DSAI 2016 & TISHW 2016
Conferences Programme
<table>
<thead>
<tr>
<th>Time</th>
<th>1 December</th>
<th>2 December</th>
<th>3 December</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:00</td>
<td>Registration</td>
<td></td>
<td>Parallel Paper Session T6,T7,D11 [Room A,B,C]</td>
</tr>
<tr>
<td>09:30</td>
<td>09:30</td>
<td>09:30</td>
<td>09:30</td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td>10:00</td>
<td>10:00</td>
</tr>
<tr>
<td>10:30</td>
<td>Opening Session [Room A]</td>
<td>10:30 Coffee Break</td>
<td>10:30 Coffee Break</td>
</tr>
<tr>
<td>11:00</td>
<td>Parallel Paper Session D1,T1 [Room A,B]</td>
<td>Parallel Paper Session D2,D3,T2 [Room A,B,C]</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>11:30</td>
<td>11:30</td>
<td>11:30</td>
</tr>
<tr>
<td>12:00</td>
<td></td>
<td>12:00</td>
<td>12:00</td>
</tr>
<tr>
<td>12:30</td>
<td>Keynote 1 [Room E]</td>
<td>Keynote 3 [Room E]</td>
<td>Keynote 5 [Room A]</td>
</tr>
<tr>
<td>13:00</td>
<td>13:00</td>
<td>13:00</td>
<td>13:00</td>
</tr>
<tr>
<td>13:30</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Closing Session [Room A]</td>
</tr>
<tr>
<td>14:00</td>
<td></td>
<td>14:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>14:30</td>
<td></td>
<td>14:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>15:00</td>
<td>Parallel Paper Session D4,D5 [Room A,B]</td>
<td>Parallel Paper Session D6,T3 [Room A,B]</td>
<td></td>
</tr>
<tr>
<td>15:30</td>
<td>15:30</td>
<td>15:30</td>
<td>15:30</td>
</tr>
<tr>
<td>16:00</td>
<td>World Deaf Federation [Room E]</td>
<td>Parallel Paper Session D7,D8,T4 [Room A,B,C]</td>
<td></td>
</tr>
<tr>
<td>16:30</td>
<td>16:30</td>
<td>16:30</td>
<td>16:30</td>
</tr>
<tr>
<td>17:00</td>
<td>Keynote 2 [Room E]</td>
<td>Keynote 4 [Room E]</td>
<td>17:00</td>
</tr>
<tr>
<td>17:30</td>
<td>17:30</td>
<td>17:30</td>
<td>17:30</td>
</tr>
<tr>
<td>18:00</td>
<td>Coffee Break</td>
<td>Coffee Break</td>
<td>18:00</td>
</tr>
<tr>
<td>18:30</td>
<td>Parallel Paper Session D9,D10,T5 [Room A,B,C]</td>
<td>Parallel Paper Session T8,T9,D12 [Room A,B,C]</td>
<td></td>
</tr>
<tr>
<td>19:00</td>
<td>19:00</td>
<td>19:00</td>
<td>19:00</td>
</tr>
<tr>
<td>19:30</td>
<td>19:30</td>
<td>19:30</td>
<td>19:30</td>
</tr>
<tr>
<td>20:00</td>
<td>20:00</td>
<td>20:00</td>
<td>20:00</td>
</tr>
<tr>
<td>20:30</td>
<td></td>
<td>20:30</td>
<td>20:30</td>
</tr>
<tr>
<td>21:00</td>
<td></td>
<td>21:00</td>
<td>21:00</td>
</tr>
<tr>
<td>21:30</td>
<td></td>
<td>21:30</td>
<td>21:30</td>
</tr>
<tr>
<td>22:00</td>
<td></td>
<td>22:00</td>
<td>22:00</td>
</tr>
<tr>
<td>22:30</td>
<td></td>
<td>22:30</td>
<td>22:30</td>
</tr>
</tbody>
</table>
Room A - Auditorium 1, level 0, Building: Blocos laboratoriais, Campus UTAD  
Room B - Auditorium 2, level 0, Building: Blocos laboratoriais, Campus UTAD  
Room C - C1.07, level 1, Building: Blocos laboratoriais, Campus UTAD  
Room D - C1.14, level 1: Building: Blocos laboratoriais, Campus UTAD  
Room E - Aula Magna, Building: Geociências, Campus UTAD

Gala Dinner - Quinta do Paço

Paper Sessions

**DSAI | Papers Sessions:**

D1 - Image processing, Computer vision and virtual environments (Chair: Frode Eika Sandnes)  
D2 - Multimodal interfaces and IoT (Chair: Franz Pühretmair)  
D3 - Design for all (Chair: Mireia Ribera)  
D4 - (ST2) Enhanced solutions for inclusive learning and students dropout prevention in higher education (Chair: Emmanuelle Gutiérrez)  
D5 - (ST5) Enhancing inclusive societies through digital media: an overview of strategies and solutions to promote universal participation (Chair: Ana Margarida Almeida)  
D6 - (ST1) Accessible Communications (Chair: Franz Pühretmair)  
D7 - (ST7) LUDI – Play for Children with Disabilities (COST Action TD1309) (Chair: Pedro Encarnação)  
D8 - (ST8) Emergent Technologies for Ambient Assisted Living (ETAAL) (Chair: Tânia Rocha)  
D9 - (ST4) Digital Exclusion in the Information and Knowledge Society (Chairs: Sofia Balula Dias & Tassos A. Mikropoulos)  
D9 - (ST3) Learning Technologies in Special Education and Inclusion (Chairs: Sofia Balula Dias & Tassos A. Mikropoulos)  
D10 - (ST6) Design with Older Adults: enhancing connectivity (Chairs: Renata Fortes & Paula Costa Castro)  
D11 - Accessibility guidelines, best practice, evaluation techniques and tools (Chair: Paulo Martins)  
D12 - (ST9) Smart Destinations technological applications for enhancing accessibility and fighting info-exclusion (Chairs: João Rodrigues & Célia Ramos)

