professor in electronics and signal processing at the Technical University of Denmark, Lyngby/Copenhagen. His main research interests include pulsed neural networks, audio-visual signal processing, rehabilitation technologies for disabled people and neuro-fuzzy methods for signal processing.

Professor Bothe is the author of books on Neuro-Fuzzy Methods and Fuzzy Logic published by Springer Verlag and a coeditor of the Proceedings of the second International Computer

Science Conventions (ICSC) Symposium on Neural Computation and ICSC Conference on Computational Methods Intelligence and Applications 19999.

## Keynote Speech: Making the Case for Accessibility New Directions, New Possibilities

**Dana Marlowe, Tec Access, Rockville VA, USA**

**Dana Marlowe** is the Senior Vice President at TecAccess, an award-winning accessibility consulting firm in the United States. She has been working in the accessibility industry for over 13 years and is known for advocating for all aspects of disability rights. Dana works in business management, marketing and communications in relation to accessible technology and disability in both government and private industry. She has served on numerous committees and regularly addresses US governmental bodies. She has given presentations on the employment of disabled people, assistive technology, and the business case for accessible technology in South America, Europe and Africa. She has an M.A. in Communication Studies focusing on Deaf studies from the University of Texas at Austin; a B.S. in Professional & Technical Communication from the Rochester Institute of Technology; and a degree in Sign Language Interpreting from the National Technical Institute of the Deaf.

## Session 1: Orientation and Mobility Systems for Visually Impaired People

### Terrain Analysis for Blind Wheelchair Users: Computer Vision Algorithms for Finding Curbs and Other Negative Obstacles

**James Coughlan and Huiying Shen, The Smith-Kettlewell Eye Research Institute, USA**

**James Coughlan** received his B.A. in physics at Harvard University in 1990 and completed his Ph.D. in physics there in 1998. He is currently an Associate Scientist at The Smith-Kettlewell Eye Research Institute in San Francisco, California. His research interests are in computer vision and its applications to blindness and visual impairment.

### Texture based Text Detection in Natural Scene Images – A Help to Blind and Visually Impaired Persons

**Shehzad Muhammad Hanif and Lionel Prevost, Université Pierre et Marie Curie, France**

**Shehzad Muhammad Hanif** is currently a PhD student at the Institute of Intelligent Systems and Robotics at the Université Pierre et Marie Curie, Paris, France. He received his BSc (Honours) from the University of Engineering and Technology, Lahore, Pakistan in 2001 and received his MS from Université Pierre et Marie Curie, Paris France in 2006. His research interests include pattern recognition, machine learning and information fusion.

This paper is presented by Guillaume Tatur of the University of Paris 6 and CNRS FRE, France. Guillaume Tatur has a degree in Physical Sciences and a masters degree in Robotics and Intelligent Systems at Paris-6 University. His research interests include robotics and the cognitive processes involved in navigation. He is currently working with Professor Pissaloux on the HuPer project. This involves the application of neuro-cognitive navigation strategies to the Inntelligent Glasses navigation aid to improve the navigation assistance provided to blind and visually impaired people.

## Experiments of Virtual Navigation as a Step in the Development of a Navigation Tool for Blind People

**Eleanor Fontaine, Guillaume Tatur, Edwige Pissaloux**

University of Paris 6 and CNRS FRE, France

**Eléanor Fonaine** is currently a PhD student at the ISIR (Institut of Intelligent Systems and Robotics) of Paris 6 University. Her thesis, under the supervision of Prof. Edwige Pissaloux and Prof. Alain Berthoz (Collège de France), is investigating vision, visual perceptions of space and applying understanding of visual perceptions of space to the development of a new Cognitive Travel Aid (CTA), the Intelligent Glasses to aid blind people in navigation.

