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PORTO WINTER SCHOOL ON GRAPH ANALYTICS AND APPLICATIONS

■ The Computer Science Department of the Faculty of Sciences of University of Porto will hold a Winter School on Graph Analytics and Applications, from 14 to 16 December 2015.

The school will deliver a mix of lectures, case study presentations and hands-on session in the domain of large scale data analytics with emphasis on the analysis of graphs/networks. Its intended target audience are PhD students and young researchers, but all interested in the field are welcome.

Big Data has become ubiquitous, and applications from all fields are rapidly scaling up in the size of both the available data and the underlying models. To extract insights from vast amount of data efficiently, parallel programming is essential, and several new programming models and implementations have been proposed. This school is a research training event geared precisely towards large scale data analytics and it offers a set of lectures and tutorials given by leading experts from both the academia and the private sector. With complex networks being pervasive and omnipresent in many social, biological and communication systems, there will be a focus on scalable graph algorithms and on the associated high performance software platforms. The attendees are expected to gain insight into some of the state-of-the-art solutions and to improve their vision on the associated research challenges.

Registration is free (and it includes access to all the sessions and to the coffee breaks), but there is a limit on the number of attendees.

Key Speakers:

- Deepak Ajwani & Alessandra Sala (Bell Labs)
- Bin Shao (Microsoft)
- Toyotaro Suzumura (IBM)
- Bruno Gonçalves (Aix-Marseille Université)
- Keshav Pingali & Donald Nguyen (University of Texas at Austin)
- Pedro Ribeiro (University of Porto)

Organizing committee: Fernando Silva, Pedro Ribeiro and Keshav Pingali

More information: <http://graph15.dcc.fc.up.pt/>

ADVANCED COMPUTING AUTUMN SCHOOL AND WORKSHOP

■ From 9 to 13 November Instituto Superior Técnico (IST - University of Lisbon) held an Autumn School on “Data Driven Computations in the Life Sciences” and a Workshop on “Innovative Modeling Techniques for Predictive Medicine”.

The School (composed of lectures and computational tutorials) and the Workshop, were organized by Adélia Sequeira of IST, within the scientific collaboration UT Austin | Portugal in the area of Advanced Computing. They focused on mathematical modeling and simulation in the Life Sciences, a rapidly developing interdisciplinary research field that connects mathematics, computational sciences and engineering to biology and medicine. Starting from high-resolution volumetric medical imaging, the development of spatially realistic physiological models for predictive medicine leads to complex mathematical models to capture heterogeneous processes of multiscale nature, that require highly efficient numerical algorithms and high performance computing techniques for their simulation.

The School and the Workshop brought together doctoral candidates, postdoctoral scientists and other researchers in applied mathematics, bioengineering and medicine, giving them the opportunity to interact and connect with the following experts that were specifically invited for the event:

Lecturers:

Autumn School - Miguel Ángel Fernández, INRIA, Paris – Rocquencourt (France), Alessandro Reali, Università di Pavia (Italy), Alessandro Veneziani, Emory University, Atlanta (USA);



Workshop - Chandrajit Bajaj, ICES/UT Austin, (USA), Antonio Fasano, Univ. Firenze, (Italy), Shaolie Hossain, Texas Heart Institute/Houston and ICES/UT Austin, (USA), Willi Jäger, Univ. Heidelberg, (Germany), Paula Oliveira, Univ. Coimbra (Portugal), Maria Neuss-Radu, Univ. Erlangen-Nürnberg, (Germany), Michael Sacks, ICES/UT Austin, (USA), Alessandro Veneziani, Emory University, Atlanta, (USA).

Organizing Committee:

Adélia Sequeira, Jorge Tiago, Marília Pires.

More than 50 participants, mostly from Portugal, but also from Germany, Italy and Russia, attended both events.

More information: <http://cemat.tecnico.ulisboa.pt/DDCLS2015/>

8 YEARS RESEARCHING THE CITY

■ The annual FUTUREPLACES Medialab for Citizenship celebrated its 8th consecutive year October 20-24, 2015. Curated by Heitor Alvelos, FUTUREPLACES renewed its commitment to the City of Porto as a testbed for new ways of media engagement.

The all-time motto “All Welcome” was brought to the fore, signalling the importance of fostering further inclusiveness in the social fabric. UPTec (U.Porto’s Science and Technology Park) and Passos Manuel were the main venues hosting 13 Citizen Labs, four keynote, the annual digital media doctoral symposium, three concerts, a series of installations and more. Worthy of note is the opening of “Open Lab”, a brand new media venue managed by students of the UTAustin-Portugal program in Digital Media. An open forum and an installation officially inaugurated its activities; expect more in the coming months. FUTUREPLACES was also visited by delegates of PLUNC and OFFF Porto, and was preceded by the UD15 International Doctoral Design Research Conference, further cross-fertilising synergies with current media agents. The Radio Manobras Futuras and Design Advanced Resources collectives were again present, documenting, interviewing and broadcasting.

Guests for this edition of FUTUREPLACES included:

Chris Csikszentmihalyi (ERA Chair at Madeira Interactive Technologies Institute), whose opening keynote addressed “Political Economics of Design: recognizing that funding trumps form or function”;

Jono Podmore (Professor of Music at Hochschule für Musik und Tanz Köln, as well as archivist for rock legends CAN), with a masterclass entitled “In the Box or Out of the Box? On the relationship between digital and analogue audio technology and its impact on the music itself”;



@ “Porto Pelo Porto”



VOX EXPRESS @ Passos Manuel

Anabela Duarte (Post-doctoral researcher affiliated with the Center for Post-Colonial Studies of the University of London, as well as former singer for Mler lfe Dada), coordinating the Vox Express intervention and providing her views and testimonies on the relationship between Art and Science;

Paul Stacey (Education specialist at Creative Commons and owner of EdTechFrontier), whose interactive keynote “Global Citizens in a Global Commons” wrapped up the very intense Citizen Lab debriefing marathon.

The focus throughout FUTUREPLACES was, as usual, on ways of opening up the spectrum for citizen engagement: this was evident both in the various masterclasses, and in the Citizen Labs, whose subjects ranged from farming with Arduino to musique concrète on live radio, from a PowerPoint support group to further ethnographic enquiry of unknown areas of the city. A particularly fruitful relationship was established with UPTec via Paul Stacey’s workshop “Open Business Models”, attended by a multitude of representatives from various incubated companies.

Exhibitions included “Calligraphy of a Mute Body” by Marta Calejo, the ongoing collective visual ethnographic project “Porto Pelo Porto”, the Miguel Januário installation “Reclaim the Future” and a one-night-only showcase of arcane computer games. Concerts included a Scientific Pop recital, a Live Coding jam, a Mutant Hotel Bar improv and the resident FuturePlaces Impromptu All-Stars Orchestra performing a new piece entitled “Gravitas”.

