

### LEARNING FROM THE PAST. CHALLENGING THE FUTURE.

Annual Report









Annual Report 2016



#### About the Institute

•



Advancing Education

**26** Funding Sources

•

## 27

Fostering Research



Workshops & Talks



**Selected Publications** 

A CENTRE OF DESIGN FOR GLOBAL CHANGE, CREATING SOCIO-TECHNICAL SYSTEMS SUITED TO HOLISTIC CHALLENGES

Blask

mm

MMM

OE





## ABOUT THE INSTITUTE

"The Board was impressed by the quality of the majority of research presented, and the enthusiasm of faculty and students for their projects"



The Madeira Interactive Technologies Institute (M-iti) is a non-profit innovation institute of the University of Madeira, the youngest and smallest public university in Portugal. It is located in the Autonomous Region of Madeira, an outermost region of Europe.

M-iti was conceived in 2000, formally integrated as a research group in 2007, and established as an Innovation Institute in 2010. M-iti has also been a member of the National Associated Laboratory for Robotics and Systems in Engineering (LARSyS) since 2011.

In 2015, M-iti was considered a Public Utility Institute (as published in the Jornal Oficial of 19 February 2015, series number 30).

M-iti operates in the interdisciplinary domain of Human-Computer Interaction (HCI), encapsulating contributions from the disciplines of computer science, psychology, social sciences, and design, with the goal of engaging in important scientific and technological challenges.

The location of M-iti provides a unique setting to deploy a Living Lab for Interactive Technologies, where systems and services can be tested using open-innovation frameworks.

## VISION

A centre of design for global change, creating socio-technical systems suited to holistic challenges.

Global changes - in climate or demographics; labour systems or capital flows; sustainable resource management or energy efficiency; memes or pandemics - are happening at a pace that could not have been anticipated a few decades ago. Our planet's newest mass extinction is being ushered in by the very same technologies and means of production that were the crowning accomplishments and best practices of our grandparents. It is clear that many of our approaches must change swiftly and radically. Yet our habits of thinking, organising, and living are largely configured to address the challenges and goals of prior epochs, and most of our tools still reflect and support those old habits. Our current technologies and material culture impede rather than enable our ability to live appropriately. We must mindfully design new materialities that foster inclusive, innovative, and reflective societies in a changing world.

M-iti aims to step into the new millennium by developing tools, systems, and techniques better suited to address its challenges. In particular: the distribution and use of natural resources, the societal and personal use of energy, global inequality of resources and opportunities, and the relationship of production and consumption all require serious reform. Reducing inequalities and social exclusion in Europe and internationally, overcoming the economic and financial crisis, and tackling unemployment require new ideas, strategies, and governance structures that bring opportunities to the young and creative generations and leverage the reflective European society to position Europe as a global actor.

The long-term vision of M-iti is an excellence centre of design for global change, aimed at identifying fresh approaches to the design of new technologies, new means of production, and new political configurations that are better suited to the global challenges of this century. Some of these challenges might be unique to Europe but others are shared by communities around the world. By projecting M-iti into the future of challenge-based research we envision exploring, designing for, and at times even anticipating global critical situations and opportunities for change. Strategically placed at the intersection of the American, European and



a sides of the Atlantic, M-iti is poised to play a crucial role in connecting, exchanging, and contributing to the innovation across the continents with which Portugal enjoys a strong relationship. As a multi-disciplinary Centre combining natural and social scientists, engineers, humanists, designers, and artists, its output will be focused on the area of applied science and human-centred technology. We will develop and share methods, working proofs, and "spin-off enterprises" focused on rebalancing the relationship of people and environment, production and consumption, the local and the global.

#### Strategy and Research Infrastructure

M-iti will serve as a hub for a global network to ideate, co-create, test, and document new forms of local/global production for global challenges. The goal of these efforts is not just the generation of new understanding of problem solving in an era of cheap information, but also tangible proofs of organisation through the creation of enterprises that embody and engage in that problem solving. Our research will result in human/animal/technical networked systems that are both research platforms and, more importantly, working examples of global coordination and problem solving.

M-iti's research focus will be on developing techniques and technologies that:

• investigate how nature and communities are affected by - and technologies that can empower them to confront - natural, political, and economic global pressures - in particular supporting the transition to reliable, sustainable and competitive energy systems. This will lead to a climate change resilient economy and society and help to explore the opportunities related to aquatic living and marine research and bio-based industries for the blue economy; • invent new design techniques to best respond to, or shepherd, complex and interrelated natural, social, and cultural global issues - that could help repositioning Europe in a changing world through new ideas, strategies and governance structures that integrate and inspire the younger and more creative generations leveraging Europe's cultural heritage to build a more inclusive, innovative and reflexive society;

• develop personal, business, scientific, and civic technological platforms for better understanding and situating actions, choices, and self in a global perspective - enabling the transition towards a green economy and society through eco-innovation and developing comprehensive and sustained global environmental observation and information systems.

M-iti will develop a unique research infrastructure that leverages the identification of demonstration of breakthrough research and design situated outside of global urban capitals, including active research in, and with, the global south for which Madeira is one of the outposts for transnational EU cooperation. This research infrastructure will enable exploration of Future Coastal Urban Environments which have a particular relationship with the oceans by advancing sensing, communication, tracking and monitoring solutions to increase our understanding of the underlying resources and ecosystems. This test bed will explore the potential of healthy marine ecosystems to provide a range of services with high potential social and economic benefits for the blue economy. The test bed will focus on building a symbiotic relationship between cyber-physical and ecological systems thus becoming a platform for scientific collaboration between researchers interested in biodiversity, climate change, engineering, material science and design.

## MESSAGE FROM NUNO NUNES

President of the Board



M-iti is one of the leading research centers in Portugal focusing on human-computer interaction and design innovation, and with the end of 2016 we are closing our seventh year as a fully established research institute.

Our strategic priority has always been to attract the best talent to Madeira, and our numbers have consequently been increasing year after year: in 2016 M-iti was associated with 27 integrated Larsys members, 26 researchers (including 37 PhD students), 24 Summer interns, 16 international Masters students, all supported by a dedicated group of seven staff members. This vibrant and enthusiastic community comes from 16 different nationalities from four continents. We welcome these people recognizing that excellence, in particular in one of the most remote regions of Europe, can only be achieved if you attract and retain the best.

This effort was recognised at the beginning of 2016 when M-iti was awarded an Excellent rating by FCT.

In 2016 we also increased our research portfolio, which surpassed 1,7M€, creating breakthrough opportunities to impact the widespread community of M-iti and Madeira. This included winning the M-iti Excel project, a €2.6m grant over 3 years to help build M-iti's infrastructure, partnerships and complement the ERA Chair grant.

To support and reinforce this growth we have also applied to the largest Horizon 2020 Teaming grant with University College London to start a new research institute in technology and design for sustainable development. If funded REACT:OR will be a game changer for M-iti but also for Madeira and LARSYS as a whole. We are also starting many new research projects and initiatives, which will reinforce our ambition of becoming a world-class interdisciplinary excellence center conducting research in the intersections of people, technology and design.

In 2016 we continued our new collaboration with two PhD FCT programs together with Tecnico from U. Lisbon (in networked interactive cyberphysical systems) and with U. Porto and U. Nova Lisbon (in Digital Media). These new programs reinforce M-iti as a "hub" between the US and Europe with connections with mainland Portugal and in 2016 with a new partnership with UCL in London.

We attracted many researchers, students and visitors through our numerous talks from invited speakers (Speaking Series and IP21 initiatives) and opened our work to undergraduates through UPOP, a Summer internship programme which enabled 25 students to work with M-iti Faculty over 3 months.

Finally, 2016 was the year of numerous visits to our institute, including the visit of the South African Government, the Israeli Government and the EU Commissioner for Research and Development. The EU Commissioner for Research and Development, Carlos Moedas, was very impressed by M-iti research, claiming "This is one of the most inspired things I've seen in my life" about the ROotlo project.



# The success of M-iti relies on the hard work and creativity of our dedicated community of researchers, students and staff. We have been recognised as an excellence center in design for global change and we will continue to strive to maintain this excellence. For this we want to leverage our location because global changes often happen outside of or at the periphery of the EU, away from the decision centers where the excellence in research is concentrated. M-iti is particularly well positioned to showcase the advantages of research and design situated outside of global capitals, including active research in and with the global south

## VISIBILITY



### "This is one of the most inspired things I've seen in my life"

Carlos Moedas during his visit

The European Commissioner for Research, Science and Innovation, Carlos Moedas, visited M-iti, on April 21, 2016. During the visit, there was a showcase of M-iti's projects, where Mr. Carlos Moedas liaised with M-iti's researchers, students, and faculty.



Mrs Tzipora Rimon, **the Israeli Ambassador to Portugal**, visited M-iti, on April 12, 2016. During the visit, there was a showcase of M-iti's projects, where Mrs Tzipora Rimon liaised with M-iti's researchers, students, and faculty.







The Minister of Education of the Free State from the Republic of South Africa, Mr Pule Herbert Isak Makgoe, visited M-iti. The visit was organised by the Regional Secretary of Education. Along came key people from the Free State academia and engineering trainees working in Madeira.

## FOUNDING MEMBERS

M-iti was founded in 2010 as an outgrowth of the Carnegie Mellon International partnership. Its founding members are the University of Madeira (UMa), Madeira Tecnopolo S.A. (MT) and Carnegie Mellon University (CMU). M-iti conducts research and provides graduate training in the domain of human-computer interaction, contributing to the development of the field and addressing/engaging in important scientific and technological challenges that are both relevant to society and have significant economic impact.



International Partnerships



## **LARSyS** - Associate Laboratory of Robotics and Engineering Systems

LARSyS's ultimate goal is to be actively involved in a new generation of research questions and advanced training in Robotics and Engineering Systems, leading to new frontiers of knowledge and the training of skilled human resources at the best international level. Our researchers aim to create and develop new knowl-edge bases with impact in ocean, urban, aeronautic and space, biomedical, and future working environments, as well as to stimulate new industry-science relations and deepen our understanding of network science.

To achieve this strategy and vision, LARSyS supports its activities in the competences available in its four research centers (i.e., ISR@IST, IN+@IST, MARETEC@ IST, and M-iti@UMadeira). These centers provide specific areas of expertise in their main domains of knowledge through ten Laboratories and/or Groups, affiliating researchers that conduct specialized work in their main fields of expertise at an international level of excellence. Overall, they provide the necessary knowledge and experience to foster LARSyS scientific program.

On the top of that structure, the strategy of LARSyS is promoted and implemented through six Thematic Areas. They aim to explore new frontiers of knowledge driven by needs and markets as we envisage them today, making use of target objectives and linkages with end-users. They consider emerging themes under, on, above, in and beyond our daily human live.

Each Thematic Area has been defined together with a main target in a time horizon of 15 years (2030), without prejudice of involving other projects. They include five Areas of Application-driven Research and one area of Fundamentals. They provide a matrix-based form for the organization of LARSyS, facilitating networks of researchers from the various centers and groups to foster the exchange of ideas across disciplines and the exploration of new frontiers of knowledge in emerging themes.

The five Thematic Areas of Application-driven Research are as follows:

• OCEAN EXPLORATION and EXPLOITATION, relying on competences and human resources of DSORg (ISR/IST), MARETEC, LTPM (IN+/IST) and M-iti.

• URBAN SYSTEMS, relying on competences and human resources of SIPg (ISR/ IST), MARETEC, LIES (IN+/IST) and M-iti.