## Body Mounted Vision System for Visually Impaired Outdoor and Indoor Wayfinding Assistance

**Sylvie Treuillet, Eric Royer, Thierry Chateau, Michel Dhome, Jean-Marc Lavest**

LASMEA, UMR 6602, University of Clermont-Ferrand, France

**Sylvie Treuillet** received the PhD degree in computer vision from the University of Clermont-Ferrand in 1990. She is currently a lecturer in Computer Science and Electronic Engineering at the Ecole Polytechnique at the University of Orleans, France. Her research interests include image processing and computer vision for 3D reconstruction, colour segmentation, and tracking in biomedical or industrial applications.

## Session 2: Access to Education and Information

### Improving Social Life and Communication of People with Disabilities by Using Internet Facilities

**Adina Ionescu[1], Ileana Hamburg[2], Zoltan Puklus[3], Attila Kürtösi[3]**

[1]"Octav Onicescu" National College, Romania
[2]Institut Arbeit und Technik, Germany
[3]Széchenyi István University, Hungary

**Adina Ionescu** has a PhD in Mathematics. She is a Teacher of Mathematics at „Octav Onicescu" National College in Bucharest, Romania. Dr Ionescu is also the Coordinator of the SOCRATES project, Improvement of the Employment Chances of the Unemployed and the Visual and Auditive Disabled by using Virtual Learning Application - IECUVADVLA.

## Towards a Methodology for Educating Students with Special Needs

**Paloma Cantón[2], Angel Lucas González[1], Gonzalo Mariscal[3] and Carlos Ruiz[3]**
**[1] Facultad de Informática, Universidad Politécnica de Madrid**
**[2] Consejería de Educación de la Comunidad de Madrid**
**[3] SETIAM – CETTICO, Fundación General UPM**

This paper is being presented by **Gonzalo Mariscal** who holds a BEng in Computing from the Universidad Politécnica de Madrid (UPM). He is a Professor in the Computer Systems Department of the Universidad Europea de Madrid (UEM). He has been working as a researcher at CETTICO's Department of Computer Technology Transfer (UPM) for the Disabled since 1999. His research interests cover human-computer interaction, adaptive interfaces, e-learning, virtual reality systems technologies, and Data Mining.

## Socially Inclusive Elearning Models in Companies

**[1]Ileana Hamburg, [1]Thorsten Busse, [2]Andreea Peca,**
**[3]Adina Ionescu**

[1]Institute Arbeit und Technik, FH Gelsenkirchen, Germany
[2]"Gelu Voievod" Theoretical High School, Gilău, Romania
[3]"Octav Onicescu" National College, Bucharest, Romania

**Dr. Ileana Hamburg** has a Doctor's degree in Mathematics. She has worked as a professor at the University of Craiova and as a computer scientist at the University of Erlangen, Germany. She is currently a computer scientist at the Wissenschsftszentrum NRW, Institut Arbeit und Technik in the Department of Production Systems. She is also a lecturer in Computer Science at the Open University (FU), Hagen.

This paper is being presented by **Thorsten Busse** who received his diploma in Social Science from the Ruhr-University-Bochum in 2004. His main research interests are eLearning for SMEs, eLearning for groups with special needs and vocational training in the IT-sector. He works as a freelancer and has been working with the Institute for Science and Technology Gelsenkirchen since 2004, as part of Dr. Ileana Hamburg's working group.

## Incorporating Accessibility Within Pedagogical Environments

**David Crombie, Benjie Marwick Johnstone, Neil McKenzie**

Dedicon, Amsterdam, The Netherlands.

This paper is being presented by **Benjie Marwick Johnstone** who is studying for a Masters Degree in Electronics and Software Engineering at Glasgow University. He is on a final year placement with Dedicon, the Dutch Library for the Blind.

## Session 3: Assistive Technology for Independence

### Designing Tangible Tabletop Interfaces for Patients in Rehabilitation

**M. Leitner\*, M. Tomitsch\*\*, T. Költringer\*\*, K. Kappel\*\*, T. Grechenig\*\***

\*Research Industrial Systems Engineering (RISE), Schwechat, Austria.
\*\*Research Group for Industrial Software (INSO), Vienna University of Technology

**Michael Leitner** received an MSc degree in Business Informatics from the University of Vienna in 2006. He is currently working on a research project in the field of embedded systems at RISE Schwechat (Research Industrial Software Engineering), a spin-off of the Vienna University of Technology. His main interests are Usability Engineering and User Interface Design.

