UT Austin | Portugal

Interdisciplinary Research, Education, and Capacity Building in

Advanced Digital Media

2008-2009 ANNUAL REPORT & FUTURE STRATEGY
Prepared for the External Review Committee
January 2010

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

UT Austin | Portugal

INTERNATIONAL COLLABORATORY FOR EMERGING TECHNOLOGIES, COLAB

Interdisciplinary Research, Education, and Capacity Building in

Advanced Digital Media

2008-2009 ANNUAL REPORT & FUTURE STRATEGY
Prepared for the External Review Committee
January 2010

CONTENTS

CoLab Strategy

VISION & MISSION[1]

In March 2007 the Portuguese Science and Technology Foundation (FCT) working with the University of Texas at Austin (UT Austin) launched The International Collaboratory for Emerging Technologies (CoLab). The main objective of this 5-Year collaboration was, and continues to be, to strengthen Portuguese scholarly research and graduate-level education, industrial links, and academic entrepreneurship.

The first two years of this collaboration focused on building strong and mutually beneficial scholarly relationships among Portuguese and UT Austin faculty and students in three academic areas: Digital Media, Advanced Computing, and Mathematics. Emphasis was focused on establishing collaborative research, faculty and student exchange, and capacity building though conferences, workshops, and academically-related events.

We have had many successes to date. As of summer 2009 we have held classes and events in Austin, Porto, and Lisbon reaching hundreds of students and professionals, providing an array of both theoretical investigations as well as media-making training. We have crafted graduate programs at both the doctoral and the MA level. Research proposals have been funded by FCT, and that work is now ongoing. Faculty and students are visiting each other's campuses and beginning to work together.

Beginning in Year 3, and increasingly with the planned programs and activities of Year 4, the emphasis is on building research and educational excellence and collaborations across the three academic programs in support of a new CoLab focus: Advanced Digital Media. To this end, three major initiatives were launched at the end of CoLab's third year, August 31, 2009:

1. On July 31, 2009, The FCT issued a call for joint research and development projects with a focus on (1) the future of television, (2) the future of news, (3) interactive media

environments and serious games, and (4) exploratory R&D projects in interactive and digital media. These resarch proposals were due on December 11, 2009.

2. In September 2009, a new joint PhD degree in Advanced Digital Media was established between the Universidade Nova de Lisboa (UNL) and Universidade de Porto with dual degree collaborations with the University of Texas at Austin.

3. Two Media Ground Collaboratories were established to provide interdisciplinary students and faculty with a common space for research and training: one at the Universidade Nova de Lisboa and another at the Universidade de Porto.

WHY ADVANCED DIGITAL MEDIA

As CoLab research and education opportunities became more defined during years 1 and 2, Advanced Digital Media emerged as a prominent transdisciplinary keystone academic area. Advanced Digital Media facilitates new devices, methods, and processes for industry, education, and entertainment applications. From medical diagnostics, learning modules, and telecommunications devices, to musical experiences and multi-site multi-player gaming – Advanced Digital Media is at the leading edge of technology and product development, as well as transdiciplinary scholarly contributions. This domain reporesents the blending of old and new media and incorporates the mathematical and computational bases for many innovations and applications.

While media technology and applications are evolving at an astounding rate, there is rapid saturation of these technologies into our cultures and, as a result, new social structures emerge. Because new media forms are interactive, questions arise to go beyond the bounds of old style notions of meeting market needs. As the audience becomes author, new challenges arise concerning the role of the media itself, as traditional roles are challenged or displaced. To keep pace with these diverse phenomena, Colab will increasingly focus on the following strategic activities:

*   Digital Media Content Creation
*   Evolving Media Industries

[1] A fourth component of CoLab is the University Technology Enterprise Network (UTEN) which has the objective of training university-based Technology Transfer (TT) Officers to establish a globally competitive and sustainable TT network in Portugal. UTEN's report for year 3 activities and year 4 strategy is a separate document. (Also see www.utenportugal.org).

- Interactivity: New Horizons for Technology, Software, Interface Applications
- Creating a Climate for Creativity in Digital Media in Portugal

STRATEGY FOR FUTURE

The broad scope of our program in advanced digital media recognizes the significant cultural currency of media in all of its forms. Whether in advertising, film, television and radio, Internet-based applications, the range of social networking tools, or embedded in architecture, performance and art, media saturate our world, informing our sense of identity, shaping our imagination even as it is shaped by our creativity.

We recognize in particular the necessity of creating robust networks of colleagues in this arena inasmuch as in the current century, it is *networks* and flows of information that will have critical roles in defining and channeling intellectual collaboration and accomplishment. Meaningful networks penetrate many institutions and organizations and epitomize the notion that innovation and knowledge can come from many quarters. Networks composed of professors, students, and people working in industry and government and civil society will be called on to work together in an increasingly complex society; having the new doctoral program in place is a major contribution to creating a deeper and resourceful network. Creating the relationships among these constituencies that will be most fruitful for the future represents a critical component of the UT-Portugal program.

Now that we are at the midpoint of our collaboration with Portugal, it is time to reassess and rechannel our efforts. New partners have sought us out and we are anxious to expand our efforts to new universities and research units. Our trajectory for the next two years must grapple not only with changes in the broader world of media and Internet-based communications systems but also with the need to integrate the regular presence of more Portuguese scholars and media businesses into the top rank

of research opportunities and international research publications and conferences.

As well, the borders between computational research and capabilities and digital media research and capabilities are blurring. Bridging these two programmatic areas and uniting them under one broader program, advanced digital media, will serve to better convey the possibilities that this domain represents. Our plan is to create environments and opportunities in which computer scientists can actively work with people in the arts and social sciences, each enriching the other's perspective and imagination. To this end, linking the UT Austin advanced digital media program with the parallel efforts of the Portugal-Carnegie Mellon program (particularly in interface design and entertainment technology) will enhance our overall achievements.

Our goals for the next two years will focus on these domains:

1. Cultivating digital media content creation capabilities
2. Exploring and improving evolving media industry organizational structures and opportunities
3. Understanding the dimensions of interactivity
4. Enhancing resarch skills and the repertoire of research approaches
5. Creating a climate for creativity in advanced digital media.

1. Cultivating digital media content creation capabilities

We plan to bring new digital media production competencies and an expanded sense of narrative structures and user interactions to industry and academic knowledge frameworks. Advanced courses can introduce new concepts and explore industry applications prompted by new media opportunities. The newly created Ph.D. and retooled MA programs create opportune venues for nurturing new content creation modes and ideas.

Our Summer Institute courses, generally intensive two-week long classes taught by UT Austin professors, will continue to provide

instruction in the basic structures and production of narrative and documentary media as well as advanced graphics and effects, alongside courses in online journalism and media theory and research. As well, the intensive, advanced workshops offered at venues such as the fall Digital Media Festival Future Places will provide students and members of the professions with opportunities to acquire specific skills and to network with each other.

The newest venture in this domain will be the *UT-Portugal/Zon Intensive Script Development Lab,* to be inaugurated in Austin in the summer of 2010. Emerging filmmakers in Portugal will be selected to spend two months in Austin to receive intensive training in writing, producing, and directing. Several universities in Portugal are collaborating with this effort, including Universidade Católica Portuguesa, Universidade de Aveiro, Universidade Lusofona, Universidade do Porto, Universidade Nova de Lisboa, Professor de Ciencias da Comunicação na Universidade da Beira Interior, and Universidade do Minho.

One byproduct of this collaboration with media company ZON will be the opportunity to explore other ways our program efforts can contribute to Portugal's content-creating/distributing/exhibition industries.

We also plan to support the doctoral programs by contributing UT Austin faculty expertise in various domains. For example, Dr. Derek Lackaff will be offering a long-semester class in 2010 on new media theory. He will initiate and close the course in person in Portugal and conduct several classes using videoconferencing from Austin.

2. Exploring and improving evolving media industry organizational structures and opportunities

Even as conventional media industries struggle to change their models, new ways of doing business appear. Our efforts should blend the best of research with the best of the market and aim to yield new "best practices" models and to identify the cutting edge challenges.

The proposals requested by the last research call under the category of Strategic Research will have catalyzed ideas about the needs of various media organizations in Portugal and perhaps more broadly the world. Two of the focus areas in that call were "Online journalism" and "the future of digital television." We anticipate working with students, researchers and the media industries to create robust fora in which experiments and investigations can probe the possibilities for creating new media organizations and activities, and for recasting the important roles that media play in social life.

We also plan to include focused courses on new media businesses. We have already begun this with courses such as *The New Hollywood* (which explores the impact of digital technologies in filmmaking and exhibition practices), and we plan to incorporate topics such as *Interactive Advertising* into our offerings as well.

Our internship programs likewise contribute to this goal. We have been placing interns from Portugal with local media industries, and will continue to do so. We also plan to cultivate more internship opportunities within Portugal.

3. Understanding the dimensions of interactivity

Hardware and software developers as well as social scientists are pushing the boundaries of interaction, and new digital technologies are expanding the horizons of what *interactivity* is, how it might operate, and what it means for individuals, social groups, and organizations.

We plan to offer a long semester, research-oriented course in Interactivity that will blend the interests and concerns of social scientists with those of media developers. Interactivity is also a core concern of the International School for Digital Transformation, particularly in terms of how new systems for collaboration, data gathering, and feedback can improve governance processes.

As well, one of the currently-funded research projects exploring computer-controlled music generation provides a tangible foundation for investigating one form of interactivity. Even as the broader consumer electronic industry is released or announcing gesture-controlled media systems, our researchers likewise are exploring those same opportunities.

4. Enhancing research skills and the repertoire of research approaches

New media bring with them new ways to gather and use data as well as new opportunities to incorporate multi-modal information into products and services, artistic experiences, and social organizations.

We plan to offer formal coursework in research methods, and will use the processes and outcomes of the research projects funded by FCT to promulgate new research approaches.

Our International School for Digital Transformation (ISDT) in summer 2010 will focus on using digital tools for research related to improving civil society. ISDT premiered in summer 2009 as a residential program for 50 international graduate students working with 30 international faculty. Over the course of a week, the combined faculty and students presented papers and engaged in lively debate around many topics related to exploiting the capabilities of new modes of collaboration and digital tools more generally.