• AERONAUTIC and SPACE SYSTEMS, relying on competences and human resources of IRSg and DSORg (ISR/IST), MARETEC, LTCES and LTPM (IN+/IST) and M-iti.

• ENGINEERING FOR AND FROM THE LIFE SCIENCES, relying on competences and human resources of SIPg, IRSg, LASEEBg and VISLAB (ISR/IST), LTCES and LTPM (IN+/IST) and M-iti.

• COGNITIVE ROBOTS AND SYSTEMS FOR ASSISTED LIVING AND WORKING, relying on competences and human resources of VISLAB and IRSg (ISR/IST), LTPM (IN+/IST) and M-iti.

The Thematic Area of Fundamentals consider formal and informal networks of researchers, from various centers, aimed to explore new frontiers of knowledge in themes without any specific known application. They consider basic knowledge beyond our current applications. It is named as follows:

DISTRIBUTED INFORMATION PROCESSING AND DECISION MAKING, relying on competences and human resources of SIPg (ISR/IST), DSORg, IRSg (ISR/IST), MARETEC, LTPM (IN+/IST) and M-iti.









r{I

The key thrust of LARSyS activity will be threefold: research, advanced training, and outreach activities, including public service. For research and advanced training, LARSyS complements its internal multidisciplinary with external cooperation by networking with highly reputed research and academic institutions and industrial partners worldwide. To this effect, impetus will be given to the exchange of scientific personnel, participation in international projects, and hiring of exceptional PhD students and senior researchers. Special attention is given to the organization of summer schools and research internships.

Advanced training initiatives are at the center of LARSyS at the best international level and involve several international partnerships, as follows:

• MIT-Portugal Program, through its overall coordination and an active involvement of researchers in the areas of Sustainable Energy Systems (SES) and Engineering Design and Advanced Manufacturing (EDAM);

• Carnegie Mellon Portugal Program, through an active involvement of researchers in the areas of Electrical and Computer Engineering (ECE), Computer Science (CS), Human Computer Interaction (HCI) and Engineering and Public Policy (EPP);

• IST EPFL Program, Joint Doctoral Initiative in the area of Distributed and Cognitive Robotics involving Instituto Superior Técnico and École Politechnique Federal de Lausanne (EFPL).

• IRGC, International Risk Governance Council, through the coordination of IRGC-Portugal, which involves five Associate Laboratories in Portugal Outreach activities, including public service, is foreseen as one of the missions of LARSyS.

This takes the form of collaboration with public administration bodies, including governmental departments and local administrations, as well as with ONGs and, above all, basic and secondary schools and science centers.

Our target is to enhance collaboration with a diversified range of stakeholders to foster the dissemination of scientific knowledge and culture to the public at large. This has been particularly achieved by a strong involvement of LARSyS over the years in the Portuguese Ciência Viva program.

To achieve all these goals, the managing structure of LARSyS considers three complementing approaches: i) bottom-up; ii) middle-out; and iii) top-down. The bottom-up nature of LARSyS is promoted through its Scientific Council, which includes all doctorate researchers. It is aimed to examine and approve the annual plans and reports, and to define the Governance structure of LARSyS. It meets twice a year.

The middle-out managing structure of LARSyS is promoted through each of the ten Research Groups/Laboratories and the six Thematic Areas. Each of the ten groups has a Principal Investigator (PI), and each of the six Thematic Areas has a PI and a Management Committee.

In addition, the necessary top-down management of LARSyS is used for overall coordination. It lies on a coordinating Board of Directors with the responsibility of supervising and guiding the activities of the four participating R&D units. This Board is composed by the directors of the four R&D units involved and by the PIs of the ten Thematic Areas. The President of the Board of LARSyS coordinates the Board of Directors and is elected among its members. A small Executive Board, including the directors of the four R&D units involved, supports the President for the daily management of the activities resulting from the collaboration among the participant units and to guarantee its accurate fulfillment.

The activities of the LARSyS are followed yearly by an External Advisory and Review Board, consisting of national and international experts, as established by decision of the Scientific Council.

## RESEARCHERS

The researchers of M-iti organize themselves in research groups by scientific affinity and through association with funded research projects. Each research group has a leader (Principal Investigator), who is either the main person responsible for the funded project, or who is appointed to the role by senior members of the institute to cover specific research areas of direct interest to M-iti.



Arminda Lopes Research Fellow

PhD from Leeds Metropolitan University, U.K, currently a professor at Polytechnic Institute of Castelo Branco and her main research area is Human Computer Interaction, Research Methods Methodologies.



Bongkeum Jeong Research Fellow

PhD in Design Policy, Hongik University, Seoul. Post-Doc
Researcher in Design & HCI, Carnegie Mellon University, Pittsburgh.
Current interests lie in Policy Design for Value Added Enhancement of Visual Content Industry.



#### Chris Csikszentmihályi

ERA Chair & Scientific Director

PhD(hc) from Cornish College of the Arts, has been a professor at colleges, universities, and institutes, including Distinguished Visiting Professor of Art and Design Research at Parsons the New School for Design. He cofounded and directed the MIT Center for Future Civic Media.



#### Cláudia Silva Post-Doc Research Fellow

PhD in Digital Media from the New University of Lisbon within the context of the UT Austin-Portugal doctoral program. In 2016, Cláudia joined the Beanstalk team to work on a transmedia storytelling project.



David Aveiro

Assistant Professor

PhD in Computer Science and Information Systems Engineering from Instituto Superior Técnico of the Technical University of Lisbon. His teaching interests include organizational engineering, database management systems and decision support systems.



Deborah Castro Mariño

Post-Doctoral Researcher

PhD in Communication Studies from Autonomous University of Barcelona. Her main research interests lie in the fields of television studies, digital media, and transmedia storytelling.



Diogo cabral

Assistant Professor

Phd in Computer Science from New University of Lisbon (UNL). Focused on developing creativity support tools and interactions that foster and augment creativity for knowledge workers and artists, crossing Multimedia and HCI fields.



#### **Dulce Pacheco**

#### Postdoctoral Research Fellow

PhD in Psychology from University of Madeira. Main research interests are cooperative work, collaborative learning, multidisciplinary studies, creativity, and leadership.



### Elise Leclerc

Post-Graduate Degree in English Linguistics from the University of Sorbonne Nouvelle and Masters Degree in European Affairs (Paris). Previously Lecturer in English Linguistics in la Sorbonne Nouvelle, Associate Director at Teaching Leaders (London).



#### Evangelos Karapanos

**Assistant Professor** 

PhD in Human-Computer Interaction from Eindhoven University of Technology. Focuses on the design and evaluation of pervasive computing systems with a focus on the experiential and social consequences of their adoption.



Filipe Quintal Postdoctoral Research Fellow

Ph.D. from University of Madeira (Exploring the dimensions of ecofeedback in the wild). Main research interest in eco-feedback, energy, sustainability and how all these fields interaction with the IoT movement



James Auger Associate Professor

PhD in Design from the Royal College of Art (UK), Auger is a designer, researcher and lecturer whose work examines the social, cultural and personal impact of technology and the products that exist as a result of its development and application.



Jesús Ibañez Research Fellow

PhD in Computer Science from University of Murcia, Spain. Interests are in intelligent user interfaces, affective computing, intelligent systems, interaction with virtual environments, virtual reality.



José Luís Silva Assistant Professor

Ph.D. in Computer Science from the Portuguese MAP-i Consortium (University of Minho, University of Aveiro and University of Porto) and postDoc at the University of Toulouse. His main research interests lies upon Software Engineering, Human-Computer Interaction, Ubiquitous Computing and Virtual Environments.



José Nocera Affiliate Associate Professor

PhD in Computing from The Open University, UK. Chair for UNESCO IFIP TC 13.8 working group in Interaction Design for International Development as well as Chair for the British Computer Society Sociotechnical Specialist Group. His interests lie in the sociotechnical and cultural aspects of systems design, development and use.



Julian Hanna Assistant Professor

PhD in English Literature from University of Glasgow. With interests in literature and technology, digital humanities, islands and futures studies.



#### **Karolina Baras**

**Assistant Professor** 

PhD in Technologies and Information Systems from University of Minho. Her research interests are ubiquitous computing, sensing well-being and Internet of things.



### Lina Brito

Assistant Professor

PhD in Telecommunication systems and eletrotecnical engineering from the University of Madeira. Focus are on Wireless Sensor Networks and IoT (Internet of Things) applied to smart cities and citizens' well-being.



Lucas Pereira Research Fellow

PhD in Computer Science from U. Madeira. Interests lie in the multidisciplinary field of data science, including machine-learning, and intelligent user interfaces. Co-founded prsma.com, a M-iti spin-off in sustainable energy R&D.



Luísa Soares Assistant Professor

PhD in Psychology from Universitat Ramon Llull. Assistant professor of Psychology at University of Madeira, Center of Arts and Humanties. Researcher at University of Porto, Psychology Research Center and at Larsys in M-iti.



Mariacristina Sciannamblo

Postdoctoral Research Fellow

PhD in Sociology and Applied Social Sciences from University of Rome Sapienza. With interests in Participatory design, computer supported cooperative work, science and technology studies, feminist technoscience studies.



Marisa Cohn Research Fellow

Phd in Information and Computer Science. Collaborates with the ERA Chair team in developing new and existing projects. Main research in Human Computer Interaction, Anthropology, and Science and Technology Studies for the study of sociotechnical systems.



Marko Radeta Postdoctoral Research Fellow

Marko is the CEO of TIGERWHALE and is a Cross-Cultural Ambassador from UNESCO Club Sorbonne. He holds a PhD in Interaction Design and BSc in Computer Engineering. His research area is Emotional-aware Interaction Design and Development.



Mary Amasia Postdoctoral Research Fellow

PhD in Chemical and Biochemical Engineering from the University of California, and a B.S. in Chemical Engineering and Materials Science from Columbia University. Has an extensive experience in leading international multi-team collaborations with industrial partners.



Mary Barreto Postdoctoral Research Fellow

PhD in Human-Computer Interaction from the University of Madeira. Conducts postdoctoral research studies in the following areas environmental sustainability, energy, eco-feedback, behavior change and community psychology.



#### Maurizio Teli Research Fellow

PhD in Sociology and Social Research. Has worked in or coordinatedseveral EU funded projects. He is now focusing on the design of digital technologies nurturing of the common, in particular as Research and Innovation Coordinator of the PIE News H2020 project.



#### Monchu Chen Research Fellow

Phd in Human-Computer Interaction from Carnegie Mellon University. Main research is on visual attention in interaction design, peripheral visual design, information visualization.



Mónica Cameirão Assistant Professor

Postdoctoral researcher with a PhD in ICT and Audiovisual Media. Involved in the development and clinical assessment of pilot interactive technologies for neurorehabilitation.



Mónica Mendes Research Fellow

PhD in Digital Media from New U. Lisbon / UT Austin|Portugal Program. Assistant professor at U. Lisbon, designer and media artist focused in art and interactivity for environmental sustainability.



Morgado Dias Assistant Professor

PhD in Electrical Engineering from University of Aveiro. Current research interests are: Artificial Neural Networks, Field Programmable Gate Arrays, Sleep Monitoring and Renewable Energy. Director of the PhD program in Automation and Instrumentation.



#### Nuno Correia

#### Assistant professor

Researcher, artist and designer. Interested in interactive multisensorial experiences. PhD in new media from Aalto University. Since 2000, he has been teaching and conducting research in Portugal, Finland, Estonia and the UK. As artist, he has presented work in more than 20 countries. He has worked in design consultancy Fjord.