**TISHW | Papers Sessions**

T1 - New Technologies to Monitor, Assist and Rehabilitate (Chair: Catarina Abrantes)  
T2 - Innovation in coaching, training and competition (Chair: Vitor Santos)  
T3 - Introducing Image and Virtual Reality systems in Sports and Health (Chair: Nuno Leite)  
T4 - (ST2) Assisted living technologies for promoting physical activity and wellbeing: Present and future trends (Chairs: Sofia Balula Dias & José A. Diniz)  
T5 - (ST1) Digital Games in assistive environments (Chair: Ana Isabel Veloso)  
T6 - (AS1) Mobile and wearable technology (Chair: Hugo Fernandes)  
T7 - (AS2) Digital and technological innovation (Chair: André Sousa)  
T8 - (AS3) Ventures, management and Social innovation (Chair: Vitor Filipe)  
T9 - (AS4) Coaching, training, competition and rehabilitation (Chair: Arsénio Reis)
DSAI 2016 & TISHW 2016

Keynote speakers
Keynote 1
Seamlessly Supported Personal Navigation in the City

Diamantino Freitas
Universidade do Porto, Portugal

Room E – 1 December | 12h00m - 13h00m

Chair: Leontios Hadjileontiadis

Abstract

Personal mobility in the city built environment is a very important aspect of autonomy and independence that needs substantially increased support as everyone may agree. Localization and geo-referencing, access to location information, guidance and navigation are essential means for integration in the built environment and use of the public transport system that is also indispensable. In spite of the availability of relevant technologies there is still much to be done at the integration level, in order to deploy inclusive services with a good accessibility for the user’s benefit.

In this communication, the experience of the Speech Processing and Electro-acoustics Laboratory of the Faculty of Engineering of the University of Porto in the research and development of inclusive solutions for personal mobility will be presented and discussed.

One of the achievements that works as an umbrella project is NAVMETRO®, the telephone voice portal and ambient acoustic guidance system for the blind and amblyopic in the Porto’s underground transport system.

Associated with this project’s evolution, several usability evaluation and enhancement works will be reported. One of the laboratory’s recent outcome, the Audio-GPS acoustic indoor localization system, will also be described with a discussion of its impact potential on the inclusion of a wide range of users’ needs for accessing and living in the built environment, including a now feasible indoor-outdoor seamless integration.
Ubiquitous Health: Wearable Computing Systems that Promote Healthy Living and Transform Health Care

Bjoern Eskofier
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Room E – 1 December | 16h30m - 17h30m

Chair: Jaime Sampaio

Abstract

The fast-growing costs of acute care are pushing the healthcare systems worldwide to a limit. Globally, we are coming to realize that we cannot afford to provide everybody with access to unlimited healthcare services in the light of current demographic changes. An alternative approach is emerging that focuses on “keeping people healthy” through primary and secondary prevention in all phases of life. This paradigm shift in the healthcare systems is demanding research in ambient, sensor-enhanced assistive technologies that “keep people outside of the hospital”. Therefore, a fast-growing interest exists for wearable and pervasive computing systems and ambient assistive technology that aim at ubiquitous health promotion for individuals in the home and community settings.

The talk will present several examples for associated research projects in the fields of sports, health, and medicine. A particular example is the miLife research project. In this project, we i) implemented ambient sensors for physiological (ECG, EMG, ...) and biomechanical (accelerometer, gyroscope, ...) data recording, ii) used pervasive computing systems (e.g. in smartphones or smarthomes) for monitoring and signal processing, and iii) employed data base technology, machine learning algorithms, and simulation models in order to provide accurate information to sportsmen, patients, and caregivers in numerous applications that aimed at promoting healthy living and improving health care.

The talk will also present further research challenges that exist in the field of wearable and pervasive computing systems for ubiquitous health support. Example challenges are the required signal processing and machine learning algorithms that need to be computationally efficient yet sufficiently accurate, but also comprehensive databases, simulative data analysis and holistic data mining strategies. The outlook of the presentation will focus on future research directions that aim at contributing to the above mentioned paradigm shift in global healthcare systems by the use of wearable and pervasive computing systems for ubiquitous health support.
Keynote 3

Pedagogical aspects of ICT in learning and communication disorders

Tassos Anastassios Mikropoulos
University of Ioannina, Greece

Room E – 2 December | 12h00m - 13h00m
Chair: José Alves Diniz

Abstract
The contribution of Information and Communication Technologies (ICT) to inclusive education is implemented in two different as well as complementary ways. Firstly, assistive technologies, based mainly on hardware systems, facilitate access to learning resources and to the educational system in general. Secondly, educational technology, with its main focus at software applications, contributes to cognitive enhancement, a topic of great importance in learning and communication disorders. Learning disorders include dyslexia that mainly involves reading disability and mathematics disorder, developmental disabilities like the autism spectrum disorder, intellectual disability, developmental coordination disorder, speech sound disorder, language impairment, and attention-deficit hyperactivity disorder.