This 8th edition of FUTUREPLACES was especially marked by the desire to further consolidate and foster the heritage of the medialab, now nearing one decade of

activity. With this in mind, the FUTUREPLACES Youtube channel is now hosting a multitude of videos from past editions, focusing on interviews, keynote addresses and concerts; a flickr page includes every official photo ever taken since 2008; further writing is updated on the “Publications” section of the website; and a new project, “FUTUREPLACES Audiolab”, will serve as a channel for curated audio editions stemming from eight years of sound recordings.

As the City keeps changing, so the concept of “Future” keeps changing, and likewise FUTUREPLACES keeps updating its mission. Expect further news and fronts to keep opening up via futureplaces.org.



Miguel Januário installation “Reclaim the Future”

NEXT STEPS FOR MULTIMEDIA RESEARCH

■ **“Next Steps for Multimedia Research” (and other careers), a debate session included in the Futureplaces Festival, gathered several students and faculty with the purpose of initiating a forum of questions and suggestions about the Doctoral Program in Digital Media. The event took place in Porto and was streamed live, allowing remote participants to interact through skype.**

Three main topics were debated: 1. Future prospects after the doctoral program in Digital Media; 2. Impact of the doctoral program in future research initiatives or entrepreneurship; 3. Suggestions on how to improve the program and the partnership with UT Austin.

In result of this session and after collecting new inputs by email from students and former students of the Doctoral Program, a list of 44 questions and suggestions was addressed to the directors of the Doctoral Program.

In summary, it is recognized that the desired professional career after the PhD is not necessarily, or only, oriented to an academic life, but can be too. Thus, how to benefit from this diversity of skills, objectives and future links? How to adjust and shape the doctoral program to this reality?

Furthermore, there are several bridges that can be built during the doctoral program. They can be created with labs, private companies, but also amplify the value of interdisciplinary collaborations. Such bridges can be established in Portugal, namely by reinforcing the work between Porto, Lisbon and Madeira (among the universities participating in the Doctoral Program), but also with the UT Austin, by identifying new ways

of benefiting from this partnership.

The debate was organized and moderated by Carlos Figueiredo (PhD in Digital Media, 2014), and had as speakers, Fátima São Simão (Responsible of the Creative Industries Pole UPTEC), Nuno Martins (PhD in Digital Media, 2013, Associate Professor in the IPCA - School of Design, designer several times awarded, and founder of the Talk About Cancer project: FalarSobreCancro.org), Eduardo Marques (finalist PhD student, researcher at INESC, and with a relevant professional experience in the private sector and as entrepreneur), Ivo Teixeira (3rd year PhD student, and one of the founders of the Open Lab), Luis Agrellos (1st year PhD student, Managing-Partner of the GEMA company).

The video of the Next Steps session is **available online** (after minute 13:08”)



DESIGNING OPEN BUSINESS MODELS

■ In its 8th edition, **futureplaces2015** gave special attention to the topic of sustainability and openness. On the 22nd October, **Paul Stacey, Associate Director of Global Learning at Creative Commons**, held a workshop about **Designing Open Business Models**, at **UPTEC - the Science and Technology Park of the University of Porto**.

The main purpose of this session was to demonstrate how one can adopt an open attitude in business (for example, by openly licensing a product) and still make money from it.

With over 30 participants, from entrepreneurs to freelancers and students, the session started with an overview of the **Creative Commons (CC) licenses** and a short introduction to the **business model canvas**, both the original version and an updated version prepared by Paul, which specifically includes CC licenses and social good. There was also a chance to present the brand new Creative Commons Toolkit for Business, conceived and developed by the CC Portuguese Affiliate, which will be launched soon on **Creative Commons blog**.

During the workshop, the typical fears of openness were addressed through the presentation of real case studies including examples of open source software, open education resources, museums, authors, large platforms and other businesses. Cases like the **Tribe**

of Noise, Reijksmuseum, Open Words, The Noun Project, Posiba, Tumult, Nina Paley, Seats2Meet, 500Px, Autodesk's training and tutorial materials were analysed during the session to explain how open business models actually prove to be sustainable and thriving.

Finally, Paul presented a selection of books about new approaches to economy and the participants had the opportunity to actually design an open business model for their own projects and discuss implementation strategies. More news and articles about open business will continue to be discussed at Creative Commons in its various platforms, namely, on Creative Commons blog and the **Made With Creative Commons website**, created for this purpose only.



DIGITAL MEDIA DOCTORAL SYMPOSIUM

■ **Digital Media students and graduates from U. Porto and UNL presented their research projects at the Digital Media Doctoral Symposium, Porto, 21st October.** Included in the **FUTUREPLACES festival program the DM Doctoral Symposium gives all students the chance to present their work to an audience of their peers and faculty and exchange ideas, concerns and thoughts with the audience.**

The event started with welcome remarks by Sharon Stover, Heitor Alvelos, Nuno Correia and António Coelho followed by an opening keynote from Chris Csikszentmihalyi, European Research Area Chair at Madeira Interactive Technologies Institute, entitled "Political Economics of Design: recognizing that funding trumps form or function". Chris's presentation reflected on how the schism between paper design on one side, and the actual material world that is produced on the other, is as wide now as it has ever been. Design for sustainability, design criticism, and speculative design constantly outstrip what actually gets made in the world, posing the real question of whether design can be an effective agent of social change. The invited

opening keynote speaker also showed all present how new forms of cooperative approaches to the production of our material culture are possible.

The DM Doctoral Symposium included 11 presentations on various student's work in areas as diverse as on how design and digital media can be engaged with a local culture; cinematography, documentary cinema and film scenes affective classification; e-government portals improvement; interactive systems; facial skin texturing to help artists render emotions and exploring emotions through photographs, colouring and storytelling; open farming; innovation in extreme scenarios; and integrated communication in the context of participatory culture (Library Network).

Along with the presentations of the student's ongoing projects the program included two graduated – Jorge Pereira and Cláudia Lima, from U. Porto – and a first year students- Michelle Kasprzak, U. Porto - presentations.

The event concluded with a much participated debate, not only between students but also between students and faculty.

Digital Media Doctoral Symposium Presentations:

Chris Csikszentmihályi (European Research Area Chair at Madeira Interactive Technologies Institute) - Political Economics of Design: recognizing that funding trumps form or function.