**Nuno Nunes** Full Professor at Técnico - U. Lisbon

Full Professor at Techico - U. Lisbon

Habilitation and PhD in Computer Science from U. Porto and U. Madeira. Nuno's research interests lie in the application of models to software, system and service design in particular for the domains of environmental sustainability and participatory culture.



Olga Lyra Research Fellow

PhD in Inclusive Education from University of CologneEducational researcher with interests in persuasive technologies for educational and social inclusion.



Paulo Lobo Assistant Professor

PhD in the field of analysis and design of civil engineering structures. With interests in seismic protection of structures with semi-active control devices, energy performance of buildings, rehabilitation centered on energy performance, and integration of energy production technology.



Pedro Campos Assistant Professor

PhD in Human-Computer Interaction, from University of Madeira Research interests lie upon Interaction Design, Augmented Reality, Agile Software Development Methods, Natural Interaction for Modeling and Inter- action Design Tools.



Peter Lyle Postdoctoral Research Fellow

PhD in the School of Design at Queensland University of Technology. With interests in computer science, interaction design and urban informatics, with a focus on communities.



Sergi Bermudez Assistant Professor

PhD from the Swiss Federal Institute of Technology Zürich (ETHZ). Main research interests lies in neurorehabilitation systems, interactive technologies and robots.



**Shujoy Chakraborty** 

Assistant Professor

PhD in Design (product semantics) from Politecnico Di Milano. Currently teaches courses in design for interactive media (DMI), design for pleasurable user experiences, theory and process of design, product development, form studies, modeling techniques, product design drawing, and 3D printing in UMa.



Simone Ashby

**Assistant Professor** 

PhD in Computer Science and Informatics from University College Dublin. Main research interests lies in Mobile-based speech and language technologies for development (SLT4D), computational phonology, acoustic phonetics, speech synthesis, adaptive speech.



#### Sónia Matos Assistant Professor

PhD from Goldsmiths College, University of London (U.K). Currently an Associate Research Faculty at M-iti as well as a lecturer at the School of Design, University of Edinburgh. Her main research areas are Interface Design and User Experience.



Valentina Nisi Assistant Professor

PhD in Interactive Location Based Narrative from Trinity College, Dublin. Research focuses on designing and producing digitally mediated experiences in real spaces, merging architecture, context and landscape.



Yoram Chisik Assistant Professor

Phd in Communication Design from the University of Baltimore. Digital Media researcher that explores the nature and meaning of technological interactions in the digital age.

Vice-President

President

Program Director

## STRATEGIC AMBITIONS



Establish M-iti as an active player in the European Research Area by building an experienced partnering network of European excellence centers that will assist in strengthening our research capacity through know-how exchange, infrastructure setup, EU funding access and brain-drain prevention.

#### Human Resources

Reach distinctive and critical human capital in interactive technologies by overcoming the fragmentation of competences (typically driven by academic and not research requirements) that is currently straining M-iti's existing human resources.

#### Networking

Overcome the brain drain by recruiting high quality experienced researchers, engineers and established scientists, and promoting free exchange of knowledge and people within and across the partner network.

#### **Critical Technical Practice Lab**

Improve the innovation performance by creating a unique research infrastructure based on an open innovation model that leverages Madeira as an international living lab for testing innovative interactive technologies and their social impacts.

#### **Strategic Planning**

Focus M-iti research strategy in key application domains that correspond to important societal challenges aligned with the ERA strategic planning: entertainment and assistive technologies, creative media and digital culture, and sustainability for smart cities.

#### **Intellectual Property**

Substantially improve the RTD indicators of the Autonomous Region of Madeira and contribute to changing the economic and development paradigm, which is presently under enormous pressure due to the financial crisis.

#### **Startups and Spin-Offs**

Boost the potential of M-iti to generate innovative ideas that can be turned into new marketable interactive systems and services through the attraction of industry and the generation of startups and spin-offs.

#### **Development Paradigm**

Enhance the use of generated knowledge through instituting an effective strategy for managing intellectual property.



#### SWOT ANALYSIS

A SWOT analysis portrays M-iti's aim to develop a single strong focus and vision exploit that can be communicated as an umbrella vision stating a research agenda to which all members of the institute can contribute and collaborate in more group-oriented projects, the focus and vision exploits the specific characteristics of Madeira being an island and the local geographical expertise.

### STRENGTHS

- High potential research faculty
- Institutional support and strategic alignment
- International connections and high quality graduate education
- Attractiveness and high quality of life in Madeira
- Cooperation with industry
- Strong leadership
- Alignment with Madeira RIS3
- Completed the hiring of ERA Chair's R&D team

### **OPPORTUNITIES**

- Increased importance of HCI and design innovation in ICT
- Increased relevance for ERA ICT challenges
- Agility and empowerment of young research team
- Industry demand for design thinking
- Lower costs of research and availability of talent
- Increasing entrepreneurship mindset of our Researchers



### WEAKNESSES

- Limited participation in the ERA
- Low critical mass, visibility and reputation
- Lack of in-house and large scale deployment equipment
- Lack of innovation, entrepreneurship and intellectual property management



### THREATS

- Economic downturn
- Brain drain
- Competition to hire talented researchers
- Dependency from National research funds
- Internal resistance
- Lack of career development opportunities

## FUNDING SOURCES



## FOSTERING RESEARCH



Currently M-iti is involved in 10 research projects involving a total funding of 1.202.349,18 €. Our current project portfolio spans the areas of neuro-rehabilitation, energy, digital culture and human-robot interaction.



## PIE NEWS

Start: 2016 Finish: 2019

#### Poverty, Income, and Employment News

http://pienews.eu

The overall ambition of the PIE News project is to foster the emergence of commonfare as an alternative economic model to fight poverty, a condition affecting some 25% of the European population. Commonfare is a new collaborative form of welfare provision based on equitable governance and grassroots democracy. It entails the involvement of diverse stakeholders to facilitate the bottom-up arousal of collective practices tackling the needs of the new poor (precarious workers, working poor, NEETs, people left behind by safety nets). The consortium will achieve this goal through a Collective Awareness Platform (CAPS) which (a) informs people about existing welfare state provisions, (b) provides them with the means to share good practices on how to handle poverty-related issues, and (c) supports their abilities to network and to sustain real-life value.

The project pioneers commonfare as a new social innovation goal by raising collective awareness on the threats connected to Poverty, lack of Income, and unEmployment ('PIE conditions'), thus empowering the new poor and enabling the relevant stakeholders, e.g. polivcy makers, to tackle such threats more effectively. Three pilot actions (in Croatia, Italy, and the Netherlands) will drive the design and implementation of the PIE News project, triggering a public engagement process.





Coordinator Universita Degli Studi Di Trento (Italy)

#### Researchers

Maurizio Teli, Mariacristina Sciannamblo, Peter Lyle, Daniela Rodrigues

#### Partners

Universita Degli Studi Di Trento (italia), Associazione Basic Income Network Italia (Italy), Udruge Centar Za Mirovne Studije (Croatia), Museu da Crise (Netherlands), dyne. org (Netherlands), Createnet - Center for Research and Telecommunication Experimentation for Networked Communities (Italy), Abertay University (United Kingdom), M-iti - Madeira Interactive Technologies Institute -Associacao (Portugal)

#### Funded by

European Commission H2020, topic ICT-10-2015 - Collective Awareness Platforms for Sustainability and Social Innovation Budget

€1 994 667

## **MITIEXCELL**

Start: 2015 Finish: 2018

### Improving Miti's Excellence in R&D and leveraging international

MITIExcell will Improve M-iti's capacity in research and technological development, expanding human potential and promoting a critical mass of researchers with interdisciplinary experience in human computer interaction (HCI) seeking to investigate and develop humanistic and technological innovative solutions, that take advantage of outermost geographical position of Madeira to promote social justice, environmental sustainability and motivation of communities by new technologies and social networks. It will also work on tools to analyze trends in tourism and marketing, complemented with transmedia experience. The three year project will be leveraging international partnerships with Carnegie Mellon University, University of Texas at Austin and University College London, in the R&D aspect.



#### Coordinator

Nuno Nunes (M-iti) Valentina Nisi (M-iti)

### 10

Researchers

Ângela Barbosa, Cátia Jardim, Cláudia Silva, Deborah Castro Mariño , Dulce Pacheco, Evandro Amaro and Sónia Matos

#### Partners

M-iti, Carnegie Mellon University, University of Texas at Austin and University College London Funded by Madeira 1420 (IDR) Budget € 1 642 189.52



#### Selected Publications & Exhibitions

P Bala, M Dionisio, V Nisi, N Nunes - IVRUX: A Tool for Analyzing Immersive Narratives in Virtual Reality - Interactive Storytelling: 9th International Conference Interactive Digital Storytelling, ICIDS 2016, Los Angeles, CA, USA, November 15–18, 2016, Proceedings 9

M Dionisio, V Nisi, N Nunes, P Bala - Transmedia Storytelling for Exposing Natural Capital and Promoting Ecotourism - Interactive Storytelling: 9th International Conference on Interactive Digital Storytelling, ICIDS 2016, Los Angeles, CA, USA, November 15–18, 2016, Proceedings 9



Start: 2015 Finish: 2018

### Tools to analyze trends in tourism and marketing complemented with transmedia experience

http://beanstalk.m-iti.org/

Beanstalk is a multidisciplinary project based at the Madeira Interactive Technologies Institute, in partnership with the Associação de Promoção da Madeira (AP Madeira). Our goal is to design and prototype new analytics tools to analyse Madeiran trends in tourism and marketing and further complement this with a transmedia experience that can potentially stimulate local economy.

This project is divided into two components – the first of which focuses on the creation of a platform where it is possible to keep track of the flow of people in Madeira. The second component consists in the development of a location based storytelling experience, using everyday mobile devices, that capitalizes on the previously collected data.



#### Coordinators

Valentina Nisi Nuno Nunes (M-iti) 10

#### Researchers

Ana Bettencourt, Bonkeum Jeong, Carlota Sousa, Dina Dionisio, Dinarte Vasconcelos, Duarte Teixeira, Mara Dionísio, Marko Radeta, Miguel Ribeiro, Paulo Bala, Sandra Olim, and Rui Trindade

#### Partners

M-iti and Madeira Promotion Bureau (AP Madeira) Funded by MADEIRA14-20 FEDER Madeira Promotion Bureau (AP Madeira)

#### Budget

€369,854.50



#### Selected Publications & Exhibitions

M., Dionisio, Nisi, V., Nunes, N., Bala, P., DreamScope: Mobile Virtual Reality Interface demonstration at ICIDS 2016, International Conference of interactive Digital Storytelling, 14-18 November, Los Angeles, USA.



Start: 2014 Finish: 2018

#### Augmented Human Assistance

http://neurorehabilitation.m-iti.org/lab/aha-augmented-human-assistance/

The Augmented Human Assistant project is an ambitious scientific and technological endeavour that aims at providing solutions to alleviate the current and upcoming social, psychological and economical burden related to sedentarism and aging related morbidities. It brings together innovation and research in a cross-disciplinary consortium with expertise in such diverse areas such as Human Functioning and Performance, Augmented Reality (AR) technologies, serious games for health, physiological signal acquisition systems, computer vision systems, robot navigation and intelligent scene assessment.

The integrated AHA system will be composed by a mobile robotic platform with advances in perception, navigation and control skills; leveraged with an extended set of sensors for human sensing and emotional state estimation; serious gaming abilities through novel augmented reality methods yielding extended feedback modalities for physical exercising and motor rehabilitation; and a virtual coach system with technologies and techniques that assist and encourage users while they perform rehabilitation exercises, and instills better compliance with their prescribed exercise regimen. Such platform will define a new class of assistive devices for healthy, elderly and patient users, allowing new modalities of interaction and engagement not yet available in the state-of-the-art.