In summer 2010 we plan to focus ISDT on creating projects for civil society purposes, driven by collaborative teams of students and faculty. For example, one outcome of the 2009 ISDT was the creation of a Free Culture Portugal group that aims to publicize and promote the adoption of open source software around the country. Our next iteration of ISDT will seek to create more efforts like this.

5. Creating a climate for creativity in advanced digital media in Portugal

Academic researchers, civil society and media businesses too frequently operate in separate planes. We will endeavor to create more ways for these constituencies to work together.

Many of the events and venues we have created can play critical roles in catalyzing new ventures and putting Portuguese researchers onto an even more prominent international stage.

We have invested in prominent events that can showcase the activity and talent in Portugal, including the Future Places festival in Porto, the UFrame Film Festival, the Cinemateca Portuguesa (Lisbon) Digital Film Series (2008), the International School for Digital Transformation also in Porto, the Creative Cities conference in Lisbon, and the 6th International Sound and Music Computing Conference in Porto. Representatives of the advanced digital media program have had a presence in other events such as the SHiFT new media conference in Lisbon and Offf in Lisbon. Such public events demonstrate the growing role of Portugal in the media world, and the important presence of university-based talent in this new field.

We hope to grow the national and international recognition of Portugal as a creative center for digital media arts and sciences. These plans mesh well with some of the plans to develop Lisbon and Porto as creative cities within the country.

A foundation of networks of scholars, research centers, businesses and professional associations will be linked through our events, research projects and educational opportunities. Such networks create the capital required to effectively take advantage of opportunities and to collaborate. Increasingly we are convinced that the social capital of these networks will be germane to helping Portugal assume a leadership role in the field of advanced digital media. During the coming year we will explore the creation of a network of research centers in Portugal affiliated with both international programs. Such a network will build on the "Mediaground" laboratory already established at the FCT campus of the University of New Lisbon. These Centers may provide the critical mass of talent (both faculty and students) required to attract talent nationally and internationally and strengthen the relationships of the Portuguese digital media industry with these programs. Furthermore, it will become a "brand" that in due time should stand for one of the most exciting digital media networks in the World.

The Mediaground network should be also managed to create an ecosystem (finance, partners, clients, patent lawyers, media relationships and advising on management, marketing and sales) facilitating the emergence of new digital media companies globally competitive.

Prof. Chandra Bajaj and Prof. Keshav Pengali (CoLab Advanced Computing Program Director) in the Applied Computational Engineering and Sciences (ACES) Visualization Laboratory). The image on screen is a 3D visualization of the dense packing of neuronal processes in the hippocampus of the brain. Portuguese interns Vanio Ferreira and Pedro Araujo contributed to this research during their stay in Austin.

Research

In September 2008 the FCT issued a national call for UT Austin|Portugal CoLab research and development projects in the following areas:

Digital media: participative media for education and culture; interactive media design; interactive music and sound design; online journalism; and film and television.

Advanced computing: methodologies and techniques in HPC and distributed/grid computing; and large scale data analysis and management to solve computational engineering and science problems.

Mathematics: algebra and number theory; applied and numerical analysis; analyses and partial differential equations; geometry and topology; optimization; stochastic processes and mathematical finance; and dynamical systems.

The FCT call was introduced through two sessions open to the general public: September 10, 2008 at FCSH/UNL in Lisbon, and on September 11, 2008 at FEUP in Porto. These sessions included discussion and an opportunity to address technical questions. Twenty-eight proposals were received. Selection metrics included: projects that were within CoLab parameters of interest; scientific relevance and merit; specific and achievable project goals; and international team selection.

Brief descriptions of the funded projects are shown in Table 1. As an example of one year's progress against R&D goals, Tables 2 and 3 provide progress reports on the Digital Media research projects, *Digital Inclusion* and *Kinetic Controller Driven Adaptive and Dynamic Music Composition Systems.* While research abstracts follow, grouped by academic area, teams of interdisciplinary faculty and graduate student researchers are exploring key underpinning concepts important to Advanced Digital Media.

DIGITAL MEDIA RESEARCH
Digital Inclusion
This project examines the digital divide, which is defined as gaps in technology access and use between generations and majority and minority social groups. This proposal is socially significant since Portugal has passed from being a country of emigrants to becoming a country of immigrants, from its colonies in Africa and Brazil in the last few decades, and more recently of immigrants from the countries of Eastern Europe. In the Lisbon area, 8% of children who attend school were not born in Portugal, which raises the question of how to combine the initiatives of digital inclusion and cultural integration. Access and use of digital media also vary between children who have access to these media at home, and those who only use them at school and in public access where use is limited and conditioned by circumstances. Principal Investigators are Cristina Ponte, Universidade Nova, Joe Straubhaar, UT Austin, and the research team includes José Azevedo, Porto. Table 2 provides a progress report on this project.

Kinetic Controller Driven Adaptive & Dynamic Music Composition Systems
Researchers on this project are examining techniques and strategies for computer-assisted composition in the context of real-time user control with non-standard human interface devices for applications in electronic art and digital entertainment systems. The research team is designing and implementing real-time software, hardware and specialized human-interfaces that will provide tools and resources for music, dance, theatre, installation artists, interactive kiosks, computer games, and internet/web information systems. The outcome of the project will be the creation of a modular toolbox for real-time dynamic music generation that will allow for the creation of software applications. Casa da Música (in Porto) and YDreams (in Lisbon) are pivotal partners in this research as they help to insure that the overall focus of the project (the creation of a software toolbox for real time control to be utilized by a broad range of users) will move toward applications meant to be engaging, entertaining and stimulating, Table 3. Principal Investigator: Carlos Guedes, INESC, Portugal; Research Team includes Bruce Pennycook, University of Texas at Austin; Tomas Henriques, University of Lisbon, Portugal; and Fabien Gouyon, INESC, Portugal.

Table 1. CoLab Funded Research Projects

Digital Media	Principal Investigators
Digital inclusion: examines the role of the digital divide in Portuguese society.	Cristina Ponte, UNL Joe Straubhaar, UT Austin
Kinetic controller driven adaptive and dynamic music composition systems: examines computer-assisted composition in the context of real-time user control with non-standard human interface devices for applications in electronic art and digital entertainment systems.	Carlos Guedes, INESC Bruce Pennycook, UT Austin
Advanced Computing	
Irregular applications for multicore processors: focuses on the use of optimistic parallel execution and program refinements to address parallel programming logistics.	João Luís Sobral, Univ. do Minho Keshav Pengali, UT Austin
Patient-specific cardiovascular modeling & analysis: to develop key modeling and analysis steps for the development of spatially realistic models of the human heart and vasculature, with patient-specific pathologies and malformations. *(Note: this project Includes cooperative support from the CoLab Mathematics group.)*	Adélia Sequeira, IST Tom Hughes, UT Austin
Mathematics	
Reaction-diffusion in porous media: seeks to introduce memory effects in the models for fluid flows in porous media characterized by small-scale and large-scale heterogeneities in several contexts.	José A. Ferreira, Univ. de Coimbra
Mathematical modeling and endoscopic image processing: to develop computerized and fast algorithms to identify and access ACF and polyps patterns, captured in vivo by endoscopy in order to facilitate and speed up screening methods toward prevention of CRC.	Isabel Figueíredo, Univ. de Coimbra
Applied mathematics from dynamical systems to cryptography: provides international faculty interaction to work on various mathematical focuses including dynamical systems, financial mathematics, game theory, optimal control, viscosity solutions, number theory, and cryptography.	Diogo Gomes, IST Lisbon
Nonlinear partial differential equations: seeking new applications for these equations against eight biomathematics tasks: Regularity for singular/degenerate PDEs; Numerical ocean and climate modeling; Nonlinear elliptic systems; Kinetic equations and BGK-type models; Problems driven by subelliptic operators; Drift-diffusion equations; Free boundary problems; PDEs involving variable exponents.	José M. Urbano, Univ. de Coimbra

ADVANCED COMPUTING RESEARCH
Irregular applications for multicore processors
Over the past thirty years, the parallel programming community has invented many tools and techniques for parallel programming of computational science applications like FFTs and finite-differences that are organized around defense matrices. However, new applications such as data-mining and social network analysis involve irregular computations that are performed on large, sparse graphs and trees. Little is known about how to write parallel programs for these kinds of irregular applications. The Portugal-UT Austin team is studying the use of optimistic parallel execution and program refinements to address this problem. Principal Investigators: Prof. João Luís Sobral, Universidade do Minho, and Prof. Keshav Pingal, UT Austin. Research team: Luís Paulo Santos, University of Minho, and Don Batory, UT Austin.

Patient-specific cardiovascular modeling & analysis
Starting from high-resolution volumetric medical imaging, researchers are developing spatially realistic physiological models of the human heart and vasculature, with its pathologies and malformations. The long term goal is the development of a semi-automated software framework for accurate structure elucidation from imaging, geometric processing for high fidelity finite element models with quantified uncertainties, as well as the physics simulations of pulsatile blood flow through the heart and vasculature models. The Portugal-UT Austin team is developing and deploying state-of-the-art techniques for key geometric and biophysics modeling and analysis steps that are essential for the ultimate development of this computational framework. Principal Investigators: Prof. Adélia Sequeira, IST, and Prof. Tom Hughes, UT Austin. The research team includes, from IST: Alexandra Moura, Alberto Gambaruto, João Janela, Juan Acebron; from Hospital Santa Maria: Jorge Campos, David Rodrigues, Rita Sousa, Carlos Mota Soares, Helder Rodrigues, José Carlos Pereira, José Manuel Pereira; from FEUP: Renato Natal Jorge, João Tavares, and from UT Austin: Prof. Chandra Bajaj.

MATHEMATICS RESEARCH
Applied mathematics: from dynamical systems to cryptography
Researchers from several disciplines are joining efforts in applied mathematics including dynamical systems, financial mathematics, game theory, optimal control, viscosity solutions, number theory, and cryptography. In dynamical systems the main focus research areas are Aubry-Mather theory, renormalization and attractors of semilinear parabolic equations. In financial mathematics focus is being placed on developing forward price models, interest rate models and stochastic volatility models, and first passage times in diffusion processes. Game theory oligopoly models are

Table 2. *Digital Inclusion* Research Project Status Report (November, 2009)

Full Title: DIGITAL INCLUSION AND PARTICIPATION. TRAJECTORIES OF DIGITAL MEDIA USE BY DISADVANTAGED SOCIAL GROUPS IN PORTUGAL AND THE UNITED STATES

Research Team: Joe Straubhaar, UT Austin, Cristina Ponte, Universidade Nova, and José Azevedo, Universidade de Porto

Research Activities, Phase 1:

The first semester of 2009 was taken up with research planning, background bibliographic research, and preliminary research in ethnographic observation of Internet public access sites and training programs. A major review and planning session took place in July 2009, just before the IAMCR meeting in Mexico City. The second semester of 2009 has been devoted to finishing bibliographic and theoretical frameworks, research in ethnographic observation of Internet public access sites and training programs (in Austin), and training for and conducting interviews.