Jorge Pereira (Alumni U. Porto) - Stories told, stories to tell — strategy, communication and participation with design and digital media engaged with a local culture

Carlos Ramos (FCT) - Interactive installations with cinematographic content, objects and data

Madalena Miranda (FCSH) - Collective Portraits Take Place in Contemporary History: a contribute to documentary cinema in digital media environment

João Castro Pereira (FCT) - Usability Evaluation and Methodology Development for E-Government Portals Improvement

Pedro Ângelo (U. Porto) - Designing Interactive Systems with dataflower

Luís Frias (FCSH) - EMOTAG - Film Scenes Affective Qualitative Classification

Teresa Vieira (U. Porto) - Consistent Facial Skin Texturing to Help Artists Render Emotions

Carla Nave Saraiva (FCT) - PaintMyEmotions: Exploring Emotions through Photographs, Coloring and Storytelling

André Rocha (FCSH) - GROUU – Open Farming

Michelle Kasprzak (1st year student, U. Porto) - Innovation in Extreme Scenarios

Cláudia Lima (Alumni, U. Porto) - Library Network: Integrated Communication in the Context of Participatory Culture.



António Coelho and PhD Graduate Jorge Pereira



Chris Csikszentmihalyi

All FUTUPLACES Photos by Luís Barbosa.
<http://luisbarbosaphotography.com/>

WORKSHOP AND LECTURE “ANALYZING SOCIAL MEDIA WITH DIGITAL METHODS”

■ Bernhard Rieder, associate professor in the University of Amsterdam, was in FCSH/UNL on October 21st, where he gave a short introductory workshop on data extraction and visualisation with Netvizz and Gephi, and a lecture entitled «Analyzing Social Media with Digital Methods: Possibilities, Requirements and Limitations».

Both events were promoted by the Digital Media PhD program and by the FCSH chapter of the research unit CIC.Digital (Center for Research in Communication, Information and Digital Culture), through an invitation made by Janna Joceli, one of the new students of the doctoral program.



Professor Rieder, besides teaching in the Media Studies department of UA, is one of the main researchers behind the Digital Methods Initiative, led by Richard Rogers. His work is focused on the theory and history of software and on the application and critique of digital methods for Internet research. As a software developer, he has

contributed to tools such as Netvizz, Instagram Hashtag Explorer and DMI-TCAT, which were also discussed both in the workshop and the lecture.

[Text by Jorge Martins Rosa, Photo by Janna Joceli de Omena]

UT AUSTIN | PORTUGAL @ ICT 2015

■ The UT Austin | Portugal Program participated in the ICT 2015 - Innovate, Connect, Transform, an event organised by the European Commission, with Fundação para a Ciência e a Tecnologia (FCT), that took place in Lisbon, from October 20 to 22.

More than 6.000 visitors were present during the three day event, offering the UT Austin | Portugal Program the opportunity to present its past, ongoing and future work and activities.

The international partnerships with the American universities – UT Austin, CMU and MIT – showcased several research projects. Ana Jorge, a Digital Media PhD student from the UT Austin | Portugal Program, presented her work “Interactive Visualizations of Movies’ Collections and Contents in Time and Space”.



FACULTY WELCOMES NEW UNL DIGITAL MEDIA PHD STUDENTS



■ The official start of the 2015/2016 Digital Media PhD course at UNL took place October 13, at FCSH, with a welcome session to all first year students from FCT/UNL and FCSH/UNL followed by the first class in História e Tendências dos Media Digitais, with professors Rui Cádima and Jorge Rosa.

Several faculty of the Digital Media Doctoral Program and executive staff of UT Austin | Portugal were present to introduce the PhD program to the new students and to meet all newcomers.

RESULTS OF THE 2015 CALL FOR DOCTORAL SCHOLARSHIP IN DIGITAL MEDIA

■ The 2015 Call for Doctoral Scholarship in Digital Media received 38 applications.

The jury evaluated the 38 applications according to the evaluation criteria's defined in the **announcement** having recommended for funding the 9 PhD scholarships mentioned in the referred announcement.

AUTUMN SCHOOL ON NONLINEAR SCIENCE

■ Instituto Superior Técnico (University of Lisbon) held an Autumn School on Nonlinear Science, from 5 to 9 October 2015.

The school brought together prominent researchers, known for their expertise in modeling, analysis and simulation of nonlinear phenomena, and graduate and post-graduate students from around the world for five days of research training. The event, that had about 50 participants, comprised an intensive program for a weeklong short courses complemented by tutorial sessions ran by post-graduate students. It focused on non-local or nonlinear partial differential equations with applications ranging from phase transitions and free boundary problems to porous media flows and contaminant transport in subsurface environments.

School Speakers:

Clint Dawson (Institute for Computational Engineering & Sciences, (ICES), UT-Austin, USA);
K.R. Rajagopal (Texas A&M, USA);
Tuomo Kuusi (Aalto University, Finland);
Peter Knabner (Universitat Erlangen-Nuerenberg, Germany);
Alexei Novikov (Penn State University, USA)

Scientific Committee: Clint Dawson (UT Austin), José Miguel Urbano (Universidade de Coimbra), Juha Videman (Instituto Superior Técnico, Universidade de Lisboa)

Organizing Committee: Margarida Baia, Farid Bozorgnia,

Léonard Monsaingeon, Juha Videman (Instituto Superior Técnico, Universidade de Lisboa)

More information:

<https://nls2015.math.tecnico.ulisboa.pt>



PLUNC

FIRST EDITION OF THE INTERNATIONAL DIGITAL ART AND NEW MEDIA FESTIVAL IN LISBON AND ALMADA

■ PLUNC started as a small conspiracy in Porto, during Futureplaces 2013. Gathered around a dinner table, a few CoLab students from Lisbon (or studying in Lisbon and Almada) asked themselves why digital art seemed to be constantly adrift their own city, and why so few events allowed them to show work in it.

Two years later PLUNC emerged with its own identity, addressing the lack of events and spaces - in the Lisbon/Almada area - showing New Media and Digital Art. It is a platform for people in this field to present work, blend in, learn from each other, experience, collaborate

and discuss projects in the intersection of Art and Technology. The Open Call plays an important role on the development of the festival as it is partially shaped by the selected works. And finally, an opportunity to show work in this area was created.

In order to bring both shores of Almada and Lisbon closer together, this year's edition targeted interactive works that focused on the concepts of proximity, approximation and pathways. To fully experience the festival, between September 24 and 27, people had to make journeys between the two shores of the Tagus

River with activities taking place in 7 different spaces spread in the Cacilhas - Cais do Sodré axis.

During these four days, PLUNC had several exhibitions, workshops, talks and performances, welcoming a total of 33 artists and guests from different countries creating an informal space for ongoing dialogue and interaction between artists, their work and the public.