The technologies and techniques that we are proposing in this project are expected to lead to better adherence to training/rehabilitation, hence better and faster outcomes. Specifically, we are proposing personalization technologies that will adapt the physical training uniquely to each user and each exercise session in the context of an overall rehabilitation process. We will deploy our technologies in end user trials that explore various combinations of technology and user engagement.



Sergi Bermudez i Badia (M-iti) Mónica Cameirão (M-iti) Rúbio Gouveia



Researchers

Afonso Gonçalves, Diogo Cro, Filipa Nóbrega, John Muñoz, José Camacho, Min Hun Lee, Pedro Rodrigues and Teresa Paulino

Partners	Funded by	Budget				
M-iti, IST-ID, CMU, FMH, YDreams, PLUX	FCT, CMUP-ERI/ HCI/0046/2013	€180 220				



#### Selected Publications & Exhibitions

Alves, J., A. Vourvopoulos, A. Bernardino, and S. Bermudez I Badia, "Eye Gaze Correlates of Motor Impairment in VR Observation of Motor Actions", Methods Inf Med, 2016

Cameirão, M. S., A. Smailagic, G. Miao, and D. P. Siewiorek, "Coaching or gaming? Implications of strategy choice for home based stroke rehabilitation." Journal of NeuroEngineering and Rehabilitation, 13(1), 1, 2016.

Gonçalves, A. and Cameirão, M., Evaluating Body Tracking Interaction in Floor Projection Displays with an Elderly Population, in Proceedings of the 3rd International Conference on Physiological Computing Systems (PhyCS 2016), Lisbon, Portugal, 2016

Muñoz, J., E. M., Cameirao, M. S., Paulino, T., i Badia, S. B., & Rubio, E. (2016, September). Modulation of Physiological Responses and Activity Levels during Exergame Experiences. In Games and Virtual Worlds for Serious Applications (VS-Games), 2016 8th International Conference on (pp. 1-8). IEEE.

Muñoz, J., Gonçalves, A., Vieira, T., Cró, D., Chisik, Y. and Bermúdez i Badia, S., Space Connection – A Multiplayer Collaborative Biofeedback Game to Promote Empathy in Teenagers: A Feasibility Study, in Proceedings of the 3rd International Conference on Physiological Computing Systems (PhyCS 2016), Lisbon, Portugal, 2016



Start: 2014 Finish: 2019

#### Enhancing the Research and Innovation Potential of M-iti through Human-Computer Interaction and Design Innovation

http://erachair.m-iti.org

The goal of this project is to expand the research and innovation potential of the Madeira Interactive Technologies Institute (M-iti) of the University of Madeira through the hiring of an ERA Chair in Human-Computer Interaction (HCI) and Design Innovation (DI). The LEAPFROG HCI-DI aims at unlocking the full potential of interdisciplinary research in interactive technologies, while strengthening innovation and knowledge transfer activities in close collaboration with local and global industrial partners and contributing to the smart specialization strategy of Madeira.



#### Selected Publications & Exhibitions

Auger, James. "Speculative Futures." Presented at the PLUNC 2016 - Festival de Artes Digitais e Novos Media, Lisboa, Portugal, 29 September - 02 October 2016. Invited Lecture

Auger, James. "The Narrow Path: constraints and counter-constraints." Presented at the Resonate 2016, Belgrade, Serbia, April 2016. Invited Lecture

Csíkszentmihályi, Christopher. "Art, Data, and Platform Design for Social Change." Presented at Institute for Advanced Study Big Data Centre, Köszeg, Hungary, 28 September 2016. Invited Lecture

Csíkszentmihályi, Christopher. "Design on the Barricades." Presented at the 14th PDC (Participatory Design Conference), Aarhus, Denmark, 15-19 August 2016. Keynote

Csíkszentmihályi, Christopher. "Exploring Mobility the World in Flux." Presented at the International Development Conference 2016, Newcastle, UK, 20-21 February 2016. Keynote

Hakken, David, Maurizio Teli and Barbara Andrews. Beyond Capital: Values, Commons, Computing, and the Search for a Viable Future. New York, NY: Routledge, 2016.

Hanna, Julian and Simone Ashby. "From Design Fiction to Future Models of Community Building and Civic Engagement," Proceedings of the 9th NordiCHI Conference on Human-Computer Interaction, ACM, Gothenburg, Sweden, 2016.

Rodrigues, Gemma and Leora Maltz-Leca. World Share: Installations by Pascale Marthine Tayou. University of Washington Press, 2016.

Teli, Maurizio, Andrea Di Fiore, and Vincenzo D'Andrea. "Computing and the Common. An Empirical Case of Participatory Design Today," Proceedings of the 14th Participatory Design Conference: Full papers - Volume 1, pp. 1-10, 2016.



Start: 2012 Finish: 2016

#### Neuroscience Based Interactive Systems for Motor Rehabilitation

http://neurorehabilitation.m-iti.org

RehabNet is a highly interdisciplinary project that addresses several research areas including: A) clinical research; B) robotics, C) Human Computer Interaction (HCI); and D) neurofeedback and neuroscience.

RehabNet proposes to develop a novel rehabilitation paradigm, based on low cost technology that can deliver motor rehabilitation for ALL patients, ANYWHERE they are.

This is achieved following 2 main research objectives: To develop a novel upperlimb rehabilitation system that allows us not only to effectively train motor function, but to monitor and to collect extensive synchronized brain activity and behavioral data on patient performance during the recovery process. This unique system will provide us extremely valuable data that will allow us to propose a generalization of it to a neurofeedback paradigm that can eventually be used by all stroke patients, either at home or in the clinic.

This is achieved following 2 main research objectives: To develop a novel upperlimb rehabilitation system that allows us not only to effectively train motor function, but to monitor and to collect extensive synchronized brain activity and behavioral data on patient performance during the recovery process. This unique system will provide us extremely valuable data that will allow us to propose a generalization of it to a neurofeedback paradigm that can eventually be used by all stroke patients, either at home or in the clinic.





#### Researchers

Ana Faria, André Ferreira, Athanasios Vourvopoulos, Daniel Camacho, Fábio Pereira, Filipa Nóbrega, John Sousa, Mónica Cameirão, Pedro Rodrigues and Teresa Paulino.

Partners	Funded by	Budget
M-iti, CMU, Myomo Inc. and the Hospital of Funchal	FP7- PEOPLE 2011- CIG	€2 637 190



#### Selected Publications & Exhibitions

Alves, J., A. Vourvopoulos, A. Bernardino, and S. Bermudez I Badia, "Eye Gaze Correlates of Motor Impairment in VR Observation of Motor Actions", Methods Inf Med, 2016

A. Gonçalves and M. Cameirão, Evaluating Body Tracking Interaction in Floor Projection Displays with an Elderly Population, in Proceedings of the 3rd International Conference on Physiological Computing Systems (PhyCS 2016), Lisbon, Portugal, 2016

J. Muñoz, A. Gonçalves, T. Vieira, D. Cró, Y. Chisik and S. Bermúdez i Badia, Space Connection – A Multiplayer Collaborative Biofeedback Game to Promote Empathy in Teenagers: A Feasibility Study, in Proceedings of the 3rd International Conference on Physiological Computing Systems (PhyCS 2016), Lisbon, Portugal, 2016

Cardona, J. E. M., Cameirao, M. S., Paulino, T., i Badia, S. B., & Rubio, E. (2016, September). Modulation of Physiological Responses and Activity Levels during Exergame Experiences. In Games and Virtual Worlds for Serious Applications (VS-Games), 2016 8th International Conference on (pp. 1-8). IEEE.

## EDUCATIONAL PROGRAMS



M-iti is active in research and education in the areas of Human-Computer Interaction, Informatics Engineering and Entertainment Technology.
In all three domains M-iti offers high-quality programs with our partners, University of Madeira, University of Lisbon, University of Porto, New University of Lisbon, University of Texas in Austin and Carnegie Mellon University.



	2010/11	20	11/12	201	2/13	201	3714	201	4/15	201	5716	2016	6717
DEI PhD in Computer Engineering		-	10		22		23		20		10		18
PhD in Networked Interactive Cyber Physical Systems	<b>1</b>	1	16		22	_	25		26		10		10
PDMD PhD in Digital Media	_	_		_		_		_			, 8		9
Master in Human-Computer Interaction	-			_				_			7		10
Bridging-program on Human Aspects of Technology MHCI	2	9	28		23		18		15		24		30
PAHT	-		9		7	_			7		14	_	



#### Professional Master in Human-Computer Interaction

www.m-iti.org/mhci

A dual degree program, taught entirely in English, in collaboration with Carnegie Mellon University, Pittsburgh, USA. This 16-month international program aims to attract students from any continent and leads to two degrees awarded by Carnegie Mellon University and the University of Madeira.

The Human-Computer Interaction (HCI) Masters program prepares students to participate in the design and implementation of software systems that can be used easily, effectively, and enjoyably. With a Masters in HCI, students are prepared to contribute in the multi-disciplinary teams that typically construct software systems. Students gain a broad understanding of techniques for building successful user interfaces, design principles that make user interfaces visually clear and appealing, techniques for identifying a softwares needs and its success, and understanding the people and organizations that will use the systems.

The MHCI program has an interdisciplinary orientation, with faculty and students from Computer Science, Design and Behavioral Sciences. The program takes three semesters to complete, one semester at Carnegie Mellon and the other two at M-iti (University of Madeira).

The MHCI Project course is an eight-month long capstone project for the Masters of HCI program and integrates the topics that the students have learned in their coursework into one "end-to-end" experience. Students work in interdisciplinary teams with an industry sponsor to produce a working prototype that serves as a proof of concept of a new service or product idea.



Number of students enroled in 2016

### PROJECTS

### TEAM ELEMENTARY

Andrew McHugh, Andrew Novotny, Jae Won Kim and Joel Rodrigues



Team Elementary worked with Exictos, to understand how people interact with money so they could build a contextually-aware consumer banking experience.



Exictos is a company that specializes in Information Technology and development of software solutions for the banking, insurance, retail, and utilities sectors.

http://elementary.m-iti.org

www.exictos.com

### PROJECTS

### TEAM EXPLORA

Ayla Walsh, Gian Spicci, Jason Eaglin, Sherry Wang



Team Explora worked with the tourism company More4You to build an enhanced experience for tourists visiting their website visitingmadeira.com.