This work underlines the importance of the pedagogical approaches in designing ICT-based environments to cognitive enhancement in situations of learning and communication disorders. Students with learning and communication disorders need individually designed and systematically monitored teaching procedures, adapted systems and teaching material that constitute an environment whereby their difficulties can be circumvented. Researchers and educators understand that interactive environments can help to address the needs of those students. Technology can have a significant role in the teaching interventions of individuals with special needs, by providing interactive media to facilitate communication and learning. Teachers need tailored applications that provide appropriate learning environments with transparent interfaces.

The diversity of characteristics encountered by children with learning and communication disorders may present an extra challenge for the design of ICT-based applications and systems such as adaptive hypermedia and virtual reality applications as well as real time dynamic affective systems. But an ICT-based learning environment and an educational system in general that does not acknowledge and address the specific, individual differences and needs of students with learning and communication disorders, in fact excludes and prohibits them from achieving a normal level of personal self-sufficiency and success in their life and the community. Important research topics are raised and discussed in this work as far as it regards the use of ICT-based environments for children with learning and communication disorders. Firstly, it is the attitude of these students against technology. This knowledge will inform researchers to think of the type of systems will be designed. Secondly, it is the pedagogical approach of the designed applications. Is the transfer of well-known teaching interventions into ICT-based environments enough or constructive approaches that promote specific types of interaction and feedback are needed? Thirdly, it is the evaluation of ICT-based environments that will help to inform on their design and delivery and improve future efforts. The ultimate goal is to facilitate the learning environments of the target population, assuming that the problem lies with the environment not the disorder and therefore needs adapting.
Keynote 4
Remixing play for inclusive learning

Sylvester Arnab
Coventry University, UK

Room E – 2 December | 16h30m - 17h30m

Chair: Leonel Morgado

Abstract

This talk will unpick the power of play for inclusive learning responding to the merging of digital/physical spaces and formal/informal contexts. There is a need for contextualised learning for facilitating deeper engagement with the learning process. This talk will touch on games and gamification inspired by the mechanics of play for injecting fun in everyday spaces based on projects, such as the EU Funded H2020 Beaconing project (Beaconing.eu) and the GameChangers game design thinking programme.
### Keynote 5

**Technology and Sports Science, Innovative Methods in Movement Analysis**

**Orlando Fernandes**  
Department of Sport and Health, Science and Technology School, Universidade de Évora, Portugal

**Room A – 3 December | 10h30m - 11h30m**

**Chair: Jaime Sampaio**

**Abstract**

Technology in Sports Science has assumed a strong importance nowadays. Particularly in the biomechanical analysis of movement with emerging new instruments and methodologies to better understand the origin and causes of the movement. Technology is a set of tools, methods and techniques that aim to solve problems and wherever possible with practical application of scientific knowledge. The new technologies are the fruit of important technological development achieved over the recent years, and has a fundamental role in innovation.

This presentation is an integration of knowledge in the context of the biomechanics and movement analysis during the last 10 years working with an innovative multidisciplinary team while respecting the objective and balance of Technology-Science.

In this particular case, the increase of data collected relative to the position of “players”, resulted in the search for new solutions to increase accuracy and low cost investment through video analysis. This also lead to the development of computational methods for non-linear analysis that can provide augmented information and to contribute to new interpretations. This process involved the development of new technologies that resulted in the integration of methodologies (know-how) and instruments that already existed, innovating and promoting a wider applicability that is an obvious characteristic of Science/Technology.
DSAI 2016 & TISHW 2016

Workshop

Assistive Technologies: Challenges and Opportunities
Workshop

Assistive Technologies: Challenges and Opportunities
Room E – 2 December | 18h00m – 20h00m

Program

17:30 Welcome drink
18:00 Opening session

João Barroso – UTAD and INESC TEC, Portugal. Principal Investigator of Integrated System for Enhancing the Autonomy of the Blind project.
Ana Cristina Neves – Director of FCT Information Society Department (to be confirmed)

18:15 War story
Leontios Hadjileontiadis – Khalifa University, UAE. Principal Investigator of i-Prognosis Project (H2020).

18:45 Horizon 2020 Funding Opportunities for ICT and eHealth
Eunice Ribeiro – Portuguese National Contact Point FET & ICT, GPPQ/FCT

19:15 Roundtable: How to develop a winning proposal to get EU funding
Bjoern Eskofier – Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany.
Franz Puehretmair – KI-I, Austria.
Leontios Hadjileontiadis – Khalifa University, UAE.
Sylvester Arnab – Coventry University, United Kingdom.
Yehya Mohamad – Fraunhofer FIT, Germany
Eunice Ribeiro – GPPQ/FCT, Portugal.
Chair: Hugo Paredes – UTAD and INESC TEC, Portugal.