Five spaces gathered a total of 13 interactive installations that the audience could engage with. "On the Shores" brought a selection of works in which the core concepts of the exhibition were differently explored and was divided in four different spaces: two deactivated waiting rooms at the fluvial terminals in Cais do Sodré and Cacilhas; Casa da Cerca - Centro de Arte Contemporânea and Ginjal Terrasse.

Both fluvial terminals were specifically designed to display the different interactive works and respect their specific needs. In Cais do Sodré, there was Els Viaene's "The Mamori Expedition" replaying and materializing a journey she once made, through her outstanding interactive sculpture. The different sounds, the water, the contour of the piece approximated the audience and re-created a journey into a new experience.



Els Viaene's "The Mamori Expedition"

Cuppetelli & Mendoza's piece "Nervous Structure" on the other hand, a site-specific installation, had an immediate response to the audience's movements and the idea of approximation and proximity between viewer and work, although automatic, seemed to incite an autonomous response. This was also the case with José Carlos Neves "Amachina", where the deconstruction of the idea of interface was a core component of the work.

Connecting Cais do Sodré to the south shore and Casa da Cerca, was a telescope pointed at the "Tweeting Antennas", by Ivan Vuksanov and Francisco Salgado. This work, selected through our open call, devised an obsolete communication system- the flag semaphore language - replicated by obsolete and dysfunctional

objects - two TV antennas - using new media (Twitter) to convey messages in real time.

Also, on the south shore of the Tagus River, remained the two other locations for the "On the Shores" exhibitions. At Ginjal Terrasse, "Anthemusa" by André Sier, invited both local and virtual users to draw figures which were projected through a laser beam pointed towards Lisbon. Further down, at the Cacilhas terminal, there were different works displayed, such as Alex Rothera's "Cove", an application that is now available for iOS devices, and "RootIO" by Jude Munkudane and Christopher Csikszentmihalyi, a radio-on-a-bucket system through which users can live-broadcast messages by dialing a number and having it immediately spread to listeners tuned to this station.

The concepts of approximation, proximity and pathways will remain as basic principles for future editions of the festival, as these concepts are vital to its dynamic.

This year we focused on a flow made possible through the ferry boats that connect Cacilhas and Cais do Sodré through our partnership with Transportes de Lisboa. We verified however, that it was not easy to engage passers-by and regular passengers in our festival and will work towards improving this engagement in the future.

The fifth exhibition space was located at the Faculty of Fine Arts of the University of Lisbon (FBAUL) and presented "Drawing ++", a small selection of works by Golan Levin and Zach Lieberman curated by the latter. We affectionately named the show as our own physical easter bunny, since it was hard to locate within the labyrinthic FBAUL building.



Drawing ++

"Drawing ++" was nevertheless directly connected to the workshop and talk given by Zach Lieberman, and managed to promote and attract the curiosity of both participants and students in the building.

4 other workshops took place at FBAUL and one was developed at FabLab Lisbon. We opted for some of the



Zach Lieberman Talk



Open Lab "Hack the Oceans"

workshops to start earlier than the festival's opening as we intended part of the results to be shown at the exhibitions. This was the case with "Paperbots", the workshop by Isabel Paiva and "Hack the Oceans", by Sebastian Muellauer, Benjamin Gaulon and Steffen Klaue. While "Paperbots" remained at the exhibition space at Cais do Sodré, "Hack the Oceans" became an Open Lab and had a performative launch on September 25, at the emblematic Cais das Colunas.

Two other Performances took place during the festival: "Biomediation" by Yago de Quay and João Beira, which unveiled "the role of the brain and emotions as audiovisual feedback and as an instrument for live performance", and "Kobayashi" by Ivo Teixeira, Rodrigo Carvalho, Patrícia Nogueira, Francisca Rocha Alves and Daniel Rodrigues Correia, who grasped the core concepts of this year's edition and provided a live audiovisual performance made of daily excerpts of the crossovers between Cacilhas and Cais do Sodré.

Finally, with the purpose of better understanding all these works and promoting dialogues between artists and audience, all artists were invited to talk about their work process and ideas. Additionally to these talks, there were also the Open Call Talks, which resulted from our Open Call, the Transtalks on the ferry boats, and a conference entitled "Augmented Aesthetics" questioning the role of technology on human perception, with special guests Sally Jane Norman and Heitor Alvelos, and invited artist Alex Rothera.

We see PLUNC as a successful event, a first edition of something that can be much more and yet has a lot to trim. What we learned so far is that there is indeed the need to provide opportunities like these to artists, as we do lack physical space and platforms (in the Lisbon/Almada area) to show and talk about new media and digital art, trends and cultures. Sometimes the digital needs tangibility.

More information: www.plunc.pt

1ST US WORKSHOP ON NANOSCIENCES / NANOTECHNOLOGIES

■ With the coordination of Brian Korgel and Paula Vilarinho (Emerging Technologies) the 1st US Workshop on Nanosciences/Nanotechnologies took place at the University of Texas at Austin, 14 and 15 September, with the purpose of stimulating collaborations between Portuguese and UT Austin researchers at the University of Texas at Austin.