Our literature and context/background review focused on these needs: Understand the conditions and tendencies for access and appropriation by users and non- users of digital media, with a focus on the groups which are digitally excluded (elderly, women, immigrants, ethnic and linguistic minorities) and in the digital integration of children and youth; Identify which national, regional, social and cultural modes and contexts could affect digital inclusion and participation. Due in part to our literature reviews and our discussions in Mexico City, we ended up focusing in theoretical terms on Silverstone's ideas on domestication of technology, Bourdieu and Bertaux on cultural capital and family trajectories related to life trajectories as related to media use, and Straubhaar's ideas on the relationship between multiple levels of identity and multiple uses of media and ICTs for different purposes.

The Mexico City planning meeting took all of one day and part of another. Joe Straubhaar and Jeremiah Spence (UT Austin), Cristina Ponte (U. Nova), José Azevedo (Porto), and Vivianna Rojas (UT San Antonio) took part. In addition to working through theoretical paradigms, we settled on basic research questions, and agreed on preliminary interview guides, which we subsequently modified somewhat.

It has been useful but always somewhat hard to work in a transnational and interdisciplinary perspective. The Portuguese team involves 20+ people, senior researchers and PhD students, placed at Lisbon, Coimbra and Porto. Sociology and Media Studies are the main scientific areas.

We have been working to communicate among ourselves about paradigms and ideas as well as to educate and train young student researchers in research about digital media. In Portugal the theoretical discussion among the researchers has been done through local meetings and a national one day seminar. Training young researchers for the qualitative study and the discussion around qualitative methods occurred in two Master Seminars on Research Methodology, in Porto and Lisbon Universities, and involved around 35 students. In Austin, that has been done by having all graduate and undergraduate student participants take a semester long course on Globalization, Migration, and Media Use.

In Austin, we did participant observation and interviewing in eight public libraries which provide public access to less advantaged users, five other kinds of ICT access and training centers, and with a couple of youth-focused technology training programs. Portugal is planning to focus on a couple of youth training programs and probably some public ICT access sites.

In Portugal, there are interviews with about 120 people, mostly living in metropolitan areas. Most of the semi structured interview took about 30-45 minutes. They covered all ages (15+), users and non-users of ICTs, and a balance among gender. In Austin, we are doing somewhat fewer interviews (45) in Austin and surrounding cities in the metro area. The interviews are semi-structured, with a larger focus on life history, as related to media. The media use questions are very comparable to those in Portugal. They will average an hour in length. The Austin side is taking this approach, so that these interviews are comparable to those we have done earlier, in terms of life history, but also comparable to Portugal in media use. The Austin sample also balances age, gender, ethnicity, and some recent immigrants vs. longer-term residents. There are some non-ICT users (rarer in Austin), some just now learning ICT use in programs and centers, and a balance of light, medium and heavy ICT use.

In Austin, each of 45 students are transcribing and writing brief analyses of their interviews, to be completed by December 11, 2009. In Portugal, transcriptions will be done in part by a research assistant and in part by interviewers. Both will be done by early January, so both Austin and Portugal teams can prepare an abstract for the IAMCR conference to be held in Braga in July 2010. Further analysis of transcripts will be done in the first semester of 2010. Teams to do that are being assembled in both Austin and Portugal. At least one Portuguese participant, Isabel Ferin, will take her sabbatical in Austin to participate in analysis here.

Table 3. *Kinetic Controller* Research Project Status Report (November, 2009)

Full Title: Kinetic Controller Driven Adaptive and Dynamic Music Composition Systems
Research Team: Carolos Guedes, INESC, Portugal; Bruce Pennycook, University of Texas at Austin; Tomas Henriques, University of Lisbon, Portugal; Fabien Gouyon, INESC, Portugal. Report submitted by Carlos Guedes and Bruce Pennycook. Corporate Partners; Ivan Franco, Y-DREAMS, Lisbon/Austin; Paulo Rodrigues, Casa da Música Education Service

Research Activities, Phase 1:
At the start of the project our team spent considerable effort defining and refining a detailed method of work for the overall project. Roles and tasks were assigned and a timetable of deliverables was devised. During Phase 1 we have completed a substantial literature review. At UT, B. Pennycook engaged Ph.D. candidate, Jason Rosenblum (Educational Technology) to populate a WIKI with past and current research in the following domains: algorithmic composition, generative composition, music perception and cognition (restricted to papers dealing with compositional modeling), and some very recent work in the field of mathematics and music. The WIKI is hosted by UT and is shared by the team. For now, the WIKI is open only to team members. At present, we are expanding the WIKI with additional literature reviews undertaken in Porto. Ultimately we will make it publicly readable as a service to other researchers.

The literature reviews have led us to consider other areas of research, especially the emerging field of music mathematics. Most of the generative music examples we have examined work fine for short-term output. For example, Brian Eno's clever ambient music iPhone app, Bloom makes pleasant but highly repetitive environmental sounds. Researchers at IRCAM and other centers are discovering formal (meaning computable) models for musical structure. Important earlier work by David Cope (UC Santa Cruz) serves as a starting point to consider how generative music processes (the second part of our title) work over larger time frames. Another difficult area of consideration we are exploring is a means to gather musical style preference. Research by Robert Rowe (NYU) and a project called Sourcetone suggests that by using a small number of audio signal feature extractors, it is possible to envision operations within our proposed system that permit an end user to record clips of music which, when analyzed, will generate new music in the same general style. We are also investigating new controller systems. Pennycook is exploring dynamic manipulation of generative parameters using a 3D controller called Space Navigator (widely used by the autocad community).

The INESC Porto team started their work on the project on August 1st under the supervision of Carlos Guedes (PI). Two researchers were hired for a period of five months as a result from a call published according to FCT recruiting guidelines (calls in attachment). These two researchers, Samuel van Ransbeek and André Baltazar are fulfilling aspects of Tasks 1 and 3 of the original proposal entitled "Literature search and review" and "System analysis and design" respectively. Composer Samuel van Ransbeek focused his work on reviewing published algorithms for generative music and their implementation on graphical programming language Max for testing and evaluation. He also did a thorough review of applications that involve automatic music generation, namely iPhone applications such as Bloom, Trope and Air by Brian Eno and other applications for automatic music generation currently available on the web, such as Nodal, Tiction, the applications for automatic music and sound generation by Karlheinz Essl (e.g. Lexicon Sonate and Amazing Maze) among several others. Engineer André Baltazar started implementing some computer vision as Max external objects, such as algorithms for body skeletization in real time, measurement of averages on the quantity of movement, algorithms for automatic tempo detection from bodily movement that elaborate on Carlos Guedes's previous research, and temporal filters to denoise real-time analysis information from video cameras.

Two doctoral students from the UT Austin-Portugal Program in Digital Media (Gilberto Bernardes and Rui Dias) are working in the project since November 1st as part of an independent study supervised by Carlos Guedes. These students intend to relate their doctoral dissertations to the project. Doctoral candidate Gilberto Bernardes is currently working on the transformation of genetic algorithms (GAs) for automatic music generation, and candidate Rui Dias is working on the Graphical User Interface (GUI) of the Toolbox, expanding the work he did in his Masters Dissertation "A Modular Platform for Prototyting Interactive Multimedia Systems."

Carlos Guedes is working on a framework for the implementation of a procedural music system that encompasses the automatic generation of syntactically correct musical structures and their transformation and adaptation over time according to the user's gestural input. So far, the Porto research team produced a prototype for an application that enables a user to control in real time, through a Wiimote or video camera, the tempo and density of events of a rhythmic structure generated automatically by a GA. This prototype was implemented using applications Max, Osculator, and Pure Data. This prototype showed promising ways for the development of gesture-controlled dynamic and adaptive composition systems that can be utilized as generative music engines for several purposes, such as games or educational applications. In December, the Porto team will put another call out to hire a doctoral or post-doctoral researcher to work in depth on the creation of new algorithms and/or transformation of existing ones and their implementation in the Toolbox. Note that the Lisbon team led by Tomás Henriques has not yet started work due to the delays on the FCT side in transferring project funds. We are continuing to pursue all these areas and, equally important, are looking into new collaborations. The team expects to present our work at international conferences such as New Instruments for Musical Expression (NIME) and the International Computer Music Conference sometime next year.

being considered to investigate the following issues: uncertainty, signaling, dynamic price discrimination (linear prices and non linear pricing), research and development programs, location decisions, advertising strategies and their effects, trade policy models and competitive strategies in spatial networks, as well as mean-field games and its applications.

Optimal control theory and viscosity solutions of Hamilton-Jacobi equations are essential to understand important problems in dynamical systems (Aubry-Mather theory) and in mathematical finance. These directions are being pursued, as well as certain problems in multiple criteria decision-making. Finally, in the emerging applied area of cryptography, the group is examining post-quantum cryptography in order to propose cryptosystems based on rational points on curves over function fields and show that they are robust to quantum adversaries. Principal Investigator: Prof. Diogo Gomes. Portuguese Research Team: Alberto Pinto, Amílcar Sernadas, Carlos Rocha, Carlos Caleiro, Cláudia Philippart, Delfim Torres, João Dias, Paulo Mateus, Raquel Gaspar, Rosa Esteves, Gabriele Terron, Verónica Quítalo. UT Austin Research Team: Irene Gamba, Jose Voloch, Luis Caffarelli, Rafael de la Llave, William Beckner.