20:00 Networking

Acknowledgements

This workshop organized during the 7th International Conference on Software Development and Technologies for Enhancing Accessibility and Fighting Info-exclusion – DSAI 2016, at University of Trás-os-Montes e Alto Douro – UTAD, Vila Real, Portugal is funded by the 2015 Digital Inclusion and Literacy Prize - Integrated System for Enhancing the Autonomy of the Blind, granted by the ICT and Society network, a special interest group created by the Portuguese national funding agency for science, research and technology (FCT).
DSAI 2016

Paper Sessions
Paper Session D1

Image processing, Computer vision and virtual environments
Room A – 1 December | 10h30m – 12h00m

Chair: Frode Eika Sandnes

**Virtual tagging detection for context awareness using computer vision**
Hugo Fernandes, Hugo Paredes, Vitor Filipe, João Barroso

**Human–computer interaction based on facial expression recognition: a case study in degenerative neuromuscular disease**
Andreia Matos, Vitor Filipe, Pedro Couto

**Assisted guidance for the blind using the kinect device**
Vitor Filipe, Nuno Faria, Hugo Paredes, Hugo Fernandes, João Barroso

**The Impact of Body Position on the Usability of Multisensory Virtual Environments**
Miguel Melo, Tânia Rocha, Luís Barbosa, Maximino Bessa

---

**Paper Session D2**

Multimodal interfaces and IoT
Room A – 1 December | 14h30m – 16h00m

Chair: Franz Pühretmair

**FLipMouse – a Flexible Alternative Input Solution for People with Severe Motor Restrictions**
Benjamin Aigner, Veronika David, Martin Deinhofer, Christoph Veigl

**Exploring Russian Tap-Code Text Entry Adaptions for Users with Reduced Target Hitting Accuracy**
Frode Eika Sandnes, Fausto Orsi Medola

**Co-creation of Smart Technology with (and for) People with Special Needs**
Juan Carlos Augusto, D. Kramer, U. Alegre, A. Covaci, A. Santokhee

**Architecture of an IoT health System for the support of users with chronic diseases**
Carlos Velasco, Yehya Mohamad, Philip Ackermann
### Paper Session D3

**Design for all**  
*Room B – 1 December | 14h30m – 16h00m*

**Chairs:** Mireia Ribera

**Search Engines: new widgets, new accessibility challenges**  
Faezeh Seyedarabi, Rocio Calvo

**Services & Products Gamified Design (SPGD): A Methodology for Game Thinking Design**  
Alberto Signoretti, Ana Isabel Martins, Mário Rodrigues, André Maurício Cunha Campos, António Teixeira

**Product Ideation by Persons with Disabilities: An Analysis of Lead User Characteristics**  
Peter Conradie, Aron-Levi Herregodts, Lieven De Marez, Jelle Saldien

**Beyond Web Content Accessibility Guidelines. Expert Accessibility Reviews**  
Rocio Calvo, Faezeh Seyedarabi, Andreas Savva

### Paper Session D4

**Enhanced solutions for inclusive learning and students dropout prevention in higher education**  
*Room A – 1 December | 18h00m – 20h00m*

**Chair:** Emmanuelle Gutiérrez

**Affective Computing to Enhance Emotional Sustainability of Students in Dropout Prevention**  
Manuella Kadar, Emmanuelle Gutiérrez y Restrepo, Fernando Ferreira, Jorge Calado, Andreia Artifice, João Sarraipa, Ricardo Jardim-Goncalves

**The importance of cooperation centres for HE students dropout prevention**  
Elsa Marcelino-Jesus, Joao Sarraipa, Gloria Andrea Cavanzo, Juan Carlos Guevara, Igor Almanza Lurita, Maria Isabel Ginocchio

**Didactics and teaching with accessibility and affectivity in higher education**  
Olga Lucía León Corredor, Dora Inés Calderón, Álvaro García-Martínez, Marcia Reis

**Towards a software-enabled environment promoting accessible learning in higher education**  
Celson Lima, Cassio Pinheiro, João Sarraipa

**Technological Innovations tackling Students dropout**  
Joao Sarraipa, Fernando Ferreira, Elsa Marcelino-Jesus, Andreia Artifice, Celson Lima, Manuela Kaddafi

**Nonintrusive Accessibility in Inclusive Higher Education**  
Emmanuelle Gutiérrez y Restrepo, Francisco García García
# Paper Session D5

Enhancing inclusive societies through digital media: an overview of strategies and solutions to promote universal participation  
**Room B – 1 December | 18h00m – 20h00m**

**Chairs:** Ana Margarida Almeida

Digital media as a driver of a more inclusive higher education: towards a proposal of an action plan  
Ana Margarida Almeida, Rita Santos, João Batista, Dora Pereira, Célia Sousa

**Raising inclusion through an online community**  
Susana Capitão, Ana Margarida Almeida, Rui Marques Vieira

**PORTUGUESE AND BRAZILIAN INCLUSIVE UNIVERSITY LIBRARIES: practices and challenges of the directors**  
Isabel Cristina dos Santos Diniz, Ana Margarida Almeida, Cassia Cordeiro Furtado

Inclusive approaches for audiovisual translation production in Interactive Television (iTV)  
Rita Oliveira, Jorge Ferraz de Abreu, Margarida Almeida, Bernardo Cardoso

**The use of mobile devices to support daily routines of teens with Down syndrome: a case study**  
Sofia Reis, Ana Margarida Almeida

**Learning Environment for Autism Spectrum Disorders: a universal approach to the promotion of mathematical reasoning**  
Maria Isabel Santos, Ana Breda, Ana Margarida Almeida