### E-Voting – A Key to Independence for All

**Ülle Lepp and Erik Loide**

Estonian Foundation for the Visually Impaired, Tallinn, Estonia.

**Ülle Lepp** is currently a Ph.D. student in the Faculty of Social Sciences at Tartu University, Estonia. She graduated from Tartu State University in 1980 and has since pursued advanced studies in Estonia and internationally. From 1998 onwards Mrs Lepp has been involved as a project manager and expert in several projects with the Estonian Foundation for the Visually Impaired (EFVI) and  with the Centre for Policy Studies (PRAXIS).

### The Ambient Intelligence and the Assistive Technologies for Elderly, Visually and Hearing Impaired Users in Slovakia

**Dušan Šimšík, Alena Galajdová, Zlatica Dolná, Jana Andrejková**

Technical University of Košice, Faculty of Mechanical Engineering, Department of Instrumental and Biomedical Engineering, Košice, Slovak republic

Jana Andrejkova and Zlatica Dolna both have a masters degree in Biomedical Engineering. They are currently postgraduate students in the Faculty of Mechanical Engineering at the Technical University of Kosice, Slovakia.  They are specialising in Bionics and Biomechanics under the supervision of Prof. Dr. Dusan Simsik and his assistant Alena Galajdova in the Department of Instrumental and Biomedical Engineering. They also do voluntary work in the Access Centre at the Technical University of Kosice, where they work with assistive technology and help with the preparation of study materials for disabled students.

Jana's main research interests are the analysis of assistive technology, information technology and e-services for elderly and disabled people. Zlatica's research interests include assistive technology, information technology, personal assistance and the analysis of human motion and the applications of this analysis in clinical and sports medicine.

**Workshop: Multimodal Access to Mathematics: The Lambda System**

**Cristian Bernareggi and Sauro Cesaretti**

Università Degli Studi Di Milano, Biblioteca Di Informatica, Milano, Italy
Unione Italiana, Ciechi (Verona), Italy.

**Cristian Bernareggi** has a PhD degree in computer science

## Session 4: Improving the Accessibility of Complex Content

### Haptic and Aural Graphs Exploration for Visually Impaired Users

**Thimoty Barbieri, Lorenzo Mosca, and Licia Sbattella**

Dipartimento di Elettronica e Informazione, Politecnico di Milano

**Thimoty Barbieri** has a degree and a PhD in Computer Engineering. He works as a researcher at the Accessibility Research Center Laboratory (ARCS Lab) at the Politecnico di Milano, Italy. He is a visiting professor in Computer Graphics and Graphical Applications at the Politecnico di Milano.

This paper will be presented by **Lorenzo Mosca** who has a degree in Computer Science.

## Session 5: Access to Multi-Media for Hearing Impaired People

### SUBPAL: A Device for Reading Aloud Subtitles from Television and Cinema

**Simon Nielsen[1], Hans Heinrich Bothe[2]**

[1]Informatics and Mathematical Modelling,
Technical University of Denmark (DTU).
[2]Centre for Applied Hearing Research (CAHR), Oersted DTU,
Technical University of Denmark (DTU).

**Simon Nielsen** is a graduate student, in the fifth year of a Master of Science in Engineering at the Technical University of Denmark. He studied for two semesters in Sydney, Australia at the University of Technology, and the University of New South Wales where he wrote his Bachelor thesis on vision based control for autonomous systems.

His research interests are embedded systems, digital design, neural sensors and assistive technology. He is participating in two projects, a-medico technical device for  Parkinson diagnostics, and a text to speech solution for reading subtitles from the television and cinema.

## OCR-Algorithm for Detection of Subtitles in Television and Cinema

**Morten Jønsson[1], Hans Heinrich Bothe[2]**

[1]Informatics and Mathematical Modelling,
Technical University of Denmark (DTU).
[2]Centre for Applied Hearing Research (CAHR), Oersted DTU,
Technical University of Denmark (DTU).