Mathematical modeling and endoscopic image processing

This project focuses on the mathematical modeling and endoscopic imaging processing of aberrant polyps and aberrant crypt foci (ACF, which statistically precede polyp formation). Multiscale methods are used in a modeling process which involves partial differential equations and level set methods, to simulate the dynamics and shape of ACF and polyps populations. The project's aim in image processing is to develop computerized and fast algorithms to identify and assess ACF and polyps patterns, captured in vivo by endoscopy in order to facilitate and speed up screening methods towards CRC prevention. Principal Investigator: Isabel Maria Narra de Figueíredo, Univ. of Coimbra. Portuguese Research Team: Carlos Leal, Giuseppe Romanazzi, Ilda Reis, João Tavares, José Dias, Maria Donato, Mário Figueíredo, Nuno Almeida, Pedro Figueíredo, Sandra Lopes, YenHsi, Tsai. UT Austin Research Team: Chandrajit Bajaj, Georg Stadler, Omar Ghattas, Zhen Ma.

Nonlinear partial differential equations

Nonlinear partial differential equations (PDEs) are central in modern applied mathematics, both in view of the significance of the concrete problems they model and the novel techniques that their analysis generates. This project explores some of the new applications of these equations in biomathematics, against eight tasks:

- Regularity for singular/degenerate PDEs
- Numerical ocean and climate modeling
- Nonlinear elliptic systems
- Kinetic equations and BGK-type models
- Problems driven by subelliptic operators
- Drift-diffusion equations
- Free boundary problems
- PDEs involving variable exponents.

Advancement in understanding of these equations can be related to many applications such as the motion of multi-phase fluids in porous media, the melting of crushed ice (and phase transitions in general), the behavior of composite materials, the pricing of assets in financial markets, or the quantum drift diffusion in semiconductors. Principal Investigator: José Miguel Urbano, Univ. of Coimbra. Portuguese Research Team: Ana Soares, Bruno Pereira, Celestino Coelho, Domingos Lopes, Euclides Luís, Eugénio Rocha, Eurica Henriques, Fabio Chalub, Fernando Miranda, Filipe Oliveira, Hugo Tavares, João Boto, Juha Videman, Lisa Santos, Miguel Ramos, Pedro Girão, Rojbin Laleoglu, Susana de Moura. UT Austin Research Team: Clint Dawson, Irene Gamba, Luis Caffarelli.

Reaction-diffusion in porous media

In recent decades, diffusion in porous media has attracted researchers from several disciplines, such as geosciences, environmental sciences, mechanics, biology, chemistry, petroleum engineering, biomedical engineering, physics and mathematics. Diffusion in porous media has applications to problems such as groundwater contamination, diffusion in polymers, and flow in oil reservoirs. The fundamental equation governing diffusion in porous media is the equation of mass conservation, which is of parabolic type. It is established assuming that the dispersive mass flux is

given by Fick´s law where the dispersion tensor is assumed to be independent of the concentration and its gradient. It is well-known that this equation gives rise to an infinite speed of propagation. Small-scale and large-scale heterogeneities in porous matrix and/or fluid properties are the main sources of deviations of the so-called Fickian dispersion behavior. In order to overcome this deviation, a certain memory effect should be included in the flux modeling. The aim of this project is to introduce memory effects in the models for fluid flows in porous media characterized by small-scale and large-scale heterogeneities in several contexts.   Principal Investigator: José Ferreira, Univ. of Coimbra. Portuguese Research Team: Adérito Araújo, Cidália Neves, Ercília da Costa e Sousa, Fernando Carapau, Giuseppe Romanazzi, Conçalo Alves da Pena, Luís Pinto, Marc Baboulin, Sílvia Barbeiro, Vivette Girault. UT Austin Research Team: Mary Wheeler, Gergina Pencheva, Mojdeh Delshad0.

STRATEGY FOR THE FUTURE

Strategies that have provided positive progress in these research projects to date, across all three academic disciplines, include international visits to enable high levels of collaboration (including both faculty and student exchange), as well as facilitating workshops and other educational modules against these topics to enhance broader understanding and research exploration. These strategies will continue to be employed, to enable researchers to increase project momentum, and also to solicit newly funded research projects.

New Research Call (Sep 7 - Dec 11, 2009)

FCT's research call initiated in fall 2009 emphasized CoLab's increased focus on Advanced Digital Media. Two types of projects were sought for funding. Type 1 Projects include high risk, exploratory research projects that bring together new research ideas and experts working in various related areas. Submissions were encouraged in (but not limited to) the following areas:

- *Environmental music*
- *Digital imaging techniques and applications*
- *Generative art and its applications*
- *Data visualization*
- *Strategic uses of digital media in social and/or cultural contexts*
- *Contextual and content-driven use of digital interfaces*
- *Behavioral analysis based on sensor networks and location-based data*
- *Human-computer partnerships and their outcomes for creating new knowledge, new models of research and analysis, and new forms of culture*
- *Molecular electronics and digital media*
- *Multi-sensoral displays*
- *Interfaces using new display technologies*
- *Real time video simulations*
- *Online video editing*
- *Interactive info-graphics*
- *Unlimited video archiving*
- *Regeneration/repurposing of old media for new purposes*
- *Balance between trust and privacy.*

Type 2 Projects include research oriented toward three strategic areas of CoLab:

- *The future of television*
- *The future of news*
- *Interactive media environments/serious games.*

Type 2 grants are intended to be of longer duration, with greater resources. These projects are designed to tap Portuguese researchers' core interests as well as the midia industries' most pressing questions. As was the case in the first call, researchers are expcted to partner across institutions and are encouraged to involve industry partners as well.

Grant Writing Workshop Provided for 2009 Research Call

Drs. Sharon Strover (UT College of Communication), and Luis Revilla (School of Information) conducted proposal writing workshops in Lisbon and Porto on November 2 and 3, 2009. These workshops were designed to highlight the elements of an academic proposal that one should develop, highlight, and elaborate. Lasting about 5 hours, each workshop included some short exercises for individuals and small groups. Topics included:

- understanding the goals of the funding agency
- generating the research idea
- writing a "significance" statement
- undertaking literature reviews

Sharon Strover [inset right], Director of CoLab Digital Media program at UT Austin and Regents Professor at the College of Communication, (with Professor Luis Revilla, UT Austin School of Information) addresses a research proposal writing workshop in Porto to enhance cross university collaboration and proposal development for the FCT research call on Advanced Digital Media.

- constructing research questions
- considering outcomes and assessments
- generating titles, keywords, abstracts

Specific references to the provisions within the current RCT research call for DIgital Media were emphasized.

Mathematics: Research with Carnegie Mellon University | Portugal (Sep 7 - Nov 13, 2009)

A second FCT research call, in the framework of both the UT Austin | Portugal and Carnegie Mellon University | Portugal Programs, requested Portuguese research proposals that explore *Thematic Areas of Applications of Mathematics* in the following priority areas:

- *Advanced materials*, including composites, micro-and nano-structures and biological structures, variational and numerical methods

- *Interfaces,* propagation of fronts and image processing, including variational models, numerical methods, applications to geophysics, environmental science, medicine, computing, visualization, vision and image recognition

- *Applications of mathematics in basic sciences,* including physics, mathematics, chemistry, computational biology and mathematics

- *Financial mathematics and stochastic models,* including risk models, utility functions, stochastic optimal control, stochastic networks, including analysis of large networks, diffusion approximation, overprocessed, large deviations, as well as computational problems

- *Information technology and communication,* including information security, sensor networks, optimization in networks and human-computer interaction.

Projects are to have a strong mathematical component, from the following core subjects of mathematics:

- Algebra and Number Theory
- Applied and Numerical Analysis
- Analysis and Partial Differential Equations
- Mathematical Physics
- Geometry, Topology
- Optimization and Optimal Control
- Stochastic Processes and Financial Mathematics
- Dynamical Systems.

Advanced Computing

An additional UT Austin | Portugal CoLab research call, set for 2010, will request Portuguese research proposals that promote Thematic Areas of Innovative Applications of Computer Science in Computational Engineering and in Computational Science fields. These projects will have a strong computer science component, with the inclusion of researchers from the following computational subjects: biology, geology, physics, chemistry, civil engineering, biological engineering, mechanical engineering, electrical engineering, biomedical engineering, and aeronautical engineering.

Cross-cutting Research:

CoLab is initiating new research ventures that represent an interdisciplinary focus on topics uniting the expertise of researchers in computing, mathematics, and digital media. Possible topics include modeling the evolution of dynamic "fronts;" developing improved algorithms for computer-controlled midia creation; and working with content and interfaces for mobil media. Our goal is to create opportunities for teams of researchers to work together in order to probe some of the current problems facing these fields.

Research and Industry

During 2008-2009 members of the CoLab program met with most relevant players in the digital media ecosystem in Portugal to identify preferred workshop themes. They include:

- Interface design
- Multi-platform content distribution
- Television
- Project management
- Media and entrepreneurship

Workshops addressing these themes will be organized in the next two years, in order to enlarge potential for research projects to emerge. Additionally, a series of partnerships will be created. The CoLab Industry Partnerships require:

- The development of a stream of professionals and researchers that may add value to the Industry Affiliates;
- A set of workshops, seminars and conferences to stimulate the Industry Affiliates' professionals and researchers.
- Access to sponsored research in strategic areas.

The program has fostered industry partnerships including Toshiba, Duvideo, Zon and YDreams in the Lisbon area, and Fundação Serralves and Casa da Música in the Porto area. But with the upcoming research projects and educational opportunities, this list will be enlarged with Portugal Telecom Sapo's portal, Media Capital, Impresa and RTP.

In the coming year we plan to further develop Colab Industry Partnerships. They require:

- the implementation of an Industry Affiliate MOU, with yearly activities planning, joint marketing activities, and an annual plan and review
- Prospect generation activities, with follow up recruiting activities
- Co-Funding partners identification, with high level (Corporate board level, Government Level) engagement and follow up of Company customized "Colab co-funder" deployment plans (Colab level)
- A Colab Annual Partners and Industrial Affiliates Event
- The development of a stream of professionals and researchers that may add value to the Industry Affiliates
- A set of workshops, seminars and conferences to stimulate the Industry Affiliates' professionals and researchers
- Access to sponsored research on strategic areas.