The team sought to understand the motivations and needs of tourists to design an innovative experience that will anticipate and exceed expectations through a comprehensive set of digital and offline tools.

http://explora.m-iti.org



More4You is a Portugal based tour operator specializing in leisure travel experiences and providing comprehensive tourist services in Madeira.

www.visitingmadeira.com

### TEAM METIS

Helen Li, Iris Wu, Prerna Pradeep and Will Miao



Team Metis worked with Collab, to understand how existing technology aids supervisors' decision-making process, so that we can improve the solution's clarity and efficiency for managing floor operations and communicating performance.

http://metis.m-iti.org



Collab is a European Multimedia Contact Center Provider with a strong heritage of innovation and has been delivering award-winning platforms to businesses of all sizes around the globe for 10+ years. Collab is part of a larger IT corporation Novabase, currently with over 2500 employees in more than 40 countries and annual turnover of approx. 260 Million USD (2015).

www.collab.com/en

### TEAM PEARL COLLECTIVE

Abdi Musse, Rachel Ng, Ryan Huber and Tiffany Wang



Team Pearl Collective worked with Porto Bay Hotels & Resorts .The team studied hospitality services in order to understand how guest needs are identified and addressed so that they can create a more personalized experience for each individual guest during their stay.

http://pearlcollective.m-iti.org/



The PortoBay group is a hotel chain comprising 12 hotels: 9 in Portugal (6 on the island of Madeira, 1 in the Algarve and 2 in Lisbon) and 3 in Brazil (Rio de Janeiro, Búzios and São Paulo), which among them have a total of 3050 beds in the 4-star and 5-star market.

www.portobay.com

#### Bridging-program on Human Aspects of Technology

www.m-iti.org/baht

This is a one-year bridging program, in which students have the opportunity to work in multidisciplinary and multicultural teams. This graduate program is extremely valuable because of the different areas of knowledge that students obtain in the field of Human-Computer Interaction. Students accepted for this program usually come from different areas such as design, art, communication, social sciences, etc.



Applications closed



Phd in Computer Science

www.m-iti.org/node/2408

This is a 2 year full-time PhD in Computer Science Program directed by UMa (Universidade da Madeira) in partnership with M-ITI, with the primary goal of contributing to graduate highly qualified professionals and researchers in the area of computer science.

In this PhD program, students have the chance to be co-supervised and oriented by our researchers and faculty members, also having the chance to work on their research subjects and also do several of the program courses at M-ITI's facilities contributing for improving theirs skills in the areas of Human-Computer Interaction and Entertainment Technology.

The Program accepts students from ther areas of computer science, software and informatics engineering, and will prepare them to conduct autonomous research projects both in the academic and economic sector. It will also give them high qualifications to think and organize complex systems as well as finding the best solutions to several and real context problems.





This program was created through the partnership between the FCT/UNL (Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa), the FEUP (Faculdade de Engenharia da Universidade do Porto) and UT Austin (University of Texas in Austin, United States).

This is a 4-year PhD program, that is aimed at students with a masters degree (2nd cycle Bologna or pre-Bologna) in the areas of information / communication sciences, multimedia, interactive design and all scientific and technological digital media areas. Digital media is an area that is rapidly growing and has gained increasing importance in our daily lives.

The Digital Media PhD program aims to train researchers, academics and leaders in innovative processes. This training will enable the conceptualization and development of digital products and services, having taken into account target audiences, contexts, and goals relevant to several distribution channels.



Number of students enroled in 2016

**NETSYS** 

#### PhD in Networked Interactive Cyber Physical Systems

www.m-iti.org/netsys

This is a 4-year PhD program, where students have one year dedicated to curricular courses and three years dedicated to research.

This program is aimed at students with a masters degree (2nd cycle Bologna or pre-Bologna) in engineering (electronic, computers, mechanical, aerospace and IT), computer science and applied mathematics and it offers a high level of expertize and skills in cyber-physical interactive systems. This PhD will provide students with the conceptual, scientific and technological tools to deal with the most challenging problems that happen in some of the most relevant real-life situations in the world.

This PhD in networked interactive cyber-physical systems aims to train researchers, professors and professionals to deal with innovative processes and situations. It also aims to enable them to analyze complex situations and to propose new solutions, as well as giving them the ability to manage multidisciplinary teams.





Number of students enroled in 2016

## PHD STUDENTS

M-iti offers doctoral programs in collaboration with University of Madeira, University of Lisbon, University of Porto, New University of Lisbon, University of Texas in Austin and Carnegie Mellon University. Our current cohort of PhD students follows.

#### **Afonso Gonçalves**

Augmented Assistive Exergames: Healthy Exercising Through Adaptive Games in a Spatial Augmented Reality

> Supervisor: Sergi Badia i Bermúdez (M-iti)

#### Amanda Marinho

Sharing Economy: when the collective became better than the ownership. An investigation about goods and service design amenable for collaborative consumption.

> Supervisor: Nuno Nunes (M-iti)

#### Ana Lúcia Faria

Design and Assessment of Virtual Reality Methods for the Cognitive Rehabilitation of Stroke.

> Supervisors: Salomé Pinho (Univ. Coimbra) and Sergi Bermúdez i Badia (M-iti)

#### Ana Caraban

Sustaining users' engagement with physical activity trackers
Supervisors:

Pedro Campos (M-iti) Evangelos Karapanos (M-iti)

#### **Augusto Esteves**

Understanding Epistemic Actions in Human-Computer Interaction

Supervisor: Ian Oakley (M-iti)

#### **Anastasios Spiliotopoulos**

Application of social network analysis techniques for studying behaviour in social network sites. Supervisor: Ian Oakley (M-iti)

#### **Athanasios Vourvopoulos**

Multimodal Neuro-Robotic VR system for Stroke Rehabilitation Supervisor: Sergi Badia i Bermúdez (M-iti)

#### **Christian Koehler**

Motivation Behavior Change in Climate Control Systems. Supervisor: Ian Oakley (M-iti)

#### **Clinton Jorge**

Improving Adoption and Awareness of Pervasive Public Displays. Supervisors: Valentina Nisi and Nuno Nunes (M-iti)

#### **Duarte Gouveia**

Executable Model Ontology for Temporal Intelligent Organizations in Network Systems Supervisor:

David Aveiro (M-iti)

#### Fábio Darío Vieira Baptista

Rapid Hardware Implementation of New Paradigms of Artificial Neural Network (RHINPANN) for Renewable Energy

> Supervisors: Morgado Dias (M-iti) João Paulo Costeira (IST)

#### Fábio Mendonça

Monitoring and Control of Sleep Quality

Supervisors: Morgado Dias (M-iti) Antonio García (Universidad de Las Palmas de Gran Canaria)

#### **Filipe Quintal**

Exploring the dimensions of eco-feedback technology in the wild.

Supervisors: Valentina Nisi Nuno Nunes (M-iti)

#### Frederica Gonçalves

Designing and evaluating creative writing environments: a directed storytelling, ethnography-based approach. Supervisor:

Pedro Campos (M-iti)

#### **Greice Silva**

Sharing Economy Supervisor: Nuno Nunes (M-iti)

#### **Hildegardo Noronha**

Interoperable Exoskeletons for Improved Immersion, Plausibility and Performance: a Haptics-based Approach.

> Supervisor: Pedro Campos (M-iti)

#### **Jayant Venkatanathan**

Examining the Interplay Between Universal Behavioural Tendencies, Online Social Networks and Social Capital

> Supervisors: Evangelos Karapanos (M-iti) Vassilis Kostakos (Oulu University, Finland)

#### John E. Muñoz

Creation of adaptive videogames for sustain active aging: the role of biocybernetic loops in game experience

> Supervisor: Sergi Badia i Bermúdez (M-iti)

#### José Corujeira

Telerobotics augmentation of Situation Awareness through Multimodal Interfaces

> Supervisor: José Luís Silva (M-iti)

#### Jude Mukundane

Creation of adaptive videogames for sustain active aging: the role of biocybernetic loops in game experience

> Supervisor: Chris Csikszentmihalyi (M-iti)

#### **Kenneth Keane**

Spatial Narrative as an Interaction Resource Towards the Discovery and Sharing of Place.

> Supervisor: Valentina Nisi (M-iti)

#### Lígia Duro

How could the use of activity trackers offer a long-term value?

Supervisor: Pedro Campos (M-iti)

#### Lucas Pereira

Hardware and Software Platforms to Deploy and Evaluate Non-Intrusive Load Monitoring Systems Supervisor: Sergi Badia i Bermúdez (M-iti)

#### Luis Duarte Andrade Ferreira

The impact of music and reminiscence therapy in the cognitive performance of Alzheimer

> Supervisors: Nuno Nunes (M-iti) Mario Bergés (Carnegie Mellon University)

#### Mara Dionísio

Fostering engagement and awareness about local nature and cultural capitals through mobile interactive entertainment

> Supervisors: Valentina Nisi (M-iti) Nuno Correia (FCT/NOVA)

#### Maria José Ferreira

Measuring the impact of inclusive educational interventions on students' development through wearable sensor technology

> Supervisor: Evangelos Karapanos (M-iti)

#### Mela Bettega

NA Supervisors: Maurizio Teli (M-iti)

#### Michelle Kasprzak

Innovation in Extreme Scenarios

Supervisor: Chris Csikszentmihalyi (M-iti)

#### **Min Lee**

Coaching Systems

Supervisors: Sergi Badia i Bermúdez (M-iti) Alexandre Bernardino (IST)

#### **Paulo Bala**

Immersive Journalism

Supervisors: Valentina Nisi (M-iti) Nuno Correia (FCT-UNL)

#### **Pedro Valente**

Adaptation of the software development effort to the organization's return of investment capabilities

> Supervisors: Nuno Nunes (M-iti) David Aveiro (M-iti)

#### Per Jakob Rogstadius

Enhancing Disaster Situational Awareness Through Scalable Curation of Social Media

> Supervisor: Evangelos Karapanos (M-iti)

#### Ricardo Nuno Araújo Sol de Jesus

Eye Hand Coordination in Interactive Information Visualization

Supervisor: Karolina Baras M-iti)

#### Roham Torabikalaki

Towards the Integration of service design methods and tools in software development process.

> Supervisors: Morgado Dias (M-iti) Álvaro Gomes (UC)

#### **Ruben Gouveia**

Understanding users' engagement with activity trackers.

Supervisor: Evangelos Karapanos (M-iti)

#### **Rui Alves**

Towards the Integration of service design methods and tools in software development process. Supervisor: Nuno Nunes (M-iti)

#### **Rui Duarte Fernandes Brás**

Knowledge Representation in Communities of Practice

> Supervisor: Eduardo Fermé (UMa)

#### Sandy Carmo Relva Rodrigues

Non-Invasive Monitoring System for Photovoltaic Installations

> Supervisor: Morgado Dias (M-iti)

#### Sara Tranquada

Internet of things

Supervisors: Chris Csikszentmihalyi (M-iti) Nuno Correia (FCT/NOVA)

#### Sheikh Shanawaz Mostafa

Automated Sleep Apnea Hipoapnea Syndrome Detector

> Supervisor: Morgado Dias (M-iti)

#### Vanessa Cesário

Digital connected devices and mediated storytelling - between children and adults -Supervisor: Valentina Nisi (M-iti)



#### **Filipe Quintal**

Exploring the dimensions of eco-feedback in the wild

Supervisor: Nuno Jardim Nunes (M-iti) Valentina Nisi (M-iti) 2016

#### Lucas Pereira

Hardware and Software Platforms to Deploy and Evaluate Non-Intrusive Load Monitoring Systems

> Supervisor: Nuno Jardim Nunes (M-iti) Mario Bergés (CMU) 2016

## PHD THESIS

Abstracts, 2016



Filipe Magno Gouveia Quintal

Supervisor: Nuno Jardim Nunes (M-iti) and Valentina Nisi (M-iti)

Exploring the dimensions of eco-feedback in the wild

Worldwide reports about energy usage have noted the importance of the domestic energy consumption sector in the worldwide scenario. This fact motivated and supported the birth and spread of the so-called eco-feedback devices. Such devices provide information about individual or group energy consumption behavior with the goal of reducing the impact in the environment. Motivated by the body of work which questions the long term effectiveness of eco-feedback systems, this thesis focus on evaluating in-the-wild the long term usage of eco-feedback systems. We have conducted five long term studies with different eco-feedback systems designed to evaluate different dimensions in the design of eco-feedback plus two more focused short term studies aimed at studying concrete approaches.