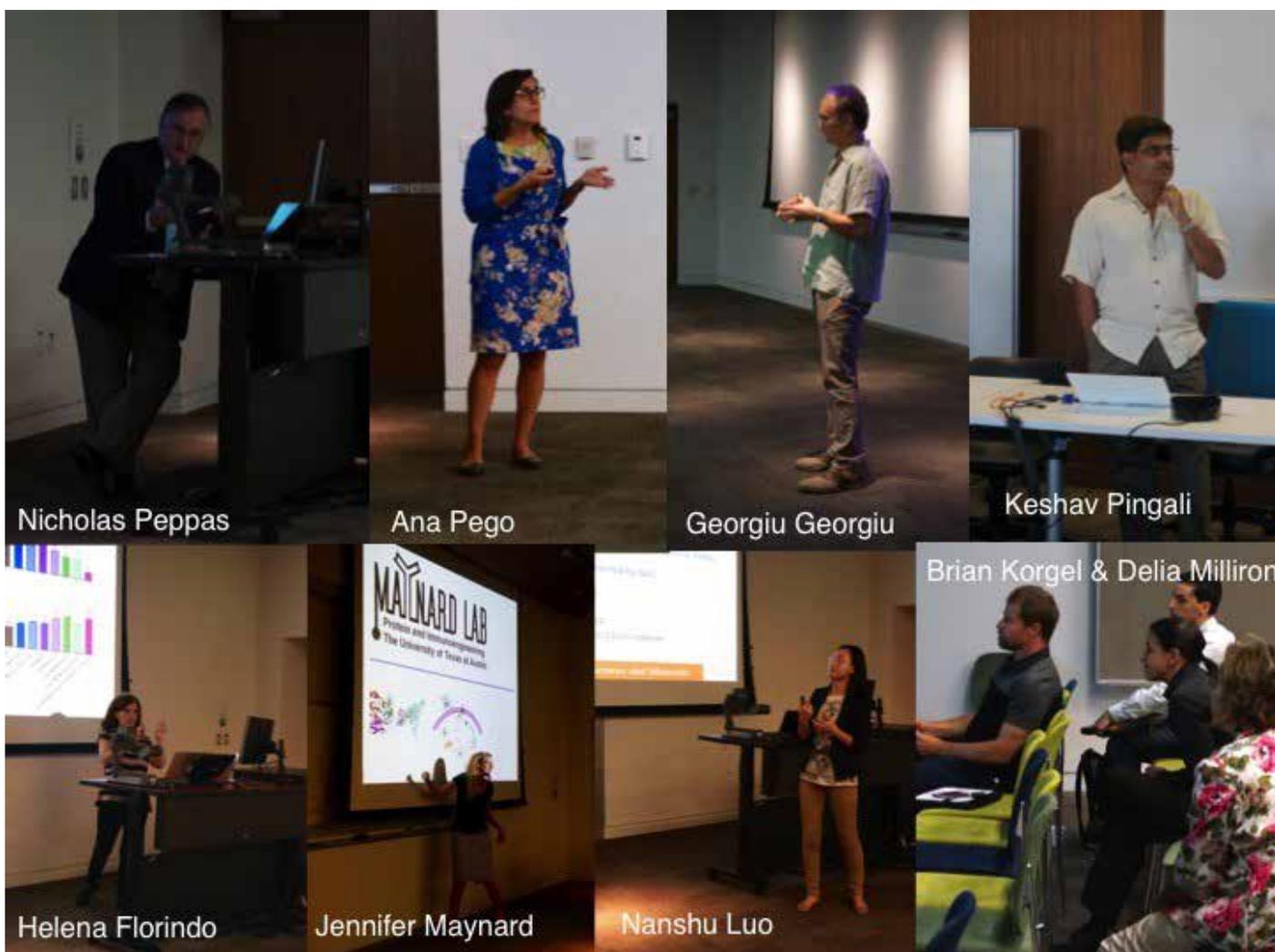


This meeting took the form of a workshop with presentations of scientific topics from Portuguese and US researchers, round table meetings to discuss joint projects and visits to facilities. A group of 10 researchers was selected from a range of Portuguese researchers who express an interest in participating. Participants were: Joana Doria Vaz Pinto (UNova de Lisboa), Carlos Miguel Calisto Baleizao (IST, University of Lisbon), Maria do Rosario Gomes Ribeiro (IST, University of Lisbon), Ana Paula Pego (University of Porto), Joao Tedim SMALLMATEK, Aveiro, Pedro Duarte (U Aveiro), Rob Pullar (U Aveiro), Maria Fernanda Paiva Proenca (U Minho) and Shahid Mumtaz (U Aveiro) from Portugal and Nanshu Lu, Nate Lynd, Laura Suggs, James Tunnell, Delia Milliron, Emanuel Tutuc, Jeanne Stachowiak, George Georgiou, Lydia Contreras and Jennifer Maynard, from UT Austin.

The 3 of the 5 Principal Investigators (PI) of the Portuguese projects recently approved by FCT under this program (namely: Ana Senos from the University of Aveiro, Cristina Freire, from the University of Porto and Helena Florindo from the University of Lisbon) also joined the meeting and presented the current results on their projects already ongoing. The same was done by the PIs of the US projects, Carolyn Seepersad and Nicholas A. Peppas both from UT Austin. The Portuguese students involved in the program also participated in this meeting. This meeting enhanced significantly the participation of American researchers, promoted partnerships and exposed the Portuguese researchers to the environment and resources (human and infrastructure) of R&D of UT Austin.

For a summary of the meeting please visit

<https://www.youtube.com/watch?v=2Ahw17szYAQ>.



■ The September Austin Meeting organized by Brian Korgel and Paula Vilarinho (Emerging Technologies) provided a challenging opportunity for an additional level of cross-disciplinary cooperation between Portuguese and UTA faculties: most sessions clearly displayed the role of modelling/simulation of nanomaterials and the impact of big data requirements in some key areas, which often require access to high performance computational resources with adequate software development. TACC at Austin runs one of the top 10 supercomputer centers worldwide; however, these resources are not unlimited and

software applications should follow strict and contemporary rules to be efficient in this new world of heterogeneous computing, where cluster nodes are now a mix of shared memory multi-core devices with computing accelerators based on manycore devices with different computing paradigms. Researchers in Advanced Computing under CoLab, both at Austin and in Portugal, have been addressing these issues in their activities, and some opportunities for future collaboration were identified during this 2-day meeting in Austin in September.

PEPPAS LABORATORY DEVELOPS WORK ON MOLECULAR IMPRINTING

■ The work conducted in the Peppas Laboratory in collaboration with Dr. Rui Reis and Dr. Manuela Gomes from University of Minho and Dr. Pedro Granja of the University of Porto, is focused on the development of molecularly imprinted matrices to enhance the specificity in the interactions between biomaterials and their environment to create responsive technologies. Molecular imprinting offers a promising strategy to tailor protein-biomaterial interactions and improve their bioactivity.

Through the synthesis of functional monomers possessing hydrophobic, hydrophilic, anionic, or cationic moieties around a protein template, recognitive networks are created that possess a geometric and chemical footprint. Our laboratory has synthesized smart polymers imprinted with lysozyme, cytochrome c, and trypsin and assessed the ability of these materials to capture, sequester, and delivery therapeutic proteins. Molecular imprinted polymers (MIPs) have exhibited selectivity for proteins

on the basis of molecular weight and isoelectric point. By example, trypsin MIPs bound approximately 59% more trypsin than control non-imprinted polymers as shown in **Figure 1**. Demonstrating semi-selectivity, these MIPs also bound other low molecular weight, high isoelectric point proteins lysozyme (48% increase) and cytochrome c (46% increase) while excluding large, negatively charged proteins (hemoglobin, 67% decrease).

During this project the **Peppas Laboratory** has also developed methods for synthesizing protein-recognitive polymers on the surface of biodegradable, poly (ϵ -caprolactone) (PCL) nanoparticles. Imprinting on

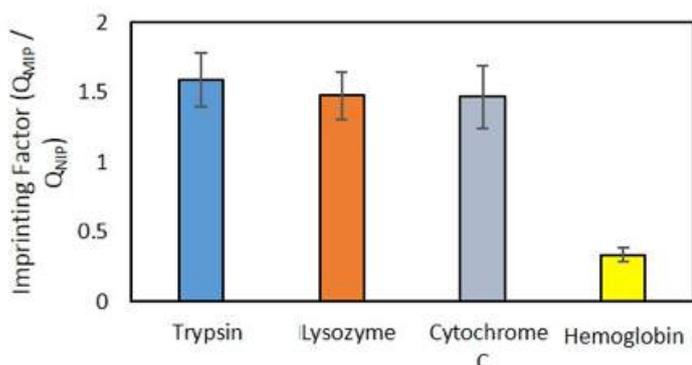


FIGURE 1. Molecular imprinting factors of a variety of proteins (Trypsin, lysozyme, cytochrome C and hemoglobin) using synthetic polymeric nanoparticles.