Education

A major goal of the UT Austin|Portugal CoLab program has been to advance graduate education in digital media, advanced computing and mathematics. In this regard, applications for PhD scholarships were requested for study in the following areas:

Digital Media:

- *Audiovisual and Interactive Content Creation* (including film and television, interactive music and sound design, participative media for education and culture)
- *Journalism*
- *Technologies*
- *Industry, Public and Markets*

Advanced Computing:

- *Computer Science,* namely in methodologies and techniques in High-performance computing (HPC), distributed/grid computing and large-scale data analysis and management
- *Computational Engineering or Science* with specific requirements in advanced computing

Mathematics:

- *Algebra and Number Theory*
- *Applied and Numerical Analysis*
- *Analysis and Partial Differential Equations*
- *Geometry and Topology*
- *Optimization*
- *Stochastic Processes and Mathematical Finance*
- *Dynamic Systems*

As of August 2009, 72 students had applied for CoLab PhD programs. Figure 2 provides the number of these applicants by year and discipline with indication of select applications to UT Austin for a dual PhD.

Faculty visits provided opportunities to discuss common interests, present academic research, and grow the collaboration. Much of the instructional activity to date has been incorporated into Summer Institutes in Portugal and at UT Austin, and highly demanding, compressed courses taught by UT Austin faculty on-site in Porto and Lisbon. These graduate level courses have addressed areas that Portuguese program directors identified as important for their students and programs.

CoLab offered education opportunities in terms of lectures, short courses, and workshops, Table 5. Tables 6 through 9 provide example agendas from large educational events and a review of faulty members and topics presented. More detailed information on these events, including session descriptions and/or abstracts presented, is available at www.utaustinportugal.org. Overall, CoLab 2008-2009 educational events have incorporated:

- 126 faculty members
- from 43 universities or organizations from 10 countries
- addressing approximately 134 advanced topics
- taking place at 4 Portuguese universities and UT Austin
- with over 600 student attendees
- consistently high student and faculty evaluations.

Digital Media Educational Events

Much of the instruction provided by CoLab's Digital Media program occurs in the Summer Institutes: highly demanding, compressed courses from UT Austin faculty on-site in Porto and Lisbon. The first summer foray ws organized quickly in the summer of 2007 shortly after the collaboration was signed, when a Digital Documentary class was offered, as well as an Animation/Flash course: one held at the FCT campus of UNL, the other at FCSH campus. We structured subsequent institutes and in order to focus efforts alternating between Lisbon and Porto. Graduate courses address subjects identified as important by Portuguese program directors. Student comments and evaluations to these 23 courses have been been very positive: good markers of the program's success.

In Year 3, Digital Media short courses were organized into several educational courses and events that were facilitated by 42 faculty members from 23 organizations; who presented 39 topics at 4 Portuguese universities with a total of over 200 students in attendance. They include workshops, generally one or two days
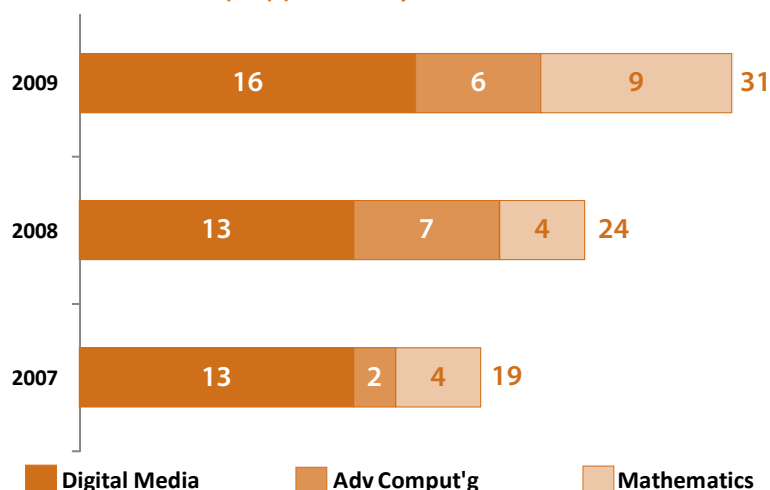
Figure 2. CoLab PhD Scholarship Applicants by Year

Year	Digital Media	Adv Comput'g	Mathematics	Total
2009	16	6	9	31
2008	13	7	4	24
2007	13	2	4	19

Digital Media   **Adv Comput'g**   **Mathematics**

Table 4. CoLab PhD Scholarship Applicants by Program

Digital Media (42 total)
André Valentim Almeida (2007)
Diogo Nuno Cabral (2007)
Fernando António Zamith Silva (2007)
Frederico Gustavo Pereira (2007)
João José Cruz (2007)
Luís Humberto Ferreira (2007)
Luísa Maria Ribas (2007)
Margarida Ribeiro Carvalho (2007)
Mónica Sofia Mendes (2007)
Nuno Miguel Gama (2007)
Paula Alexandra Silva (2007)
Paulo Frias da Costa (2007)
Sofia Catarina Mota (2007)
André Miguel Guedelha Sabino (2008)
Domingos José da Silva Ferreira (2008)
Filipe José Pais Ferreira (2008)
Gilberto Bernardes de Almeida (2008)
Heitor Manuel Pereira Pinto da Cunha e Alvelos (2008)*
Luís Manuel de Frias Machado (2008)
Nuno Duarte Martins (2008)
Paulo Alexandre Valente de Jesus Rosa (2008)
Paulo Nuno Gouveia Vicente (2008)
Rossana Henriques dos Santos (2008)
Tiago Miguel Gonzaga Videira (2008)
Vitor José Pelaio Ventaneira Badalinho (2008)
Vitor Manuel Soares Gomes da Silva (2008)
Afonso Gouveia O'Neill (2009)
Ana Duarte Cabral Martins (2009)
Ana Margarida de Sousa Júlio Mendes Barata (2009)
António Carvalho Maneira (2009)
Bruno Oliveira (2009)
Carlos Manuel Carvalho Santos Oliveira (2009)
Edgar dos Anjos Teixeira (2009)
Hugo Miguel Gonçalves Crespo Machado da Silva (2009)
João Filipe Fernandes Castanheira Beira (2009)
Luís Filipe de Matos Martins Gomes (2009)
Marta Isabel Santos Paiva Ferreaz da Conceição (2009)
Myshkin Ingawale (2009)
Rui Miguel Fernandes Robalo Avelan Coelho (2009)
Rui Miguel Silva Sampaio Dias (2009)
Sandra Mónio Couto Coelho (2009)
Sofia Ester Pereira Reis (2009)

Advanced Computing (15 Total)
Diogo Neves (2007)
José Sousa (2007)
Daniel Simoes Lopes (2008)
Diogo Gomes Almeida Chambel Lopes (2008)
Fernando Luís Todo-Bom Ferreira da Costa (2008)
Jorge Pinto Milhazes (2008)
Rodrigo Miguel Ribeiro Taveira (2008)
Rui Carlos Araújo Gonçalves (2008)
Vitor Serafim Pereira de Oliveira (2008)
Alex Fernando Araújo (2009)
David Ribeiro Alves (2009)
Edgar Sousa (2009)***
João Barbosa (2009)***
Maria José Duarte (2009)
Tahereh Nodehi (2009)

Mathematics (17 total)
Gabriele Terrone (2007)
Hassan Najafi Alishah (2007)***
Olena Domanska (2007)
Rafayel Teymurazyan (2007)***
Abdelrahim Said Abdelrahim Mousa (2008)
Carlos Yoshio Uehara Scarinci (2008)
Silvia Quina Nobre (2008)
Verónica Rita Antunes de Soares Quítalo (2008) **
Adam David Ward (2009)
Diego Macron Farias (2009)
Farid Bozorgnia (2009)
Hugo Alexandré Freixas Argente dos Santos (2009)
Levon Robert Nurbenkyan (2009)
Marco António Delgado Robalo (2009)
Maria Teresa Pérez Pérez (2009)
Nelson Batalha (2009)
Stefania Patrizzi (2009)

* Applying for post-doc study, rather than PhD
** Currently attending a UT Austin PhD program
*** Applying to a UT Austin PhD Program for Dual Degree

13

Classes focus on providing students with the skills to undertake their own work as well as the ability to work with the most common hardware and software tools necessary for independent production and exhibition. Courses also allow them to develop the analytic talents to understand how industries shape and respond to change in media technologies.

Courses such as *Digital Documentary* enable students to learn the elements of assembling a documentary, including working with the visual language of a story, and to use web tools such as blogs to assemble information, gather feedback and explore ideas with fellow students. This method also works well with other digital media writing courses in which interaction and format may operate differently. Animation and Interactive Music are more technologically-driven, requiring mastery of several applications tools. Courses build upon an understanding of basic visual and aural principles.

The more theoretically oriented classes allow students to complete independent projects. Technology and Culture, for example, taught students some of the basic principles of gathering interview-based data. Students explored how people are using web 2.0 environments by constructing their own surveys and gathering data.

Table 5. CoLab Educational Events: Short Courses, Lectures, and Workshops

Digital Media

Oct 7 - 8, 2008	*Introduction to Arduino* Future Places Workshop	Univ. of Porto
Oct 7 - 8, 2008	*Interface design for mobile devices* Future Places Workshop	Univ. of Porto
Oct 11, 2008	*Active Media 2.0* Future Places Workshop	Univ. of Porto
Oct 20 - 23, 2008	Video Game Development Lecture series	Porto, Lisbon
May 25 – Jul 17, 2009	2009 Digital Media Summer Institute at Porto	Porto
May 25 - Jun 19, 2009	2009 Digital Media Summer Institute at Lisbon	Lisbon
Jul 19 - 24, 2009	International School on Digital Transformation	Univ. of Porto
To date, in the New Fiscal Year:		
Oct 13, 14, 2009	*Computer Vision* Future Places Workshop	Univ. of Porto
Oct 13, 14, 2009	*Uncovering Urban Stories* Future Places Workshop	Univ. of Porto
Oct 13, 14, 2009	*Interface Design for Mobile Devices* Future Places Workshop	Univ. of Porto
Oct 14, 2009	*Open Cities* Future Places Workshop	Univ. of Porto
Nov 2 – 3, 2009	Proposal Writing Workshop	Lisbon, Portugal

Advanced Computing

Oct 9, 10, 2008	Functionally Graded Materials Workshop	Univ. of Minho
May 25-27, 2009	TACC 2009 Spring School in Advanced Computing at Lisbon	IST, Lisbon
May 28, 29, 2009	TACC 2009 Spring School in Advanced Computing at Porto	Univ. of Porto
Jun 1 - 3, 2009	Advanced Seminar on Multicore Platforms	Univ. of Minho

Mathematics

Mar 31-Apr 4, 2009	Imaging, Modeling & Visualization in Multiscale Biology	Univ. of Texas at Austin
May 28, 29, 2009	Post-Doctoral Academy in Mathematics	IST, Lisbon
Jul 13-17, 2009	Kinetics & Statistical Methods for Complex Particle Systems Summer School	Univ. of Lisbon
Jul 19- Aug 8, 2009	Summer School in Financial Mathematics	Univ. of Texas at Austin
Jul 20-24, 2009	Kinetics & Statistical Methods for Complex Particle Systems Workshop	Univ. of Lisbon

in duration , as well as intensive courses lasting up to two weeks.