Our summary reports on the fact that the there is a novelty effect associated with ecofeedback systems in which the usage of these devices declines significantly after a month. We did not found evidence that the novelty effect is related to location or the type of information represented, nor that the decrease in the eco-feedback usage could lead to the consumption relapsing to values previous to the introduction of the eco-feedback Our work has also generated other contributions related to the positioning of the feedback, using metaphors for representing the consumption and presenting information about the source of the energy in the feedback.



#### Lucas Pereira

Supervisor: Nuno Jardim Nunes (M-iti) e Mario Bergés (CMU)

Hardware and Software Platforms to Deploy and Evaluate Non-Intrusive Load Monitoring Systems

The work in this PhD thesis addresses the practical implications of deploying and testing Non-Intrusive Load Monitoring (NILM) and eco-feedback solutions in real-world scenarios. The contributions to this topic are centeredaround the designand development of NILM frameworks that have been deployed in the wild, supporting long-term research in eco-feedback and also serving the purpose of producing real-world datasets and furthering the state of the art regarding the performance metrics used to evaluate NILM algorithms. This thesis consists of three main parts: i) the development of tools and datasets for NILM and eco-feedback research, ii) the design, implementation and deployment of NILM and eco-feedback technologies in real world scenarios, and iii) an experimental comparison of performance metrics for event detection and event classification algorithms. In the first part we describe the Energy Monitoring and Disaggregation Data Format (EMD-DF) and the SustData and SustDataED public datasets. In second part we discuss the development and deployment of two hardware and software platforms in real households, to support eco-feedback research. We then report on more than five years of experience in deploying and maintaining such platforms. Our findings suggest that the main practical issues can be divided in two categories, technological (e.g., system installation) and social (e.g., maintaining a steady sample throughout the whole study). In the final part of this thesis we analyze experimentally the behavior of a number of performance metrics for event detection, identifying clusters and relationships between the different measures. Our results evidence some considerable differences in the behavior of the performance metrics when applied to the different problems.

Keywords: NILM, Event-Based, Eco-Feedback, Performance evaluation, Platforms, Real world scenarios

## AWARDS & HONORS

Over the years, many of our researchers have been internationally recognized for their work, and contribution to research. Below are some of the prestigious prizes and awards that our researchers received in 2016.



2016 ISVR Early Career Investigator Award

Mónica Cameirão was awarded the 2016 ISVR Early Career Investigator Award, an award granted by the International Society for Virtual Rehabilitation. The award was announced at the International Conference on Disability Virtual Reality and Associated Technologies in Los Angeles, California in September, where Mónica Cameirão delivered a platform presentation.

	Findit and statement of the Ministerior of Advisor Not 2019 PT / 2 - 3/ Date: 27 - 07 - 3/ Date: 27 - 07 - 3/ Date: 27 - 07 - 3/
Região A Ason	lutinoma da Madeira ubleia Legislativa Pusietencia
	Exma. Senhora
	Doutora Mónica da Silva Cameirão
	$N_{\rm HM} = - 2 (2\pi e^{-2})^2 = - 1 (2\pi e^{-2})^2 = - 2 (2\pi e^{-2$
	na annuar
	Funchal, 27 de outubro de 2016
Assunto. Voto de Conseratulação	
in the second configuration	
Encarrega-me Sua Excelénc enviar um Voto de Congratulação a	ia o Presidente da Assembleia Legislativa da Madeira ( V. Exa., unanimemente aprovado em reunião plenária des
Assemblear de 26 de cumbro de 20.	
Com os melhores cumprimer	atos.

#### Congratulation vote from the The Legislative Assembly of Madeira

**Mónica Cameirão** received a Congratulation vote from the The Legislative Assembly of Madeira to for her recent International Society for Virtual Rehabilitation's (ISVR) Early Career Investigator Award, acknowledging her contribution to the Madeiran community through the development of technologies that improve the quality of life of those with special needs.



#### Google Technology Research Award Pilot

Nuno Nunes and Valentina Nisi were awarded the Google Technology Research Award Pilot of the Internet of Things -IoT. The first selected project is SEDUCE (Sensing of Domestic Users for Conservation of Energy), and is directed by Nuno Nunes. The second is iBeFUN (iBeacons for Fun), and is led by professor Valentina Nisi.

#### Best Paper & Poster Awards

**Best Student Paper Award at the 3rd International Conference on Physiological Computing Systems** (PhyCS) with the paper "NeuRow: An Immersive VR Environment for Motor-Imagery Training with the Use of Brain-Computer Interfaces and Vibrotactile Feedback." Athanasios Vourvopoulos, André Ferreira and Sergi Bermúdez

**Best Poster Award at the 4th International Conference on ICT for Sustainability 2016** held in Amsterdam, August 29 - September 1, 2016. The poster was entitled: "Household routines: identifying contextual cues for energy related activities." Mary Barreto

Best Paper Award at the 8th International Conference on Virtual Worlds and Games for Serious Applications (VS-Games 2016) in Barcelona with the paper entitled "Modulation of Physiological Responses and Activity Levels During Exergame Experiences." John Muñoz, Sergi Bermudez i Badia, Monica Cameirão, Élvio Rubio Gouveia and Teresa Paulino.

## DISTINGUISHED LECTURE SERIES

#### **Speaking Series**

M-iti organises seminars and invited talks in the areas of Computer Science and Human-Computer Interaction. Below we highlight some of the most proeminent speakers who visited M-iti in 2016.





Sharon Strover is the Philip G. Warner **Regents Professor in** Communication and former Chair of the Radio-Director of the Latino **TV-Film Department** at the University of Texas where she now directs the Technology and Information Policy Institute.

Joseph Straubhaar is the Amon G. Carter Sr., Centennial Professor of Communication. and Latin American Media Studies Program in the Moody College of Communications, and Association Director of the Telecommunications and Information Policy Institute at the University of Texas at Austin.



Martha Colburn is an artist and filmmaker. She is best known for her animation films, which are the Faculty of Psychology. created through puppetry, In 2005 he was awarded collage, and paint on glass the Virtual Reality Career techniques. Her films have Award by IEEE Virtual screened in the Venice Biennelle, The Stedelijk Museum, Art Basel, Sundance Film Festival and Cannes Film Festival.



Mel Slater is an ICREA Research Professor at the University of Barcelona in Reality 'In Recognition of Seminal Achievements in Engineering Virtual Reality.'

#### **IP21 - Conferences in Intellectual Property**



Intellectual property (IP) is a defining topic in research and business. Many of our current laws on IP were developed in the 19th Century, with the rise of the industrial revolution, and were further refined in the era of broadcast. Since the late 20th Century, the Internet and digital media have been challenging many of the social and economic factors that underpinned our understandings of property, scarcity, creativity, and means of production. What, then, is the loadstone that will guide our understanding of IP in this century? IP21 brings to M-iti a variety of practitioners working on the frontline of this changing landscape. We focus especially on intellectual innovation and new business opportunities, with especial reference to the free software and open data movements.

Alyssa Wright (left) opened the IP21 in 2016, with the two-session talk entitled "The Business of Open."

Alyssa Wright works at the intersection of open technology, cultural diversity and mapping. As Vice President of Partnerships and Business Development at Mapzen, Alyssa leads community initiatives and communications to bring the best mapping capabilities to organizations of all sizes.

## WORKSHOPS AND TALKS



### WORKSHOPS

**Information Visualization Workshop** Robert Spence, from January 25th to February 5th

**Kinetic Typography** Dan Boyarski, from March 29th to April 15th

**Videomaking** Rob Wilton, from April 26th to May 6th

**Documentary Filmmaking** Nancy Schiesari, from December 12th to 16th

### TALKS

Towards Distinctive User Experiences Virpi Roto , December 7th

Software-Defined Intermittent Networking and H2020 Marie-Curie Actions David Palma, December 5th

> **Revolution Frames** Martha Colburn, November 30th

Digital innovations for financial inclusiveness: ICTs and crowdfunding in emerging economies

Endrit Kromidha, November 16th

Transforming the self - Body ownership and agency illusions in immersive virtual reality

Mel Slater, November 2nd

Hacking happiness: the emergence of Positive Technology Andrea Gaggioli, October 19th

**Theatre, projection mapping and a chocolate factory** Taavi Varm, October 12th

#### An Island is a World

Kaiton Williams, September 8th

Exploring physiological data in smartwatches for workload management John Muñoz, August 1st

Pixels, Pencils, and Poems: Ethnographic Methods for Making Futures Laura Watts, June 16th

> **Does culture matter?** José Abdelnour Nocera, June 2nd

Technology-mediated Solutions for Neurorehabilitation Roberto Llorens Rodríguez, June 1st

Social Class and Television in Latin America- the Rise of a New Lower Middle Class, a Growing Cosmopolitan Elite, and Their Impacts on Program Preferences and New Television Technology Use

Joseph Straubhaar, May 31st

The Value of Making Connections: Rural Regions and the Internet Sharon Strover, May 31st

> Enabling Audiovisual User Interfaces Nuno Correia, May 25th

Disentangling TV 2.0: Analyzing the online extension of TV fiction and social audience's feedback

Deborah Castro, May 10th

The shortest path is dead, long live the scenic path! Novel Ways of getting from A to B  $\,$ 

Johannes Schöning, April 14th

Web-based Immersivity: Setting the Field Sabrina Scuri, April 5th

Adaptive Music and Contactless Interaction Technology Dominic Becking, March 14th

Smart Office Buildings - User Interaction and Well- being Dominic Becking, March 18th

> **The Business of Open** Alyssa Wright, March 2nd

Public Design of Common Devices. A research trajectory Maurizio Teli, February 29th

Multivariate information visualization. Principles and applications in Physiological John Muñoz, February 2nd

> A New Scottish Enlightenment Mohammed Ali, January 15th

### SEMINARS & SYMPOSIA

Public Playtest Funhcal, December 12th

Capstone Projects Final Presentations Funhcal, December 12th

## SELECTED PUBLICATIONS



Alves, J., Vourvopoulos, A., Bernardino, A. and i Badia, S. B. "Eye Gaze Correlates of Motor Impairment in VR Observation of Motor Actions", Methods Inf Med, 2016.

Alves, R., and Nunes, N. J. "Ceiling and Threshold of PaaS Tools: The Role of Learnability in Tool Adoption", HCSE 2016, and 8th International Conference on Human Error, Safety, and System Development, HESSD 2016, Stockholm, Sweden, Springer International Publishing, pp. 335–347, August, 2016.

Ana L. N. Fred, Jan L. G. Dietz, Aveiro, D., Liu K., Bernardino, J. and Filipe, J. : Proceedings of the 8th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K 2016) - Volume 1: KDIR, Porto - Portugal, November 9 - 11, 2016. SciTePress 2016, ISBN 978-989-758-203-5

Anslow, C., Campos, P., and Jorge, J. (2016). An Introduction to Collaboration Meets Interactive Spaces. In Collaboration Meets Interactive Spaces (pp. 1-7). Springer International Publishing.

Anslow, C., Campos, P., Lucero, A., Grisoni, L., Augstein, M., and Wallace, J. (2016, November). Collaboration Meets Interactive Surfaces and Spaces (CMIS): Walls, Tables, Mobiles, and Wearables. In Proceedings of the 2016 ACM on Interactive Surfaces and Spaces (pp. 505-508). ACM.

Ashby, S., J. Hanna, K. Ramp, and J. Baranoff, "Balancing Tradeoffs in the Design of an Interactive Art Installation on Surveillance and Big Data", HCI International 2016, Toronto, Canada, 06/2016.