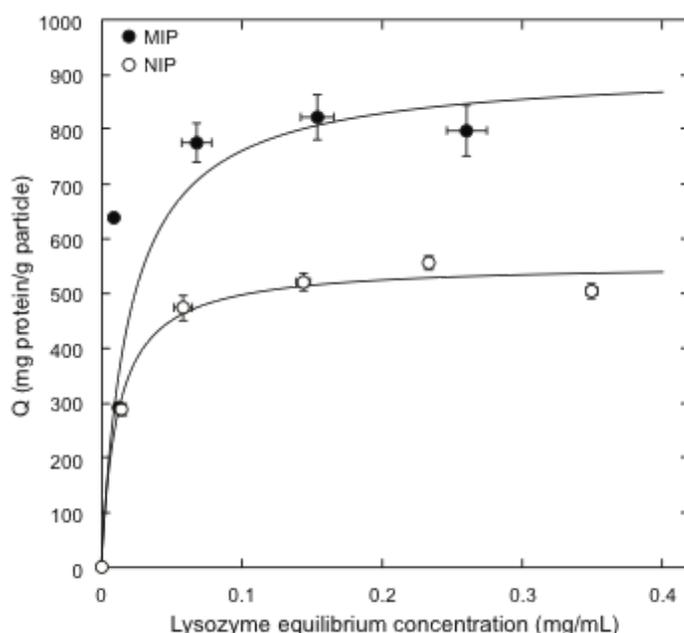


FIGURE 2. Results from batch rebinding studies of lysozyme to imprinted and non-imprinted polymer nanoparticles and fits to the Langmuir

the surface of nanomaterials mitigates the diffusional limitations seen with traditional bulk imprinting strategies. This is especially important for macromolecule templates such as the protein cytokines, growth factors, and biomarkers that are being explored as templates in this UT-Portugal collaborative project. We have demonstrated that PCL nanoparticles with molecularly imprinted polymer shells can bind significantly more of the template protein than PCL nanoparticles with non-imprinted shells (**Figure 2**).

In June of 2015, BME Ph.D. students **John R. Clegg** and **Heidi R. Culver** traveled to Guimarães, Portugal for the annual POLARIS/TERM STEM meeting and to the University of Minho in Braga. Each student gave an invited talk on progress in the UT-Portugal collaborative project. **Heidi Culver** presented her work on surface modification of nanomaterials, and synthesis of responsive polymer coatings and John gave a talk on the synthesis and characterization of imprinted polymers for high-isoelectric point proteins.

While at the meeting, **Heidi Culver** and **John Clegg** had the opportunity to meet and interact with Dr. **Rui L. Reis** and Dr. **Manuela E. Gomes** and their associates, tour the 3B's research facility, and meet collaborating students and scientists. These interactions resulted in the beginning of a new molecular imprinting project using natural materials for the recognition and delivery of protein and growth factors for bioresponsive tissue scaffolds in the Peppas group. Preliminary experiments have been conducted using alginate as a biomaterial to create molecular imprinted nanoparticles. As shown in **Figure 3** Alginate nanoparticles with 1% encapsulated-hemoglobin have been successfully synthesized. Furthermore, a postdoctoral research fellow from the University of Minho (Dr. **Rui Domingues**) will work in the Peppas lab for 6 months starting in January 2016,

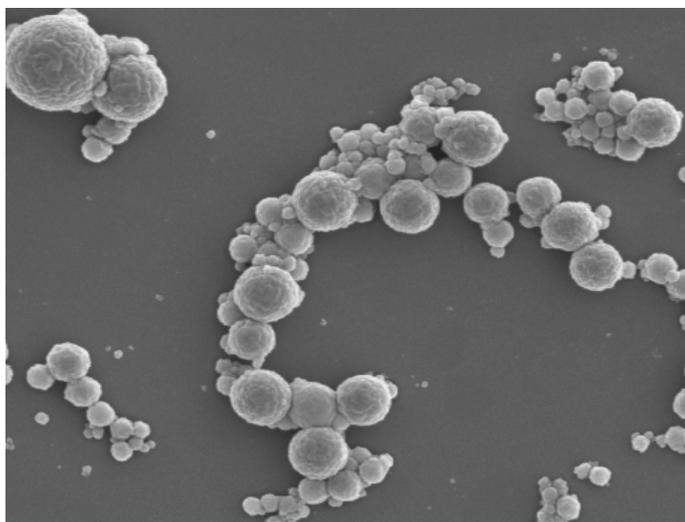


FIGURE 3. Scanning electron micrographs of hemoglobin-loaded alginate nanoparticles

to develop new technologies based on the results from these UT-Portugal projects.

In the UT-Portugal meeting in September 2015, Dr. **Helena Florindo** and students and postdoctoral fellows from the Peppas lab interacted and discussed possible opportunities for collaboration. Dr. **Florindo** presented her work on the development of nanotechnologies for drug and vaccine delivery. Specifically, her expertise in cancer research offered new insights on this disease and initiated communications for future collaborative projects. In March of 2016, Dr. **Julia Vela Martinez**, **Angela Wagner** and **Marissa Wechsler** from the Peppas laboratory will visit the University of Lisbon (and Wechsler will continue to the University of Minho) where they will be hosted by Dr. **Helena Florindo** and **Rogério Gaspar** and tour their facilities to discuss the progress of the second UT-Portugal collaboration.