**An inclusive and multistakeholder approach to promote linguistic skills in children with special needs: the role of an online sharing platform**  
Teresa Sousa, Oksana Tymoshchuk, Ana Margarida Almeida, Paula Santos
## Paper Session D6

**Accessible Communications**  
*Room A – 2 December | 08h30m – 10h00m*

**Chair:** Franz Pühretmair

**Self-Determined Easy Access to Different Literacy Levels**  
Peter Heumade, Reinhard Koutny, Franz Pühretmair, Kerstin Matausch-Mahr, Klaus Miesenberger

**Visualizations as Part of Accessible Conferences**  
Karina Lattner

**Don’t write it, picture it! Accessible Information by graphic signs**  
Imke Niediek

**Easy-to-Read enables Participatory Social Research**  
Gabriele Trautendorfer, Birgit Peböck, Franz Pühretmair, Myriam Karlinger

## Paper Session D7

**LUDI – Play for Children with Disabilities (COST Action TD1309)**  
*Room A – 2 December | 10h30m – 12h00m*

**Chairs:** Pedro Encarnação

**Moving Beyond Boundaries: When User-Centered Design meets Sociology**  
Angharad Beckett, Eva Brooks, Raymond Holt

**Mainstream robotic toys and children with physical impairment: what about playfulness?**  
Serenella Besio, Andrea Bonarini, Helen Lynch, Paola Molina, Fabio Veronese, Daniela Bulgarelli

**Gaming Archaeology: Playful Learning for Children With Different Abilities**  
Patrizia Marti, Iolanda Iacono, Michele Tittarelli

**Playful interaction with Teo, a Mobile Robot for Children with Neurodevelopmental Disorders**  
Andrea Bonarini, Francesco Clasadonte, Franca Garzotto, Mirko Gelsomini, Maximiliano Romero

**Off-the-shelf, robotic toys and physically impaired children: an analysis and suggested improvements**  
Fabio Veronese, Daniela Bulgarelli, Serenella Besio, Nicole Bianquin, Andrea Bonarini
## Paper Session D8

**Emergent Technologies for Ambient Assisted Living (ETAAL)**  
**Room B – 2 December | 10h30m – 12h00**

**Chair:** Tânia Rocha

1. **Elderly mobility analysis during Timed Up and Go test using biosignals**  
   Sandra Reis, Virginie Felizardo, Nuno Pombo, Nuno Garcia

2. **An Integrated Approach to Fall Detection and Fall Risk Estimation Based on RGB-Depth and Inertial Sensors**  
   Enea Cippitelli, Samuele Gasparrini, Ennio Gambi, Susanna Spinsante

3. **Towards a Smarter organization for a Self-servicing Society**  
   V. De Florio, M. Bakhouya, D. Eloudghiri, C. Blondia

4. **Usability evaluation of ambient assisted living systems using a multi-method approach**  
   Ana Isabel Martins, Alexandra Queirós, Anabela G. Silva, Nelson Pacheco Rocha

5. **“Professor Piano”: a music application for people with intellectual disabilities**  
   Dennis Paulino, Duarte Amaral, Mariana Amaral, Arsénio Reis, João Barroso, Tânia Rocha

## Paper Session D9

**Digital Exclusion in the Information and Knowledge Society & Learning Technologies in Special Education and Inclusion**  
**Room A – 2 December | 14h30m – 16h30m**

**Chair:** Sofia Balula Dias & Tassos A. Mikropoulos

1. **The use of DigComp in teaching and learning strategies – a roadmap towards inclusion**  
   Ana Balula

2. **Network Support for Students with Special Educational Needs in the Universidade de Lisboa: ‘Rede NEE-ULisboa’**  
   Cristina Espadinha

3. **EmbodiMentor: a science fiction prototype to embody different perspectives using augmented reality**  
   Leonel Morgado, Christian Gütl, Aletha Stahlal
FISCMAP: A fuzzy logic-based quality of concept mapping modelling approach fostering reflective feedback
Sofia B. Dias, Foteini S. Dolianiti, Sofia J. Hadjileontiadou, José A. Diniz, Leontios J. Hadjileontiadis

A Digital Storytelling Approach for Fostering Empathy Towards Autistic Children. Lessons learned
Tharrenos Bratitsis

Use of the Curiosity Cabinet metaphor to support inclusive learning
Patricia Charlton, Anne Preston, Charalampos Karagiannidis, Christos Kouroupeteroglou, Muriel Grenon, Siegfried Handschuh, Adamantios Koumpis

Paper Session D10

Design with Older Adults: enhancing connectivity
Room B – 2 December | 14h30m – 16h30m

Chair: Renata Fortes & Paula Costa Castro

Elderly’s Comprehension on Facebook: a Communicability Evaluation
Carolina Sacramento, Simone Bacellar Leal Ferreira

Co-designing a diversity of social media products with and for older people
David M. Frohlich, Christopher Lim, Amr Ahmed

Personalizing health-related ICT interface and application: older adults and elderly caregivers preferences
Mariane M. T. dos Santos, Humberto Lidio Antonelli, Sandra Souza Rodrigues, Caroline L. de O. Silva, Renata P. M. Fortes, Marcos Hortes Chagas, Paula Costa Castro

An analysis of application usage notes and reminders by older persons – ElderNote Case study
Josias E. de A. Melo, Sandra Souza Rodrigues, Guilherme A. Martins, Humberto Lidio Antonelli, Renata P. M. Fortes, Marcos Hortes Chagas, Paula Costa Castro