Auger, J. "The Narrow Path: constraints and counter-constraints." Presented at the Resonate 2016, Belgrade, Serbia, April 2016. Invited Lecture

Auger, J. In Design as Research - Positions, Arguments, Perspectives, edited by Gesche Joost, Katharina Bredies, Michelle Christensen, Florian Conradi, Andreas Unteidig. Basel: Birkhauser, Board of International Research in Design (BIRD), 2016.

Auger, J. "Spekulativnost." In Introduction to Speculative Design Practice: Eutropia, a case study, edited by Ivica Mitrović, Oleg Šuran. Croatia: Ministry of Culture of the Republic of Croatia & Croatian Designers Association, 2016.

Aveiro, D., Pergl, R., and Gouveia, D. (Eds.). (2016). Advances in Enterprise Engineering X: 6th Enterprise Engineering Working Conference, EEWC 2016, Funchal, Madeira Island, Portugal, May 30-June 3 2016, Proceedings (Vol. 252). Springer.

Bala, P., M. Dionisio, V. Nisi, and N. J. Nunes, "IVRUX: A Tool for Analyzing Immersive Narratives in Virtual Reality", Interactive Storytelling: 9th International Conference on Interactive Digital Storytelling, ICIDS 2016, Los Angeles, CA, USA, November 15–18, 2016, Proceedings: Springer International Publishing, pp. 3–11, November, 2016.

Baptista, D., Abreu, S., Travieso-González, C., and Morgado-Dias, F. (2016). Hardware implementation of an artificial neural network model to predict the energy production of a photovoltaic system. Microprocessors and Microsystems.

Baras, K., Soares, L., Paulo, N., and Barros, R. (2016, July). 'Smartphine': Supporting students' well-being according to their calendar and mood. In Computer and Energy Science (SpliTech), International Multidisciplinary Conference on (pp. 1-7). IEEE.

Barreto, M., "Household routines: identifying contextual cues for energy related activities", 4th International Conference on ICT for Sustainability (ICT4S 2016), 2016.

Barricelli, B. R., Clemmensen,T., Campos, P., Nocera, J. A. and Lopes, A. Motivation, Participation, and Engagement in Human Work Interaction Design Literature (2016), CoPDA2016 – Cultures of Participation in the Digital Age: From "Have to" to "Want to" Participate at NordiCHI'16, 9th Nordic Conference on Human-Computer Interaction, Chalmers University of Technology and University of Gothenburg, Sweden. (paper is included in the ACM Digital Library as part of the NORDICHI 2016 Adjunct Proceedings), ISBN: 978-1-4503-4763-1 doi>10.1145/2971485.2987668 Bernardino, A., Vismara, C., Baptista, F., Carnide, F., Oom, S. and i Badia, S. B. "Dataests using Kinect and Physiological Sensors," International Conference on Technology and Innovation in Sports, Health and Wellbeing. 2016

Bossen, C., Smith, R. C., Kanstrup, A. M., McDonnell, J., Teli, M. and Bødker, K. "PDC 2016. Proceedings of the 14th Participatory Design Conference-Volume II." (2016).

Cabral, D. and Correia, N. "Video editing with pen-based technology," Multimedia Tools and Applications, 1-26

Cabral, D., J. M. F. Silva, C. Fernandes, and N. Correia, "Annotating Live Video with Tablet Computers: A Preliminary User Study", Proceedings of the International Working Conference on Advanced Visual Interfaces: ACM, pp. 296–297, 2016.

Cabrero, D. G., and A. Lopes, "Cross Cultural Discourses of Globally Situated Rhetorical and Etymological Interactions", HCI International 2016 (forthcoming), Toronto, Canada , 07/2016.

Cabrero, D. G., Winschiers-Theophilus, H. and Abdelnour-Nocera, J. "Reconceptualising Personas Across Cultures: Archetypes, Stereotypes & Collective Personas in Pastoral Namibia

Cabrero, D. G., Winschiers-Theophilus, H., and Abdelnour-Nocera, J. (2016, November). A Critique of Personas as representations of the other in Cross-Cultural Technology Design. In Proceedings of the First African Conference on Human Computer Interaction (pp. 149-154). ACM.

Cabrero, D. G. et al. User-created personas in rural Mexico and in rural Spain: Approaches neither from the North nor from the South. Avances en Interacción Humano-Computadora, [S.I.], v. 1, n. 1, p. 13-17, sep. 2016. Available at: <a href="http://aihc.amexihc.org/index.php/aihc/article/view/3">http://aihc.amexihc.org/index.php/aihc/article/view/3</a>>. Date accessed: 22 feb. 2017.

Cameirao, M., A. Smailagic, G. Miao, and D. P. Siewiorek, "Coaching or gaming? Implications of strategy choice for home based stroke rehabilitation", J Neuroeng Rehabil, vol. 13, 02/2016.

Cameirão, M. S., Faria, A. L., Paulino, T., Alves, J. and Sergi Bermúdez i Badia, S. B. "The impact of positive, negative and neutral stimuli in a virtual reality cognitive-motor rehabilitation task: a pilot study with stroke patients." Journal of NeuroEngineering and Rehabilitation 13, no. 1 (2016): 70.

Cao, H. - A., T. K. Wijaya, K. Aberer, and N. J. Nunes, "Estimating Human Interactions with Electrical Appliances for Activitybased Energy Savings Recommendations", Proceedings of the 2016 IEEE International Conference on Big Data (BigData '16). Washington, DC, USA: IEEE, December, 2016. Abstract

Cao, H. - A., F. Rauchenstein, T. K. Wijaya, K. Aberer, and N. J. Nunes, "Leveraging User Expertise in Collaborative Systems for Annotating Energy Datasets", Proceedings of the 2016 Workshop on Smart Grids at the 2016 IEEE International Conference on Big Data (BigData '16): IEEE, December, 2016.

Cao, H. - A., T. K. Wijaya, K. Aberer, and N. J. Nunes, "Temporal Association Rules For Electrical Activity Detection in Residential Homes", Proceedings of the 2016 Workshop on Smart Grids at the 2016 IEEE International Conference on Big Data (BigData '16): IEEE, December, 2016.

Cardona, J. M., Cameirao, M. S., Paulino, T., i Badia, S. B. and Rubio, E. "Modulation of Physiological Responses and Activity Levels during Exergame Experiences." In Games and Virtual Worlds for Serious Applications (VS-Games), 2016 8th International Conference on, pp. 1-8. IEEE, 2016.

Cesário, V., Rodrigues, J., Li, H., Wu, I. and Nisi, V. (2016) \*Crescendo: Routine Learning App for Children with Autism Spectrum Disorders, V Cesário, J Rodrigues, H Li, I Wu, V Nisi, Proceedings of the The 15th International Conference on Interaction Design on Interaction Design and Children, ACM, pp 571-576.

Cesário, V., Freitas, P., Pimentel, D. and Nisi, V. "Children's Books: Paper VS Digital, What Do They Prefer?" Proceedings of the The 15th International Conference on Interaction Design and Children, ACM, pp. 625-630.

Cesário, V., Nisi and Coelho, A. "ClueKing: Allowing Parents to Customize an Informal Learning Environment for Children." International Conference on Serious Games, Interaction and Simulation, Springer International Publishing. pp 23-30.

Csíkszentmihályi, C. "Design on the Barricades." Presented at the 14th PDC (Participatory Design Conference), Aarhus, Denmark, 15-19 August 2016. Keynote

Csíkszentmihályi, C. "Exploring Mobility the World in Flux." Presented at the International Development Conference 2016, Newcastle, UK, 20-21 February 2016. Keynote

Csíkszentmihályi, C., & Mukundane, J. (2016, May). RootIO: ICT+ telephony for grassroots radio. In IST-Africa Week Conference, 2016 (pp. 1-13). IEEE.

Dionisio, M., V. Nisi, N. J. Nunes, and Bala, P. "Transmedia Storytelling for Exposing Natural Capital and Promoting Ecotourism", Interactive Storytelling: 9th International Conference on Interactive Digital Storytelling, ICIDS 2016, Los Angeles, CA, USA, November 15–18, 2016, Proceedings: Springer International Publishing, pp. 351–362, November, 2016. Faria, A. L., J. Couras, M. S. Cameirão, T. Paulino, G. M. Costa, and i Badia, S. B. "Impact of combined cognitive and motor rehabilitation in a virtual reality task: an on-going longitudinal study in the chronic phase of stroke." (2016).

Faria, A. L., Andrade, A., Soares, L., & i Badia, S. B. (2016). Benefits of virtual reality based cognitive rehabilitation through simulated activities of daily living: a randomized controlled trial with stroke patients. Journal of NeuroEngineering and Rehabilitation, 13(1), 96.

Faria, A. L., M. S. Pinho, and S. Bermudez I Badia, "Do papel-e-lápis à realidade virtual: uma nova abordagem para reabilitação cognitiva personalizada", 11º Congresso Nacional de Psicologia da Saúde, 2016.

Faria, C., Baptista, D., Marques, J. C., & Morgado-Dias, F. Modelling and Control of Madeira Wine Aging process Using Directive Inverse Control.

Faria, C. M., et al. "Automatic Control of Madeira Wine Aging Process." CONTROLO 2016. Springer International Publishing, 2017. 785-795.

Gonçalves, A., and Cameirão, M. (2016). Evaluating Body Tracking Interaction in Floor Projection Displays with an Elderly Population.

Gouveia, D., and D. Aveiro, "Things, References, Connectors, Types, Variables, Relations and Attributes–A Contribution to the FI and MU Theories", Enterprise Engineering Working Conference: Springer International Publishing, pp. 181–195, 05/2016.

Hanna, J., "Generation", Literature Now: Key Terms and Methods for Literary History, Eds. Sascha Bru, Ben De Bruyn, and Michel Delville: Edinburgh University Press, pp. 320, 2016.

Hanna, J., "Post-Media Marinetti: The 21st Century Avant-Garde Manifesto", 2016 International Conference of the European Network of Avant-Garde and Modernism Studies (EAM), Rennes, France, 06/2016.

Hanna, J. and S. Ashby, "From Design Fiction to Future Models of Community Building and Civic Engagement", NordiCHI 16, Gothenburg, Sweden, ACM, 10/2016.

i Badia, S. B., Gerard G. Fluet, Roberto Llorens, and Judith E. Deutsch. "Virtual Reality for Sensorimotor Rehabilitation Post Stroke: Design Principles and Evidence." In Neurorehabilitation Technology, pp. 573-603. Springer International Publishing, 2016.

i Badia, S. B., Deustch, J. E. and Llorens, R. "Open rehabilitation initiative: design and formative evaluation." (2016).

Jeong, B., Chen, M. C. and Ibanez, J. "A Tattooing for the Child Health Records Design that can Save Lives", HCI Korea 2016, Seoul, ACM Digital Library, pp. 15-21, 01/2016.

Jeong, B., "ON-skin technologies: aesthetic, expressive, and functional tattoos for child health records", Ubicomp/ ISWC'16, Heidelberg, Germany, ACM, 09/2016.

Jeong, B., and M. Chen, "The Analysis of the Impact on the Interface Design for Mobile Device in Relation with Brand Preference", Advances in Affective and Pleasurable Design, Florida, USA, Springer International Publishing, pp. 695-714, 08/2016.

Jordan, Z., Nocera, J. A., Peters, A., Dray, S., & Kimani, S. (2016, November). A Living HCI Curriculum. In Proceedings of the First African Conference on Human Computer Interaction (pp. 229-232). ACM.