1. Introduction to Arduino FUTURE PLACES Workshop *(October 7-8, 2008, UPorto)***:** This workshop introduced participants to the physical computing platform known as Arduino. The first day of the workshop was devoted to physical computing. The second day, participants developed small self-standing projects. *The workshop was filled to capacity with 20 participants.* Instructor: Aleksandar Zivanovic, with Tinker.it!; Assistant Instructor: Andrea Piccolo, with Tinker.it!

2. Interface Design for Mobile Devices FUTURE PLACES Workshop *(October 7-8, 2008, UPorto)***:** This workshop explored user interface design opportunities and challenges for mobile devices, in the context of underlying architecture or storyline. Participants developed an interactive project for exploring a physical location at the Serralves Museum in Porto. *The workshop was filled to capacity with 20 participants.* Instructor: Mónica Mendes,University of Lisbon; Assistant Instructor: Nuno Correia, New University of Lisbon.

3. Active Media 2.0 FUTURE PLACES Workshop *(October 11, 2008, UPorto)***:** Participants received an introduction into interative, generative mapping projects and software used to create these projects (FreeMind, Max/Jitter, Sound/Video Capture). Participants created short projects. *The workshop was filled to capacity with 20 participants.* Instructor: Steven Devleminck, Hogeschool Sint-Lukas; Assistant Instructor: Boris Debackere, Hogeschool Sint-Lukas.

4. Video Game Development Lecture Series *(October 20 - 23, 2008, UPorto and UNL)***:** Matthew Payne, a doctoral student in the Department of Radio-Television-Film at UT Austin, provided a lecture titled *Video Games and Social Science Research* at the School of Computer Science and the School of Engineering at the University of Porto. In Lisbon, he introduced *The Challenges of Milblogging and Online Journalism,* and *Genre and Media Crossing as Remediation: From James Bond's Technothrillers to Videogames,* at the Faculty for Sciences and Humanities.

5. 2009 Digital Media Summer Institute, UPorto *(May 25 - July 17, 2009)***:** UT Austin Professors taught seven 3-credit courses at the graduate level. Subjects were selected with the assistance of Univ. do Porto faculty, and included: *Screenwriting for New Media; Advanced Animation; Film Preservation and Historiography; Sound for Picture: Production and Post; Collaborative Documentary; Creating & Designing Interactive Music;* and *Online Journalism,* Table 6. Final projects in all classes resulted in public presentations so that work could be scrutinized and critiqued.

Table 6. Digital Media Summer Institute Credit Courses

Universidade do Porto

Credits	Course Name	UT Professor	# Students
3	Screenwriting for New Media	Stuart Kelban	16
3	Advanced Animation	Geoff Marlsett	8
3	Film Preservation and Historiography	Caroline Frick	5
3	Sound for Film: Production and Post	Andy Garrison	15
3	Collaborative Documentary	Karen Kocher	9
3	Creating and Designing Interactive Music	Bruce Pennycook	14
3	Online Journalism	Rosental Alves	10

Universidade Nova de Lisboa (UNL)

Credits	Course Name	UT Professor	# Students
3	Technology and Culture	Craig Watkins	15
3	Convergent Hollywood	Bryan Sebok	10
3	Online Journalism	Rosental Alves	12
3	Intro to Digital Documentary Production	Nanch Schiesari	11
3	Screenwriting	Richard Lewis	12

➡ FEEDBACK ⬅

Digital Media Summer Institute Credit Courses

Course surveys consisting of a series of quantitative questions asked the students to rate statements from 1 to 5, where 5 is the best possible response. The overall rating for the courses was 4.67, indicating a high level of satisfaction among attendees. More complete assessments on Digital Media courses, seminars, workshops, and events, are available at www.utaustinportugal.org.   Following are some of the student comments captured by this evaluation process.

"I believe that the most important thing I learned was that intercultural research can be very fulfilling and rewarding."

– Research Workshop Student, 2008

"I really liked the workshop because our ideas got made into a possible project in just one week: the ideas and the people got together and the teacher helped in everything he could."

– Online Journalism Student, 2008

"I learned how to look at things from a different point of view to ask pertinent questions and be able to answer them. I've learned how to work with final draft, how to read a script and how to elaborate a script considering all the details to watch out for and the problems to be solved and how to solve them. It opened a path that I hadn't tried before and I enjoyed it very much."

– Screenwriting Workshop Student, 2008

"The most important thing I've learned has been the work-in-progress challenge. The continuous discussion in class about the projects was a very productive experience for me. It keeps your creativity at a high level. It was always important, the motivation and the interst of the workshop leader, Karen. This work approach keeps you focused and concentrated which is very important to the work"

– Digital Documentary Student, 2008

"It was a magnificent experience. As student and young journalist, the workshop helped me to understand the new tendencies and opened new perspectives. It was positive because discussion was promoted."

– Online Journalism Student, 2008

"Everything was important, but probably the most useful is all the theory that the instructor taught us as he was teaching the techniques, because I will be able to apply this in the future, even if I work with other software"

– 3D Rendering Student, 2008

"With this workshop my critical spirit became richer. When I see a film I better understand its structure and how it is organized. When I need to design a script, I will be cognitively more mature and informed to do so."

– Screenwriting Student, 2008"

"The fact that the course is basically based on conversation between teacher and students is very good. Being able to talk and give opinions about what the teacher is talking about is very effective for learning and developing critical judgment."

– Online Journalism Student, 2008

"I have to say that the most important thing for me were the discussions we had during the whole week. My research focuses mainly on the on the topics we have discussed, so it was very important for me to have the opportunity to discuss it. It was also important that we were not always agreeing. Everybody was doing their readings and so had the chance to sustain his/her point of view, which gave place to very interesting discussions that have really pushed forward my work."

– Digital Hollywood Student, 2008

"I think it was really good for a short course, with really high goals. Everyone had the same background and all the students were very motivated. The professor is an incredible open source of knowledge and wisdom."

– Online Journalism Student, 2008

"The feedback from someone in the field made me feel more consistent on my theoretical background."

– Digital Music Student, 2008

"I just like to reinforce the fact that it was a very nice experience. Karen was very persistent and always a source of motivation and inspiration. I realy would like to repeat the experience, maybe in Austin? Who knows!"

– Interactive Documentary Student, 2008

Table 7. International School on Digital Transformation: Faculty Members (Digital Media)

Sunil Abraham, Centre for Internet and Society, Bangalore: *Legal and Technical Control and Resistance on the Internet*

Patricia Aufderheide, School of Communiction, American University, Washington, D.C.: *Copyright and Citizenship*

Rui Barros, INESC Porto: *Technology Issues and Small Municipalities*

Warigia Bowman, University of Mississippi: *Challenges to and Opportunities to Information Technology in East Africa*

Fiorella De Cendio, University of Milano: *Facilitating Participation and Deliberation at the Urban Level*

Martha Fuentes-Bautista, University of Massachusetts at Amherst: *Access Cultures and the Construction of Networked CItizenship in the American Technopolis*

Tanya Notley, Tactical Technology Collective, London UK: *Data Visualization*

Tapan Parikh, University of California at Berkeley: *Sustainable Economic Development and Information Systems*

Tiago Peixoto, European University Institute, Florence, Italy: *Participatory Budgeting*

Alison Powell, Oxford Internet Institute, Oxford, UK: *The Future of the Internet from the Bottom Up*

Nicholas Reville, Particapatory Culture Foundation: *Social Change Infrastructure: Building Values into the Way Our World Works*

Scott S. Robinson, Universidad Metropolitana, Iztapalapa Campus, Mexico City: *From Telecenters to Cybercafes*

Jorge Martins Rosa, Universidade Nova de Lisboa, Lisbon, Portugal: *Flow: Understanding the Latest Trend of Social Networking*

Christian Sandvig, University of Illinois at Urbana-Champaign: *Networked Television Beyond Television Networks: The Policy Problems of Internet Video Distribution*

Doug Schuler, Public Sphere Project, Evergreen State College, Seattle Washington: *Reinventing Social Thought and Action with Civil Intelligence*

Leslie Regan Shade, Concordia University, Quebec Canada: *Public Interest Activism in Canadian ICT Policy: Blowin' in the Policy Winds*

Micah Sifry, Personal Democracy Forum, TechPresident.com: *The Useful Myth of the Obama Campaign*

Laura Stein, The University of Texas at Austin: *Social Movement Communication*

Siva Vaidhyanathan, Media Studies and Law, University of Virginia: *The Googlization of Everything*

Katrin Verclas, Mobilactive.org: *Mobile Phones and Social Development*

Ademar Aguiar, University of Porto

Rupert Daniel, Black South West Network

Lisa Nakamura, University of Illinois, Urbana Champaign

Maria de la Paz Contreras, Vinculart AC, Mexico City

Participants at the International School for Digital Transformation (via PZAO on Flickr)

TACC's RANGER computer system provides 123 Tbytes of memory for research computing applications.

⟶ **FEEDBACK** ⟵

Advanced Computing Interns

Did the internship provide you with valuable educational experience that will prove useful when you return to Portugal?

- Yes, absolutely - 62.5% (5)
- Yes – 37.5% (3)
- Maybe – 0% (0)
- No – 0% (0)
- Definitely not – 0% (0)

Would you recommend this workshop to a friend or colleague if it is offered next year?

- Yes, absolutely - 75% (6)
- Yes – 25% (2)
- Maybe – 0% (0)
- No – 0% (0)
- Definitely not – 0% (0)

More complete assessments on Advanced Computing courses, seminars, workshops, and events are available at www.utaustinportugal.org

Below: Professor Keshav Pengali, director of CoLab's Advanced Computer program at UT Austin, addresses the Advanced Seminar on Multicore Platforms at the University of Minho. (Alberto Proença in foreground.)