Blind Guide: anytime, anywhere
Daniel Vera Yánez, Diego Marcillo, Hugo Fernandes, João Barroso, António Pereira

Enhancing older adults connectivity by introducing mobile devices communication tools
### Paper Session D11

**Accessibility guidelines, best practice, evaluation techniques and tools**  
Room C – 3 December | 08h30m – 10h30m  

**Chairs:** Paulo Martins  

*The Paradigm of the Cloud and Web Accessibility and its Consequences in Europe*  
Pedro R. Palos, Marisol B. Correia  

*A Content Analysis of Online Communities for the Deaf and Hard of Hearing*  
Ines Kozuh, Anja Poznic, Matjaz Debevc  

*ICF based Usability Scale – evaluating usability according to the evaluators’ perspective about the users’ performance*  
Ana Isabel Martins, Alexandra Queirós, Anabela G. Silva, Nelson Pacheco Rocha  

*Automatic identification in accessible iTV services: proposal of an IPTV interface*  
Rita Oliveira, Telmo Silva, Jorge Ferraz de Abreu, Margarida Almeida

### Paper Session D12

**Smart Destinations technological applications for enhancing accessibility and fighting info-exclusion**  
Room C – 3 December | 11h30m – 13h00m  

**Chairs:** João Rodrigues & Célia Ramos  

*A Cultural Heritage and Points of Interest Multi-Criteria Router Supported on Visitors Preferences*  
João Pereira, Sergey Nogin, Pedro J. S. Cardoso, João M.F. Rodrigues  

*Using Multi-Stage Features in Fast R-CNN for Pedestrian Detection*  
M. Farrajota, J.M.F. Rodrigues, J.M.H. du Buf  

*Improving Accessibility through Semantic Crowdsourcing*  
A. Mazayev, J. A. Martins, N. Correia  

*An Initial Framework for a Museum Application for Senior Citizens*  
João M. F. Rodrigues, Joana Lessa, Miguel Gregório, Célia Ramos, Pedro J.S. Cardoso
TISHW 2016

Paper Sessions
## Paper Session T1

**New Technologies to Monitor, Assist and Rehabilitate**  
**Room B – 1 December | 10h30m – 12h00m**

**Chairs:** Catarina Abrantes

**Blind Path Obstacle Detector using Smartphone Camera and Line Laser Emitter**  
Rimon Saffoury, Peter Blank, Julian Sessner, Benjamin H. Groh, Christine F. Martindale, Eva Dorschky, Joerg Franke, Bjoern M. Eskofier

**Exercit@rt mobile: monitoring of pulmonar rehabilitation in COPD**  
Marco Pereira, Ana Margarida Almeida, Hélder Caixinha

**Promotion of impaired executive functions and impulse control in various chronic health conditions using serious games**  
F. Haverkamp, Y. Mohamad

**Autonomous systems to support social activity of elderly people: A prospective approach to a system design**  
Arsénio Reis, Hugo Paredes, Isabel Barroso, Maria João Monteiro, Vitor Rodrigues, Salik Ram Khanal, João Barroso

## Paper Session T2

**Innovation in coaching, training and competition**  
**Room C – 1 December | 14h30m – 16h00m**

**Chairs:** Vitor Santos

**Real-time tracking of a tennis ball by combining 3D data and domain knowledge**  
Vito Renò, Nicola Mosca, Massimiliano Nitti, Cataldo Guaragnella, Tiziana D’Orazio, Ettore Stella

**CFD Analysis of Head and Helmet Aerodynamic Drag to Wheelchair Racing**  
Pedro Forte, Daniel A. Marinho, Pedro G. Morouço, Tiago Barbosa

**The changes in fractal dimension after a maximal exertion in swimming**  
Tiago M. Barbosa, Chen Simin, Pedro Forte, Jorge E. Morais

**From Game Events to Team Tactics: Visual Analysis of Dangerous Situations in Multi-Match Data**  
Manuel Stein, Halldór Janetzko, Andreas Lamprecht, Daniel Seebacher, Tobias Schreck, Daniel Keim, Michael Grossniklaus
Paper Session T3

Introducing Image and Virtual Reality systems in Sports and Health
Room B – 2 December | 08h30m – 10h00m

Chairs: Nuno Leite

The Influence of Audiovisual Sports Advertising in Sedentary Individuals
Jennifer Santos, Pedro Amado

Input System Interface for Image-guided Surgery based on Augmented Reality
Silvino Martins, Mário Vairinhos, Sérgio Eliseu, Janet Borgerson

A Virtual Reality UAV Simulation with Body Area Networks to promote the elders life quality
Andrés Bustamante Crespo, Graciela Guerrero Idrovo, Nuno Rodrigues, António Pereira

First Aid Drone for Outdoor Sports Activities
Gustavo Cedeño Bravo, Diego Marcillo Parra, Luís Mendes, António Manuel de Jesus Pereira

Paper Session T4

Assisted living technologies for promoting physical activity and wellbeing: Present and future trends
Room C – 2 December | 10h30m – 12h00m

Chairs: Sofia Balula Dias & José A. Diniz

A Dataset for the Automatic Assessment of Functional Senior Fitness Tests using Kinect and Physiological Sensors
Alexandre Bernardino, Christian Vismara, Fátima Baptista, Filomena Carnide, Simão Oom, Sergi Bermudez i Badia, Élvio Gouveia, Hugo Gamboa