Members of the UT-Portugal collaborating groups at Austin: From left, first photograph **Heidi Culver**, **Angela Wagner**, **John Clegg**, **Marissa Wechsler**, **Dr. Julia Vela**. Second photo: From left **Heidi Culver**, **Giulia Pasotti**, **Dr. Julia Vela**, **Dr. Ana Pego** (Univ. Porto), **Marissa Wechsler**, **Dr. Laura Strong**, **Dr. Nicholas Peppas**, **Dr. Helena Florindo** (Univ. Lisbon), **Angela Wagner** and **John Clegg**

Collaborative Projects in the UT/Portugal Program

Development of Scaffolds for Regenerative Medicine by Molecular Imprinting (US)

Manuela Gomes & Rui Reis (University of Minho), Pedro Granja (University of Porto), Nicholas Peppas (UT Austin)

Intelligent scaffolds for molecular recognition of advanced applications in regenerative medicine

Materiais de suporte inteligentes por reconhecimento molecular para aplicações avançadas em medicina regenerativa (Portugal)

Manuela Gomes & Rui Reis (University of Minho), Pedro Granja (University of Porto), Nicholas Peppas (UT Austin)

Multidisciplinary strategy for the development of a new multiple nanosystem for modulation of immunologic response

Estratégia multidisciplinar para o desenvolvimento de um nanosistema múltiplo para modulação de resposta imunológica (Portugal)

Helena Florindo & Rogerio Gaspar (Univ of Lisbon), Nicholas Peppas (UT Austin)



EMERGING TECHNOLOGIES STUDENT'S INTERNSHIPS AT UT AUSTIN

■ Pedro Duarte, a PhD student of the University of Aveiro, Portugal, started his internship at UT Austin (from June 2015 until May 2016), coordinated by Carolyn Seepersad (UT Austin) and Paula Vilarinho (U Aveiro). With the title "Additive manufacturing of Yttria-Stabilized Zirconia for Dental Applications", the objective of the proposed research is to design and provide proof-of-concept for an additive manufacturing technique — based on indirect selective laser sintering of nanostructured yttria-stabilized zirconia (YSZ) powders — for fabricating

customized ceramic dental components directly, without a mold.

■ Another PhD student of the University of Aveiro, Portugal, Manuela Fernandes, also just started her internship at UT Austin (from November 2015 until April 2016). Coordinated by Paulo Ferreira (UT Austin) and Ana Senos (U Aveiro) she will be studying thin films of KNN in different substrates, with in-situ TEM heating experiments from room temperature to 1000 °C.



Pedro Duarte (U Aveiro Portugal), Carolyn Seepersad (UT Austin) and Paula Vilarinho (U Aveiro Portugal) @ UT Austin in September 2015. Pedro Duarte is the first intern student within Emerging Technologies.



Manuela Fernandes (U Aveiro Portugal) @ UT Austin in November 2015

WORKSHOP ON MOLECULAR GEOMETRY AND VISUALIZATION

■ INESC-ID Lisboa organized a Workshop on Molecular Geometry and Visualization, in September 11, at the Centro de Congressos do Instituto Superior Técnico. This workshop gathered members of an exploratory research project, supported by the UT Austin | Portugal program, which aims to develop more efficient algorithms to detect pockets in very large molecules. Such algorithms are important in the design of new drugs, as they can predict the location where drugs can bind to a specific protein and, consequently, determine its implications on protein function.

Dr. Chandrajit Bajaj, professor of Computer Science at the University of Texas at Austin, was the special speaker of this workshop, and shared his vast expertise in this area with the Portuguese project members, allowing to refine the technical approach and better define the scope and contributions expected from the research project.

This workshop was supported by the Fundação para a Ciência e Tecnologia through the project A-MOP

- Algorithms for Macro-Molecular Pocket Detection, UTAP-EXPL/QEQ-COM/0019/2014.

For more information please visit <https://sites.google.com/site/amopworkshop2015/>



UTEN TEAM MEETS WITH APPLICANTS OF GLOBAL STARTUP PROGRAM

■ In September, IC2 Institute Program Director Marco Bravo led the UTEN team as it traversed Portugal to meet the entrepreneurs who applied for the Global Startup Program. To assist all applicants in making their strongest presentation, the team scheduled two-day visits in Coimbra, Lisbon, and Porto. At each location, on Day One they provided a workshop on Entrepreneurial Storyboarding and constructing a value proposition for the US market. Day Two was devoted to interviews.

The workshop day was met with high enthusiasm. Fernando Sousa of Video Observer said, “Our three managing founders attended this workshop and it was of great value. We spent a day reviewing our business model and the value chain, from the market problem that we address to the different actors in our business model. The workshop obliges you to break down your business model to the important and essential pieces, and focus on what is important—helping you to define your value offer to different market players.”

Incubation

Eight ventures have been selected for assistance in business development:

- Biopremier
- Celfinet
- Dognaedis
- Eyesee
- Line Health
- Veniam
- WY Group
- Xhockware

These early stage firms have strong international market potential, and the GSP team will help them address global market challenges. In November, these entrepreneurs visited Austin to attend strategy sessions, meet with industry experts, and expand on the insights gained in September’s workshop. Lourenço Oliveira, Business Developer for Line Health, described GSP’s role as a very positive one, saying, “UTEN brings American startup know-how to the Portuguese ecosystem. They teach us best practices and methods, without which we couldn’t aim at becoming successful entrepreneurs.”

Acceleration

The GSP team will also be helping another ten businesses in an acceleration process to increase their access to international opportunities:

- BeMicro
- Ciengis
- BVCreative
- Coolfarm

- doDoc
- Peekmed
- Petable
- Switch
- Sword Health
- Watt-IS

These firms have a product ready to meet global needs, with market-appropriate branding materials, that has already met with success in domestic sales.

Results

The 2015 GSP cohort has seen significant results. For example, in the past six months Take the Wind has signed a distributor agreement with Skillqube in Germany, finalized a multi-year exclusive distribution deal in Philadelphia, and secured a contract agreement with the American Heart Association (AHA) to showcase Body Interact at AHA's October conference in Orlando.

Line Health (formerly PharmAssistant) has reimagined the business's value proposition to enlarge its potential in the US market. The firm changed its name and its branding, redesigned its main product, and is now conducting a clinical pilot with the NeuroTexas Institute. CEO Diogo Ortega said, "GSP has added an immense value since our first interaction one year ago, as our internal KPI's show."

The University Technology Enterprise Network (UTEN) is an initiative sponsored by the Portuguese government and established by the IC²Institute to provide Portuguese technology firms with opportunities for international outreach, acceleration, and business development. The Global Startup Program (GSP) selects burgeoning Portuguese firms for global market acceleration.