Lucas, C. V. and Soares, L. (2016).<sup>\*1</sup> HAVE A WISH: NOT HAVE TICS AND STOP WORRYING<sup>\*</sup> The impact of tics disorder in the development of a child. Iberian Journal of Clinical & Forensic Neuroscience, Year 3, IV (9,10), 882-905. ISSN: 2182 -0290.

Mata-Lima, H., Morgado-Dias, F., da Silva, G., Carrato, M., Alcântara, K., & Almeida, J. A. (2016). A Systematic Framework for the Design and Implementation of a Quality Management Practice: The Case of a Consulting Engineering Company. Environmental Quality Management, 25(4), 49-61.

Mendes, M., P. Ângelo, V. Nisi, and N. Correia, "Appropriating Video Surveillance for Art and Environmental Awareness: Experiences from ARTiVIS", Science and Engineering Ethics, 2016.

Mostafa, S. S., L. N. Sousa, N. F. Ferreira, R. M. Sousa, J. Santos, D. F. Morgado, and M. Wäny, "FPGA Implementation of Gamma Correction using a Piecewise Linear Approach for a Small Size Endoscopic Camera", Image Sensors and Imaging Systems 2016, San Francisco, USA, 2016. Mukundane, J., & Csikszentmihalyi, C. Shrinking towards the people: tailoring electronic communication media solutions to community needs. In Conference on M4D Mobile Communication Technology for Development (p. 163).

Muñoz, J. E., A. Gonçalves, T. Vieira, D. Cró, Y. Chisik, and S. Bermúdez i Badia. "Space Connection-A Multiplayer Collaborative Biofeedback Game To Promote Empathy In Teenagers: A Feasibility Study."

Muñoz, J. E., Paulino, T., Vasanth, H., & Baras, K. (2016, September). PhysioVR: A novel mobile virtual reality framework for physiological computing. In e-Health Networking, Applications and Services (Healthcom), 2016 IEEE 18th International Conference on (pp. 1-6). IEEE.

Nisi, V., Costanza, E. and Dionisio, M. (2016) "Placing location-based narratives in context through a narrator and visual markers" Interacting with Computers, Oxford University Press.

Nunes, N. J., V. Nisi, C. Jorge, and J. Hanna, "Madeira Story Generator: Prospecting Serendipitous Storytelling in Public Spaces", Entertainment Computing, 05/2016.

Nunes, N. J., V. Nisi, and K. Rennert, "beEco: Co-designing a Game with Children to Promote Environmental Awareness - A Case Study", Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems, New York, NY, USA, ACM, pp. 718–727, April, 2016.

Oliveira, F., L. Soares, and M. S. Lemos, "m-health: Avaliação de intervenções breves para a prevenção do cancro do colo do útero em estudantes universitários", Desafios da Psicologia da Saúde num mundo em mudança, Lisboa, 11º Congresso Nacional de Psicologia da Saúde, ISCTE-IUL, 26-29 janeiro, 2016.

Ornelas, J. D., J. C. Silva, and J. L. Silva, "Demonstration-based Help for Interactive Systems", Proceedings of the The 2th International Conference in HCI and UX on Indonesia 2016: ACM, pp. 125–128, 2016.

Ornelas, J. D., J. C. Silva, and J. L. Silva, "Supporting GUI Exploration through USS Tool" Journal of Information Systems Engineering & Management, 1:4 (2016), 51 ISSN: 2468-4376 http://lectitopublishing.nl/Article/Detail/SD2H8536 DOI: 10.20897/lectito.201651

Ornelas, J. D., Silva, J. C., Silva J. L. "USS: User support system." Information Systems and Technologies (CISTI), 2016 11th Iberian Conference ... 2016 http://ieeexplore.ieee.org/abstract/document/7521412/

Peralta, L. M. R., Rodriguez, L. P. L. M. Brito, and E. I. and Hernandez, "CWSN: A Graph-based Model for Collaborative Wireless Sensor Networks", Sensors, Transducers, Signal, Conditioning and Wireless Sensors Networks from the Advances in Sensors' Book Series, vol. 3: IFSA, pp. 303–327, 2016.

Peters, A., Jordan, Z., Merkle, L., Rocha, M. M., Nocera, J. A., van der Veer, G. C., ... & Churchill, E. (2016, November). Teaching HCI: A Living Curriculum?. In Proceedings of the First African Conference on Human Computer Interaction (pp. 267-270). ACM.

Prandi, C., M. Roccetti, P. Salomoni, V. Nisi, and N. J. Nunes, "Fighting exclusion: a multimedia mobile app with zombies and maps as a medium for civic engagement and design", Multimedia Tools and Applications, pp. 1–29, July, 2016.

Prandi, C., P. Salomoni, M. Roccetti, V. Nisi, and N. J. Nunes, "Walking with Geo-Zombie: A pervasive game to engage people in urban crowdsourcing", 2016 International Conference on Computing, Networking and Communications (ICNC), pp. 1-5, February, 2016.

Quintal, F., C. Jorge, V. Nisi, and N. J. Nunes, "Watt-I-See: A Tangible Visualization of Energy", Proceedings of the International Working Conference on Advanced Visual Interfaces, New York, NY, USA, ACM, pp. 120–127, June, 2016.

Ribeiro, M., L. Pereira, F. Quintal, and Nunes, N. J. "SustDataED: A Public Dataset for Electric Energy Disaggregation Research", ICT for Sustainability 2016, Amsterdam, The Netherlands, Atlantis Press, 08/2016.

Rodrigues, S., R. Torabikalaki, F. Faria, N. Cafôfo, X. Chen, A. R. Ivaki, H. Mata-Lima, and D. F. Morgado, "Economic feasibility analysis of small scale PV systems in different countries", Solar Energy, vol. 131: Pergamon, pp. 81–95, 2016.

Rodrigues, S., F. Faria, A. Ivaki, N. Cafôfo, X. Chen, and D. F. Morgado, "Tesla Powerwall in the United States and Portugal a Comparative Analysis on the use of Storage with Small Scale Photovoltaic Systems", International Journal of Engineering and Technology studies, 2016.

Rodrigues, S., Torabikalaki, R., Faria, F., Ramos, H. G. and Morgado-Dias F. "Australian PV System Market Analysis for the Powerwall", 32nd EU PVSEC 2016 Conference Proceedings Paper, In Press, Munich, June 2016.

Rodrigues, S., F. Faria, N. Cafôfo, X. Chen, H. Mata-Lima, and D. F. Morgado, "Analysis of the Self-Consumption Regulation for Photovoltaic Systems with Battery Banks in the Portuguese Residential Sector", Journal of Clean Energy Technologies, 2016.

Ruotsalo, T., K. Klouche, D. Cabral, S. Andolina, and G. Jacucci, "Flexible Entity Search on Surfaces", Proceedings of the 15th International Conference on Mobile and Ubiquitous Multimedia, New York, NY, USA, ACM, pp. 175–179, 2016.

Silva, J. L., J. D. Ornelas, and J. C. Silva, "Make it ISI: interactive systems integration tool", Proceedings of the 8th ACM SIGCHI Symposium on Engineering Interactive Computing Systems: ACM, pp. 245–250, 2016.

Sol, R., and K. Baras, "Assessment of activity trackers: toward an acceptance model", UbiComp '16 The 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing, Heidelberg, Germany, ACM, 09/2016.

Sousa, R. M., M. Wäny, P. Santos, and D. F. Morgado, "NanEye-An Endoscopy Sensor with 3D Image Synchronization", IEEE Sensors, 2016.

Teli, M., A. Di Fiore, and V. D Andrea, "Computing and the Common: An Empirical Case of Participatory Design Today", Proceedings of the 14th Participatory Design Conference: Full Papers - Volume 1, New York, NY, USA, ACM, pp. 1–10, 2016.

Torabikalaki, R., Šahović, N., Rodrigues, S., Mata-Lima, H. and Morgado-Dias, F. "Cost-effective Analysis of Roof-top PV Systems in Montenegro and Serbia", 4th International Symposium on Environment-Friendly Energies and Applications -EFEA 2016, Belgrade, Serbia.

Valente, P., T. R. Silva, M. Winckler, and Nunes, N. J."Bridging Enterprise and Software Engineering Through an User-Centered Design Perspective", Web Information Systems Engineering – WISE 2016: 17th International Conference, Shanghai, China, November 8-10, 2016, Proceedings, Part II, Cham, Springer International Publishing, pp. 349–357, November, 2016.

Valente, P., Silva, T. R., Winckler, M. and Nunes, N. J. "The Goals Approach: Enterprise Model-Driven Agile Human-Centered Software Engineering", Human-Centered and Error-Resilient Systems Development: 6th International Conference on Human-Centered Software Engineering, HCSE 2016, HESSD 2016, Stockholm, Sweden, Springer International Publishing, pp. 261–280, August, 2016.

Vourvopoulos, A., i Badia, S. B. and F. Liarokapis, "EEG correlates of video game experience and user profile in motorimagery-based brain-computer interaction", Vis Comput, pp. 1–14, 2016.

Vourvopoulos, A., A. Ferreira, and i Badia, S. B. "NeuRow: an Immersive VR Environment for Motor-Imagery Training with the Use of Brain-Computer Interfaces and Vibrotactile Feedback", 3rd International Conference on Physiological Computing Systems (PhyCS 2016), Lisbon, Portugal, 07/2016.

Vourvopoulos, A., and i Badia, S. B. "Motor priming in virtual reality can augment motor-imagery training efficacy in restorative brain-computer interaction: a within-subject analysis", Journal of NeuroEngineering and Rehabilitation, vol. 13, issue 1, 12/2016.

Vourvopoulos, A. (2016, February). Usability and Cost-effectiveness in Brain-Computer Interaction: Is it User Throughput or Technology Related?. In Proceedings of the 7th Augmented Human International Conference 2016 (p. 19). ACM.

## INVESTING IN THE FUTURE

M-iti's primary goal is to keep investing in a professional infrastructure that promotes innovation, warranting that the results of our research becomes relevant to companies and has impact in our economical environment. In 2015 M-iti invested heavily to bring management and business development professionals. A new startup, created by PhD students, was spun off and won a H2020 SME-I contract, with coaching proved by M-iti.

Attract and retain experienced researchers from other parts of the world that will develop their scientific careers in M-iti and therefore contribute to build critical mass and the internationalization and development of the University of Madeira, as well as to the outermost region of Madeira. This growth will be support by a two million euro grant from European funds, granted at the end of the year. International partnerships will be a pillar of M-iti's medium and long term future, and we shall work on deepening intuitional links with CMU and University of Texas at Austin. M-iti is seeking funds to allocate 1000 m2 of new lab space for the implementation of the Critical Technical Practice Lab. This new shared space for M-iti's researchers will be contiguous and integrate seamlessly with the current facilities used for M-iti'songoing projects.

Improving the innovation performance through a unique research infrastructure that will attract researchers and industry to the Madeira Interactive Technologies "Living Lab" and promote an economic impact through the successful creation and development of startups, spinoffs and industry-funded labs capable of generating new marketable interactive systems and service.



Miti - Madeira Interactive Technologies Institute-Associação Polo Científico e Tecnológico da Madeira, floor -2 Caminho da Penteada 9020-105 Funchal Portugal VAT no. 509250149 Telephone: +351 291 721 006 Email: admin@m-iti.org

Photographic elements gently donated by: M-iti's Communication Team Text and revision by: M-iti's Communication Team and Board Council This document is M-iti's property and should not be shared without M-iti's express authorization, for that purposes please e-mail us.