Postural Behavior and Parkinson’s Disease severity
Catarina Godinho, José Brito, Margarida Silva Dias, Véronique Ferret-Sena, Filipe Melo

Frailty, Falls, and Functional loss Education: The 3Fights@Edu MOOC perspective
Filomena Carnide, Fátima Baptista, Ana Moura, Anne-Marie Mosbech Jensen, Sofia Balula Dias, Henning Langberg, Francisco Delpozo

Active and healthy ageing for Parkinson’s Disease patients’ support: A user’s perspective within the i-PROGNOSIS framework

December 1-3, 2016 – UTAD, Vila Real, Portugal
Investigating the effectiveness of physical training through exergames: focus on balance and aerobic protocols
Vasiliki I. Zilidou, Evdokimos I. Konstantinidis, Evangelia D. Romanopoulou, Maria Karagianni, Panagiotis Kartsidis, Panagiotis D. Bamidis

Paper Session T5
Digital Games in assistive environments
Room C – 2 December | 14h30m – 16h30m

Chairs: Ana Isabel Veloso

Conceptualization of PhysioFun Game: A low-cost videogame for home-based stroke rehabilitation
Tânia Ribeiro, Ana Isabel Veloso, Rui Costa

“Game-based psychotherapy” for active ageing: A game design proposal in non-game context
Liliana Vale Costa, Ana Isabel Veloso

Heuristics for designing digital games in assistive environments: Applying the guidelines to an ageing society
Ana Isabel Veloso, Liliana Vale Costa

Multimodality by Electronic Games as Assistive Technology for Visual Disabilities
Cláudio Gonçalves Bernardo, Tomás Roberto Cotta Orlandi, Alexandre Mori, Claudio Gottschalg Duque

Social games and different generations: a heuristic evaluation of Candy Crush Saga
Ana Carla Amaro, Ana Isabel Veloso, Lidia Oliveira

Wheelchair simulator game for training people with severe disabilities
### Paper Session T6

**Mobile and wearable technology**  
**Room A – 3 December | 08h30m – 10h00m**

**Chairs:** Hugo Fernandes

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use of Internet of Everything Technologies in Sports</strong></td>
<td>Marcelo Pires, Vítor Santos</td>
</tr>
<tr>
<td><strong>Aquatic fitness training programs to improve health-related parameters: advanced monitoring tools</strong></td>
<td>Henrique Neiva, Mário Marques, Bruno Travassos, Daniel Marinho</td>
</tr>
<tr>
<td><strong>Wearables Technologies in Recreational Team Sports: A Brief Review</strong></td>
<td>António Carlos Sousa, Bruno Filipe Travassos, Maria Helena Gil, Henrique Pereira Neiva, Daniel Almeida Marinho</td>
</tr>
<tr>
<td><strong>Blind Path Obstacle Detector using Smartphone Camera and Line Laser Emitter</strong></td>
<td>Rimon Saffoury, Peter Blank, Julian Sessner, Benjamin Groh, Christine Martindale, Eva Dorschky, Joerg Franke, Bjoern Eskofier</td>
</tr>
<tr>
<td><strong>Using NFC to manage users and infrastructures</strong></td>
<td>Jorge Borges, Arsénio Reis, Vítor Santos, João Barroso</td>
</tr>
<tr>
<td><strong>A game to improve memory in elderly</strong></td>
<td>Vitor Santos, Arsénio Reis, João Barroso</td>
</tr>
<tr>
<td><strong>Usage of mobile devices for monitoring and encouraging active life</strong></td>
<td>Dennis Paulino, Arsénio Reis, Hugo Paredes, João Barroso</td>
</tr>
</tbody>
</table>
Paper Session T7

Digital and technological innovation
Room B – 3 December | 08h30m – 10h00m

Chairs: André Sousa

Using cloud image processing services
Arsénio Reis, Dennis Paulino, Hugo Paredes, Vitor Filipe

Margrit Gelautz, Florian Seitner, Christian Kapeller, Nicole Brosch

Information Systems In Gym Sports
Luís Almeida, Vitor Santos

BuyMe: Didactic game for the cognitive training of Children and the Elderly
Tânia Rocha, Arsénio Reis, Hugo Paredes, João Barroso

Automating user supervision at the gym
Arsénio Reis, Vitor Santos, Hugo Paredes, Vitor Filipe, João Barroso

Combined technologies to improve air-pistol shooting technique
Vasco Amorim, Vitor Filipe

Paper Session T8

Ventures, management and Social innovation
Room A – 3 December | 11h30m – 13h00m

Chairs: Vitor Filipe

ObesiTIC. Collaborative design for Health Improvement through Physical Activity and Sports
Idoia Muñoz, Jokin Garatea

Ocean Living Lab. An innovative structure for co-conception and experimentation in nautical sports
Jokin Garatea, Idoia Muñoz

e-Health usability and acceptance: a case study of portuguese citizens’ health portal
Silvia Ala, Francisco Cardoso, Hugo Paredes
ActiveGym, inspiring educational success and healthy lifestyles at UTAD  
João Ribeiro, Arsénio Reis, Elsa Justino