Morten Jønsson is a graduate student, in the fifth year Master of Science in Engineering (electronics) at the Technical University of Denmark. He has primarily worked in the field of control design and robotics. He participated in the robotic competition Eurobot as part of his Bachelor thesis. His research interests are in the areas of signal processing, image analysis, assistive technologies and physiology. He is participating in two projects: a medico-technical device for Parkinson diagnostics and a device for reading aloud subtitles from television and films.

## Emotional Subtitles: A System and Potential Applications for Deaf and Hearing Impaired People

**James Ohene-Djan[1], Jenny Wright[1] and Kirsty Combie-Smith[2]**

[1]Goldsmiths College, University of London,London, UK
[2]Deafax, UK.1 Earleygate, University of Reading, Reading, UK

**James Ohene-Djan** - Dr James is a Lecturer and Senior Tutor in the Department of Computing at Goldsmiths College, University of London. His research interests include Sign language technologies, Advanced learning technologies, and Adaptive, personalisable systems. He is the founder of the Assistive Technologies group at Goldsmiths and has published over 20 refereed papers.

## A System for Control of Hearing Instrument Selection and Adjustment based on Evaluation of Correct Transmission of Speech Elements and Features

**A. Plinge, D. Bauer**

Institut für Arbeitsphysiologie an der Universität Dortmund, Germany

**Axel Plinge** has spent several years working with Dr. Bauer on Speech Enhancement and Replacement for people with profound sensorineural hearing impairments

## SESSION 6: Sign Language and Access to Information for Deaf People

### Joining Hands: Developing a Sign Language Machine Translation System for the Deaf Community

**Sara Morrissey and Andy Way**

National Centre for Language Technology, School of Computing, Dublin City University, Dublin, Ireland

**Sara Morrissey** is in the final stages of her PhD in Machine Translation at the National Centre for Language Technology in Dublin City University (DCU), Ireland. She holds a B.Sc. in Computational Linguistics from DCU and wrote her bachelor thesis on Rule-Based Machine Translation of Irish Sign Language for weather reports. Her research interests include human communication, D/deaf communication and accessibility, sign languages, machine translation, natural language processing and linguistics.

## SESSION 7: Telephony and Other Services for Hearing Impaired People

### Sign Language MMS to Make Cell Phones Accessible to the Deaf and Hard-Of-Hearing Community

**Mohamed Jemni, Oussama El Ghoul, Nour Ben Yahia, Mehrez Boulares**

Research Laboratory of Technologies of Information and Communication (UTIC), Ecole Supérieure des Sciences et Techniques de Tunis,Tunis, Tunisia

**Mohamed Jemni** is a Professor at the Ecole Supérieure des Sciences et Techniques de Tunis (ESSTT), University of Tunis in Tunisia. He has the HDR (Habilitation à Diriger des Recherches) in Computer Science from the University of Versailles, France and a PhD in Computer Science from the University of Tunis. He is the Head of the Research Laboratory on Information and Communication Technologies at the University of Tunis and the director of research for the Masters in Computer Science at ESSTT. He has published more than 50 papers in international journals and conferences.

Mohamed Jemni is the chairperson of the biannual international conference on ICT and Accessibility, first held in April 2007 Hammamat, Tunisia). He is currently conducting two main projects in his laboratory:
- Improving accessibility to the deaf community by the use of ICT and sign language.
- Development of an e-learning environment for visually impaired students.

## Household Sound Identification for People with Hearing Disabilities

**H. Lozano, I. Hernáez, E. Navas, FJ. González, I. Idígoras**

ABLE Technologies Group, INNOVA Department,
Robotiker - Tecnalia, Vizcaya, Spain.

Héctor Lozano works in the Robotiker-Tecnalia company, in Spain, in the department of "Social Sector". He graduated as an Engineer in Computer Science at the University of the Basque Country two years ago and he is currently working for a PhD applying communication, electronics and control technologies to support disabled people. He is investigating the application of different techniques for detecting and identifying sounds.