6. 2009 Digital Media Summer Institute, Lisbon *(May 25 - June 19, 2009)*: UT Austin Professors taught five 3-credit courses at the graduate level. Subjects were selected with the assistance of Univ. Nova de Lisboa faculty, and included: *Technology and Culture*; *Convergent Hollywood; Online Journalism; Intro to Digital Documentary Production;* and *Screenwriting,* Table 6. Final projects in all classes resulted in public presentations so that work could be scrutinized and critiqued.

7. International School on Digital Transformation *(July 19 - 24, 2009, UPorto)*: Over 20 international faculty (distinguished researchers, teachers, activists, and entrepreneurs) addressed topics across a wide band of current digital media interest including various effects on society and culture, as shown in Table 7. Over 50 participants registered and attended.

Advanced Computing Educational Events

Advanced Computing organized four educational events that were facilitated by 10 faculty members from 3 universities; who presented 15 topics at 3 universities with a total of over 190 students in attendance.

1. Functionally Graded Materials Workshop *(October 9-10, 2008, UMinho)*: Professor Chelikowsky of UT Austin was a keynote speaker at the Portuguese Workshop on *Functionally Graded Materials,* at the Univ. of Minho. This workshop used available laboratory facilities to promote the exchange of ideas and expertise in order to create a National/International network of researchers and industries within the frame of functionally graded materials.

2. TACC IST Lisbon, 2009 Spring School in Advanced Computing *(May 25-27, 2009)*: Held at the Centro de Congressos of IST, sessions focused on interaction between the Portuguese Advanced Computing community and the Texas Advanced Computing Centre at UT Austin. Topics included:

- *Introduction to Parallel Computing*

- *Ranger Hardware Overview and User Environment*
- *Introduction to OpenMP*
- *Optimization and Performance Engineering for Scientific applications*
- *Introduction to MPI*
- *Scalability Performance*
- *Advanced visualization techniques*

Labs provided opportunity for hands-on experience with both Sun Constellation Linux Cluster RANGER at UT Austin *(one of the largest computing system in the world for open science research)* and the Sun Visualization Cluster SPUR at UT Austin *(a powerful stand-alone visualization system enabling researchers to perform visualization tasks on Ranger-produced data without migrating to another file system)*. TACC instructors included Dan Stanzione, Lars Koesterke, Kent Milfeld, and Paul Navrátil.

3. TACC UP Porto, 2009 Spring School in Advanced Computing
(May 28-29, 2009): The theme of this workshop was *Advanced Parallel Programming and Visualization on Ranger and Spur*. Classes were targeted to computational scientists who are developing code for large clusters and/or porting code to large clusters. Topics included:

- *Advanced MPI programming*
- *Hybrid programming with OpenMP and MPI*
- *Profiling, optimization, and debugging of code*
- *Advanced visualization techniques*
- *Visualizing very large datasets*

Labs provided opportunity for hands-on experience with both RANGER and SPUR. TACC instructors were Dan Stanzione, Lars Koesterke, and Paul Navrátil.

4. Advanced Seminar on Multicore Platforms *(June 1-3, 2009, UMinho)*: This three day event emphasized the organization

of current computing devices, which trend towards increased parallelism, and the issues related to their programmability, Table 8. The Seminar prepared special equipment for the Intel demos, including a 24-core computing node with 64GB RAM. This computing node was made accessible to all participants for experiments. Over 100 participants from cities spanning Coruña in Galicia to Lisbon engaged in this interactive event.

Advanced Computing Interns
Eight Portuguese undergraduate students and three doctoral candidates received internships at UT Austin to work with UT faculty members on FCT-funded research projects during summer 2009: Matheus Almeida and Rui Silva (supervised by Ron Eiber); João Barbosa (supervised by Paul Navratil); Vanio Ferreira and Pedro Araujo (supervised by Chandrajit Bajaj); Edgar Sousa and Pedro Monteiro (supervised by Keshav Pingali); Eduardo Cruz (supervised by Robert van de Geijn). PhD candidates were Miguel Monteiro, Rui Gonçalves, and Diogo Neves.

Mathematics Educational Events
Mathematics organized and hosted five educational events that included 74 faculty members from 24 universities; who presented 80 topics at 3 universities with a total of over 225 student attendees.

1. Imaging, Modeling & Visualization in Multiscale Biology
(March 31 - April 4, 2009, UT Austin): This workshop focused on a range of interdisciplinary topics presented from both mathematical and engineering applications perspectives, aimed to initiate new dialogue among the participants. The audience included mathematicians and engineers as well as graduate students interested in researching problems related to mathematics, medical imaging, biomechanics, biology, and bioengineering, Table 9 (also see photo).

2. Postdoctoral Academy in Mathematics *(May 28-29, 2009, UT Austin)*: The Academy brought together post-docs from the

Table 8. Advanced Seminar on Multicore Platforms (Advanced Computing)

Invited Speakers

Alexey Kukanov, Intel Corporation: *Employing Intel Threading Building Blocks to Utilize Multi-core Processors*

Michael Garland, NVIDIA Research: *Parallel Computing on Manycore GPUs (Parts 1 and 2)*

Montse Farreras, Universitat Politecnica de Catalunya, *Barcelona Supercomputing Center: Introduction to PGAS Programming Paradigm with UPC (Unified Parallel C)*

David Padua, University of Illinois at Urbana-Champaign: *Algorithms, Architecture, Programming Models (Part 1)*

Keshav Pingali, The University of Texas at Austin: *Algorithms, Architecture, Programming Models (Part 2) and Parallelism in Irregular Algorithms*

Robert van de Geijn, The University of Texas at Austin: *Dense Linear Algebra Libraries: Deriving High Performance from Abstraction*

Table 9. Mathematical Aspects of Imaging, Modeling and Visualization in Multiscale Biology (Advanced Computing and Mathematics)

Tuesday, March 31

Morning chairs: Luis Caffarelli and Chandrajit Bajaj, UT Austin

    Tinsley Oden, UT Austin: *Real-Time Control of Laser Treatment of Cancer Using Computational Models of Nonlinear Bio-Heat Transfer*

    Kristian Sandberg, Univ. of Colorado at Boulder: *Orientation Based Methods for Image Segmentation*

    Irene Fonseca, Carnegie Mellon University: *A Higher Order Model for Image Restoration*

Afternoon chair: Hélder Rodrigues,

    Inderjit Dhillon, UT Austin: *Multilevel Graph Clustering*

    Irene Gamba, UT Austin: *Statistical Charged Transport Models: Simulations & Multiscale Analysis in Heterogeneous Nano Structures*

Evening Session: Presentation of posters by **M. Barchiesi,** Carnegie Mellon Univ., **F. Cagnetti,** Carnegie Mellon Univ., **A. Gambaruto,** IST Lisbon, **S. Kroemer,** Carnegie Mellon Univ., **D. Lopes,** IST Lisbon

Wednesday, April 1

Morning chair: Isabel Narra Figueiredo, University of Coimbra

    Adélia Sequeira, IST Lisbon: *Multiscale Modeling and Simulation in Hemodynamics*

    Eduardo Borges Pires, IST Lisbon: *Biomechanical Modeling of the Femoro-Acetabular Impingement of the CAM Type*

    João P. Barreto, University of Coimbra: *Image Geometry in Medical Endoscopy by Embedding the Projective Plane into a Higher Dimensional Space*

Afternoon chair: Eduardo Borges Pires, IST Lisbon

    David Ress, UT Austin: *Analysis of High-Resolution Brain Volume Anatomies Acquired Using Magnetic Resonance Imaging*

    Michael Reed, Duke University: *What Can Mathematics Do for Biology? Lessons from Cell Metabolism*

Evening Session: Presentation of posters by **F. Oliveira,** Univ. of Porto, **G. Romanazzi,** Univ. of Porto, **L. Santos,** IST Lisbon, **P. Silva,** Univ. of Coimbra

Thursday, April 2

Morning chair: Adélia Sequeira, IST Lisbon

    Paulo Fernandes, IST Lisbon: *A Multi-scale Model of Bone Tissue Adaptation*

    Kristen Harris, UT Austin: *Analysis of Complete 3D Reconstructions of Brain Ultrastructure at High Resolution*

    José Augusto Ferreira, University of Coimbra: *Memory in Diffusion Phenomena*

Afternoon chair: Andrew Gillette, UT Austin

    Thomas Bartol, Salk Institute: *Realistic Modeling of Neuronal Cell Signaling with MCell*

    João Manuel R.S. Tavares, University of Porto: *A Computer Analysis of Structures in Image Sequences: Methods and Applications*

Friday April 3

Morning chair: Chandrajit Bajaj, UT Austin

    Ozan Oktem, UT Austin: *Local Tomography in Electron Microscopy*

    Timothy Baker, Univ. of California at San Diego: *Strategies and Challenges in Three-Dimensional Reconstruction of Viruses*

    Pawel Penczek, , University of Texas, Houston Medical School: *Analysis of Conformational Variability of Macromolecules in Cryo-electron Microscopy*

Afternoon chair: Diogo Aguiar Gomes, IST Lisbon

    John Wallingford, UT Austin: *Visualizing Embryo Development Big & Small: In Vivo 4-dimensional Imaging of Tissues, Cells, and Molecules*

    Ron Elber, UT Austin: *Coarse Grained Molecular Times with Non-Markovian Modeling*

Saturday April 4: talks held in ACES 2.402

Morning chair: Luis Caffarelli, UT Austin

    Lisa Fauci, Tulane University: *Interaction of Elastic Biological Structures with Complex Fluids*

    Lexing Ying, UT Austin: *Butterfly Algorithm and Its Applications*

    Pierre-Louis Lions, UT Austin: *Some Examples of Mean Field Games Models*

Mathematics programs of both the Carnegie Mellon | Portugal and UT Austin | Portugal partnerships, for a two-day event to address the theme *Applied Analysis and Partial Differential Equations.* Speakers included award-winning mathemeticians Luis Cafarelli from UT Austin and Panagiotis Souganidis from the University of Chicago.