### Paper Session T9

**Coaching, training, competition and rehabilitation**  
Room B – 3 December | 11h30m – 13h00m

**Chairs: Arsénio Reis**

- **The Effect of Curcumin Supplementation on Exercise-induced Muscle Damage**  
  Babak Nakhostin-Roohi, Sahba Karegar-Jedd

- **Parental motivational climate – a risk factor contributing to overtraining syndrome in young elite athletes?**  
  Zuzana Frydrychova, Iva Buresová, Katerina Bartosova, Sara Huteckova

- **Personal traits of elite athletes in the context of overtraining syndrome in adolescence**  
  Sara Huteckova, Iva Buresová, Katerina Bartosova, Zuzana Frydrychova

- **EXTERNAL HEATING GARMENTS USED POST-WARM-UP AND EFFECTS IN SPORTS PERFORMANCE**  
  Maria Helena Gil, Mário Cardoso Marques, Henrique Pereira Neiva, António Carlos Sousa, Daniel Almeida Marinho

- **Dual Task effects on posture and gait control of elderly people**  
  Graça Barros, Filipe Melo, Raul Oliveira
DSAI 2016 & TISHW 2016

Useful Information
Internet Access

Please follow the instructions in order to access the conference wireless network.

1. Wireless network name: *conferences*
2. Wireless network key: *UTAD2016*

You must read the following terms and conditions carefully before using these services:

1. This service is provided free of charge and without obligation to our visitors. There is absolutely NO WARRANTY provided with this service. There is no guarantee for availability and security. We assume no responsibility for any damages.

2. We reserve the right to interrupt or terminate this service at any time and without prior notice.

3. Data transmission in a WLAN is subject to eaves dropping. You are responsible for any necessary encryption of your data e.g. by using VPN connection to your company network.

4. We cannot prevent attacks from the internet or from computers using this network. The use of a personal firewall, virus scanner, etc. to protect your system, is your personal responsibility.

5. Username and connection data (IP-, MAC-Address, times) will be saved and processed for up to 30 days, and used for monitoring errors, performance and possible misuse. This information will be handled over to law enforcement authorities as need be.

6. The Username and Password is for use by you alone and only for the duration of your stay. You must keep them secret and not disclose them to someone else.

7. You are of course required to abide all Laws. You are not allowed to run a Server or to provide internet Services over this network.

* By entering the Username and Password, you agree to the above terms and conditions.*
Meals

Lunch on Thursday 1st, Friday 2nd and Saturday 3rd will be served at the Restaurante Paronâmico in UTAD.

The Gala Dinner, on Friday 2nd at 20:30, will be held at Quinta do Paço. A BUS service will be available to take all guests to the Gala Dinner at Quinta do Paço.

If you have any special needs, please contact the conference organization.

This map shows how to go from the conference venue to the Restaurante Panorâmico.
Transportation

How to go from the Rodonorte BUS station to the Hotel Mira Corgo (10 minutes walk):

How to go from Vila Real’s Bus Terminal to the Hotel Mira Corgo (14 minutes walk):
BUS ‘URBANOS’ connection:
Hotel Mira Corgo – Universidade de Trás-os-Montes e Alto Douro
Universidade de Trás-os-Montes e Alto Douro - Hotel Mira Corgo

Day 1:
9h00 Hotel - UTAD
20h UTAD – Hotel

Day 2
8h13 Hotel – UTAD (Bus 3)
19h27 UTAD – Hotel (Bus 3) or 20h05 UTAD – Hotel (Bus 4)

Gala Dinner Special BUS:
20h15m: UTAD – Hotel
20h30m: Hotel – Quinta do Paço
Return:
23h00m Quinta do Paço – Hotel

Day 3
7h58 Hotel – UTAD (Bus 4) or 8h32 Hotel – UTAD (Bus 3)

The Bus Stop “Avenida 1º de Maio” at Hotel MiraCorgo is in front of the Hotel.
The Bus Stop in UTAD is at UTAD Engenharias.

Each BUS ride will be free to the conference participants. Participants must show the
conference badge (cracha) to the driver.
Conference Venue

The conference will be held at:
University of Trás-os-Montes and Alto Douro
Quinta de Prados,
5000-801 Vila Real, Portugal

Map: From Hotel Mira Corgo to UTAD (22 minutes walk)

Buildings:
Accommodation

For conference participants and guests, special arrangements have been made with different hotels in different distances from the venue and different price categories.

The following hotels are available for DSAI 2016:

Hotel Mira Corgo

Address: Avenida 1º de Maio, 76 a 78, 5000 – 651, Vila Real

Bookings: Viagens Abreu, S.A.
   Email: filipa.matias@abreu.pt
   Phone: +351 222 043 589

Hotel Quinta do Paço

Address: Arroios – 5000-051 Vila Real – PORTUGAL

Bookings: Viagens Abreu, S.A.
   Email: filipa.matias@abreu.pt
   Phone: +351 222 043 589

Residencial Clássico

Address: Rua Urbanização São Lourenço, lote 3 C – Lordelo, Vila Real

Phone: +351 259 341 795

Douro Village Hostel

Contacts:

Address: Rua 31 de Janeiro Nº44, Vila Real, Portugal
Phone: +351 259 042 294
| DSAI 2016 – Software Development and Technologies for Enhancing Accessibility and Fighting Info-exclusion |
| TISHW 2016 – Technology and Innovation in Sports, Health and Wellbeing |
| Programme |
December 1-3, 2016 – UTAD, Vila Real, Portugal