For more UTEN GSP news check online:

www.utenportugal.org/



TEXAS GOVERNOR Takes the Wind. Governor Greg Abbott enjoyed a demonstration of Body Interact (a product of UTEN GSP's venture Take the Wind) while visiting UT-Rio Grande Valley Regional Academic Health Center with Senator Cornyn, VA Secretary McDonald, and Congressman Hinojosa. Photo courtesy of Governor's Staff

DIGITAL MEDIA DOCTORAL STUDENTS' NEWS

Fernando Nabais contributes with essay to "Digital Movement" book

■ Digital Media PhD student Fernando Nabais contributes with an essay to the just released *Digital Movement* book by publisher Palgrave Macmillan. This book is the recent addition to the Palgrave Studies in Performance and Technology and was edited by Nicolas Salazar Sutil and Sita Popat, following the conference Corporeal Computing:

A Performative Archaeology of Digital Gesture, that was held in the University of Surrey in September 2013. "Digital Movement addresses the evolving ways in which movement and its technological mediation can inform creative thinking and embodied practices. In order to identify unique cross-disciplinary links within human movement research this book brings together experts from a number of creative disciplines including dance, theatre, sculpture, as well as computer and mathematical art, whilst offering an integration of scholarly perspectives from cultural, media and performance studies." The book is a collection of thematic essays from several artists and theorists, such as Sally Jane Norman, University of Sussex, UK, Thecla Schiphorst, Simon Fraser University,

Canada, Mark Coniglio, Independent Artist, UK, or Tom Calvert, Simon Fraser University, Canada, among others. Nabais essay, *I_CARE_US: Flying Robots and Human-Robot Interaction in Digital Performance*, analyses the aesthetic exploration of drones in digital performance, framing it in the history of robotic art and the earlier experiences of Futuristic Aerial Theatre, in the 1920's. Nabais own piece, *I_CARE_US*, a performance for one drone and one performer, premiered in Teatro São Jorge, Lisboa, in 2014, is also dissected in its aesthetic dimension as in its contribution to studies in human-robot interaction.



Tiago Videira concludes his PhD

■ Tiago Videira finished his PhD thesis, entitled “Instrumental Fado: A generative interactive system” which was approved unanimously at FCSH/UNL in November 2nd.

Here is his testimonial:

“My PhD was a life changing experience and a fantastic opportunity to learn, grow and become a more mature, well-rounded human being. The two years I’ve lived in Austin, in particular, were absolutely overwhelming. The outcome of this process resulted in an interdisciplinary journey in which I detail how I have deeply studied and formalized a musical practice (in this case Portuguese Fado) and then programmed a computer model able to automatically generate instrumental songs, which are sound-alikes of the musics and sounds typically associated with fado practice. The model is modular and flexible and can be adapted to generate many other kinds of songs. With the right data it can generate Satie like music, Danny Elfmanish music or any other musical practice desired. The main purpose of this journey has been to illustrate my methodologies step by step (kinda like a how-to book, or a kitchen recipe book) in such a way that researchers can then use it to study and model whatever musical practice they desire.

In the first part of my dissertation I show how the concept of fado historically emerged, what it represents, and how it has changed. Moreover, I offer a detailed, holistic and systematic characterization of the musics and sounds associated with it (both instrumental and vocal), providing a series of factual and empirical descriptors. I discuss some values associated with fado through a systematic analysis of the performance practice itself, as portrayed by its performers, audiences and scholars, along the course of history, and offer a detailed characterization of its traits. A combined interdisciplinary methodology following the lines of ethnomusicology (ethnographic and historiographic methods) and psychology of music has been used.

I have complemented the analysis with the use of computational musicology on empirical data. I have conceived a musical corpus with 100 transcriptions, identified as fado, found in the written sources. These transcriptions are piano reductions, adapted for the domestic market, of both the instrumental accompaniment and vocal line sung, the vocal line being reduced to an instrumental version. This corpus

was edited and will soon be made available as a digital database (<http://fado.fcsh.unl.pt>). This database consists of the musical scores, MIDI files, analytical, formal and philological commentaries, as well as slots for relevant information (sources, designations, date(s), authorship(s)) for each fado. The creation of this new digital object is relevant for archival and patrimonial purposes. I have applied music information retrieval techniques, followed by statistical procedures, on the corpus, in order to identify some patterns and rules shaping its characteristics. The results and conclusions allow a better understanding of what fado is and open doors regarding the construction of a theory, parametrization and modeling of the music and vocal sounds associated with it, for pedagogical, patrimonial and composition purposes, namely automatic generation of similar music.

The second part of the dissertation deals mainly with computational creativity. After providing a state of the art, I conceive and describe a model based on the previous sections: a digital system, capable of generating new instrumental music (based both on the instrumental and vocal line usually present in fado practice, the vocal line being reduced to an instrumental version), following the processes and rules previously found. I also discuss and present ideas for automatic evaluation of the system and future work to be done, namely the ability to expand the model to suit other musical practices.”



UPCOMING EVENTS

■ Porto Winter School on Graph Analytics and Applications 14-16 December, 2015

Venue: CS Department, FCUP, University of Porto

Organizers: DCC/FCUP & UT-Austin

Sponsored by: CoLab project between Portugal and the University of Texas at Austin

Registration is free with limit on the number of attendees.

More Information: <http://graph15.dcc.fc.up.pt/>

■ xCoAx 2016: 4th International Conference on Computation, Communication, Aesthetics and X 7-8 July 2016

Location: Bergamo, Italy

Call open until 31 January 2016 - Topics:

Computation; Communication; Aesthetics; X; Algorithms / Systems / Models; Artificial Aesthetics; Audiovisuals / Multimodality; Creativity; Design; Interaction; Games; Generative Art / Design; History; Mechatronics / Physical Computing; Music / Sound Art; Performance; Philosophy of Art / of Computation; Technology / Ethics / Epistemology .

xCoAx is an exploration of the intersection where computational tools and media meet art and culture, in the form of a multi-disciplinary enquiry on aesthetics, computation, communication and the elusive x factor that connects them all.

Organizing committee

André Rangel, CITAR / Portuguese Catholic University

Alison Clifford, University of the West of Scotland

Graeme Truslove University of the West of Scotland

Jason Reizner, Faculty of Computer Science and Languages, Anhalt University of Applied Sciences

Mario Verdicchio, University of Bergamo (Conference Chair)

Miguel Carvalhais, ID+ / Faculty of Fine Arts, University of Porto

Pedro Tudela, i2ADS / Faculty of Fine Arts, University of Porto

More information: <http://xcoax.org/>

■ Additive Manufacturing Summer School June 2016

Location: University of Aveiro

■ 1st Meeting on Technology Transfer for Emerging Technologies Fall 2016

Location: Lisbon

ONGOING OPPORTUNITIES

■ "USA@PT Grants" 2016

- Grants to Support the Participation of Speakers from the U.S. at Conferences and Seminars in Portugal
- Deadlines for applications open for Conferences, seminars and workshops in Portugal from April to December 2016

<http://www.flad.pt/en/usapt-grants-2016/>

■ Joint Transnational Call for funding of European Research Projects on Internet of Things

- Deadline - 13th January 2016

http://www.fct.pt/calendario/docs/CHIST-ERA_Call_2015_Leaflet.pdf

MORE OPPORTUNITIES can be found at FCT website: <http://www.fct.pt/concursos/>

USEFUL LINKS

www.utaustinportugal.org

www.fct.pt

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