3. Kinetics & Statistical Methods for Complex Particle Systems Summer School *(July 13-17, 2009, University of Lisbon)***:** This second CoLab Summer School took place at Complexo Interdisciplinar da Universidade de Lisboa, Table 10, and addressed the theme of *analytical, numerical, and probabilistic issues related to dynamical properties of complex systems, with connection to natural and biological sciences.* Five mini-courses prepared graduate students and young researchers to participate in the following in-depth workshop. In addition to being a UT Austin | Portugal CoLab initiative, this event was also supported by the ICTI Carnegie Mellon University | Portugal partnership, CIM and CMAF. *The first Mathematics Summer School took place in June 2008 at the Mathematics Department Instituto Superior Técnico in Lisbon.*

4. Mathematics Summer School in Financial Mathematics *(July 19- Aug 8, 2009, UT Austin)***:** A two week program on financial mathematics was provided for advanced undergraduate and first year graduate students from Portuguese universities, to prepare them for the follow-on advanced workshop. This summer school took place at The University of Texas at Austin with financial support from the National Science Foundation for US attendees and from the CoLab program for Portuguese attendees.

5. Kinetics & Statistical Methods for Complex Particle Systems Workshops *(July 20 - 24, 2009, University of Lisbon)***:** This workshop followed the Summer School sessions by the same title, to provide a more advanced exploration, to a wider audience, on *analytical, numerical, and probabilistic issues related to dynamical properties of complex systems, with connection to natural and biological sciences,* Table 10. This in-depth workshop was designed to enlarge capacity for research applications in the arena of mathematics. In addition to being a UT Austin | Portugal CoLab initiative, this event was also supported by the ICTI Carnegie Mellon University | Portugal partnership, CIM and CMAF.

STRATEGY FOR FUTURE
Digital Media Strategies
Two major CoLab milestones in education include the launch in September 2009 of joint PhD and Master degree programs:

Doctoral Program: A new joint doctoral program focusing on Digital Media was awarded UNL and UPorto. Sixty students have applied for the joint degree. The four-year program was designed with a multidisciplinary structure supporting four specializations: *1) Creation of Audiovisual and Interactive Contents, 2) Technology, 3) Journalism,* and *4) Industry, Publics, and Markets.* Competitively selected students will be co-supervised by professors in Portugal and Austin and will have research and education internships at UT Austin.

MA Program (João Mário Grilo, Artur Pimenta Alves): An existing master program in Multimedia, offered by University of Porto, was changed to reduce the teaching component to one year, and increase the time dedicated to thesis or project work. Due to start in 2010, the new two-year multidisciplinary program offers the following profiles: *1) Arts and Culture, 2) Education, 3) Interactive Music and Sound Design,* and *4) Technologies.* A number of new courses have been created to support the area of interactive music. In the second year, students pursue either a research-oriented thesis or a project developed with industry.

In addition to initiating these degree programs, the Digital Media program will stimulate the participation of *undergraduate researchers* in sponsored research projects, workshops and seminars. It will be possible for Faculty and PhD students, associated with Colab, to supervise undergraduate research projects. Undergraduate students in Portugal may also apply for internships in Austin.

Plans for Year 4 also include the presentation of a **ZON Intensive Script Development Lab** to be held in June and July 2010 at UT Austin, with a follow-on Lab in August and September, in Portugal. Interested graduate students will submit synopses for short films scripts. From these applicants, ZON-UT Austin will choose 8 to 10 students to attend the lab. The lab will present three modules: film screenwriting, film directing, and film production. In Austin, students will pace these projects through script development, visualization of the script (draft shooting with actors on location or in studio) – and then, in Portugal, through the production, shooting, and post-production of a finished film project for broadcasting and/or for theatrical exhibition and for entry in the ZON Prémio Criatividade em Multimédia 2010.

2009 intern winner, Pedro Resende, cultivated his skills through the Digital Media Learning Program by interning with *501 Post* in Austin and auditing classes at The University of Texas at Austin.

Interns & Post Docs Examples

Catarina Barato, another Digital Media intern, shoots video during her Austin stay.

Veronica Quitalo joined the Department of Mathematics PhD program in the Fall of 2008 under the UT - Portugal dual degree program after working in Portugal with Diogo Gomes at IST. Her areas of study include dynamical systems, stochastic games, fully non linear equations and probability. For the fall semester 2009, she served as a teaching assistant in the UT Department of Mathematics.

Eight Portuguese undergraduate students and three doctoral candidates received internships at UT Austin to work with UT faculty members on FCT-funded research projects during summer 2009. Some of this group is shown here, with professors, in the ACES Visualization Lab.

Universidade Lusófona vence prémio Zon

Criatividade. Prémio f...
e Multimedia, que realiza...

O Prémio Zon Criatividade em...
Multimedia foi hoje atribuído à...
curta-metragem "Romeu e Julieta...
– O Musical", uma produção da...
Universidade Lusófona, numa ce-...
rimónia no Centro Cultural de Be-...
lém, presidida pela ministra da...
Cultura, Gabriela Canavilhas.

O trabalho de Zara Pinto (reali-...
zação) e Marta Hipólito (produ-...
ção), uma alusão ao clássico de...
Wiliam Shakespeare, alcançou o...
primeiro lugar na categoria Cur-...
tas-Metragens assim como o Gran-...

CURTA-METRAGEM

"Romeu e Julieta - O musical" vence prémio de criatividade

◆ O Pré...
Multim...
à curta-...
ta – O mu...
Univers...
rimónia...
lém, em...
nistra da...
vilhas. ...
são ao c...
peare, a...
na categ...
multan...

CEM MIL EUROS DISTINGUEM DUAS ALUNAS DA LUSÓFONA

'Prémio ZON' para musical

■ O filme 'Romeu & Julieta – O Musical', realizado por Zara Pin- to e produzido por Marta Hipó- lito, estudantes da Universidade Lusófona, conquistou o Prémio 'ZON Criatividade em Multi- média 2009' e, ainda, o 1º Lugar na categoria Curtas-Metragens, num valor total de cem mil euros.

O 'ZON Criatividade Multi- média', entregue ontem no Mu- seu Berardo, em Belém, numa ce- rimónia presidida pela ministra da Cultura, Gabriela Canavilhas, é o maior prémio monetário na- cional atribuído num concurso multidisciplinar, tendo o valor global de 200 mil euros.

Na Categoria Aplicações, que distingue aplicações informáti- cas adequadas a ambientes mul- timédia, o 1º lugar coube ex-ae- quo ao trabalho 'Jarbas', liderado por Pedro Torres Assunção, de 25 anos, e ao Portal de Televisão da Universidade do Porto. ■FC.

"Romeo and Juliet - the Musical" wins creativity prize *Jornal de Notícias,* Dec 12, 2009

The ZON Prize for Creativity in Multimedia was awarded yesterday to the short film "Romeo and Juliet - the Musical," a production of Lusophone University, in a ceremony at the Cultural Center of Belem presided by the Minister of Culture Gabriela Canavilhas.

The work, which is an allusion to the classic of William Shakespeare, won first prize in the category Short Films as well as the grand prize of the event, earning the team of filmmakers 100,000 euros and the privilege of attending a course at the University of Texas at Austin.

200 projects competed in this year of the contest, its second, in three categories: Short Films, Applications and Multimedia Content. The jury selected 13 entries in the Short Films category "due to a tie."

"ZON Prize" goes to a musical *Correio da Manhã,* Dec 12, 2009

The film "Romeo & Juliet - the Musical," directed by Zara Pinto and produced by Marta Hipólito, students at Lusophone University, won the "ZON Prize for Creativity in Multimedia 2009" and, in addition, first prize in the category Short Films, with a total value of 100,000 euros.

The "ZON Prize for Creativity in Multimedia," awarded yesterday at the Berardo Museum in Belem at a ceremony presided over by the Minister of Culture Gabriela Canavilhas, is the largest monetary prize awarded in Portugal in a multidisciplinary competition, with a total award of 200,000 euros.

In the Applications category, which honors computer applications for multimedia environments, the first prize award resulted in a tie between the entry "Jarbas" from a team led by 25-year-old Pedro Torres Assunção and the Television Portal of the University of Porto.

The ZON award for Creativity in Multimedia is co-financed by ZON Multimedia, Portugal and the FCT through the concession of CoLab research grants, with the commitment to promote the integration of the winners into a UT Austin|Portugal CoLab Digital Media research project. The prize carries a cash award of 100,000 € and includes the opportunity to spend time at The University of Texas, as well as the opportunity to air the winning entry on television and in movie theaters.

Table 10. Summer School and Workshop on Kinetics and Statistical Methods for Complex Particle Systems (Mathematics)

July 13 –17, 2009 Summer School Mini-Courses

Eric Carlen, Dept. of Mathematics, Rutgers University, New Jersey *Probabilistic Methods in Kinetic Theory*
Pierre Degond, CNRS, Universite Paul Sabatier, Toulouse, France: *Kinetic and Fluid Modeling of Complex Systems: Theory & Numbers*
Irene M. Gamba, Dept. of Mathematics and ICES, UT Austin: *Evolution of Statistical Models of Non-conservative Particle Interactions*
Markos Katsouslakis, Dept. of Mathematics & Statistics, CAMC, Univ. of Massachusetts at Amherst: *Mathematical Strategies and Error Quantification in Coarse-graining of Many-body Stochastic Systems*
Robert Pego, Dept. of Mathematical Sciences, Carnegie Mellon Univ.: *Dynamics and Scaling in Models of Coarsening & Coagulation*

Jul 20 - 24, 2009 Workshop

Monday

Eli Ben Naim, Los Alamos National Laboratories, NM USA: *Kinetics of Averaging, Parts 1 and 2*
Eugenio Regazzini, Universita di Pavia, Italy: *On the Approximation to Equilibrium of Solutions of Kinetic Equations via the Central Limit Theorem of Probability Theory*
Ester Gabetta, University di Pavia, Italy: *TBA*
Diogo Gomes, Instituto Superior Tecnico: *Bernstein Estimates for Weakly Coupled Fully Non-linear Elliptic Systems*
Maria João Oliveira, CMAF and Universidade Aberta, PT: *Stochastic Dynamics of Infinite Particle Systems*
P. Raphael: *On the Stability of Steady States for the Gravitational Vlasov Poisson System*

Tuesday

Wilfrid Gangbo, Georgia Institute of Technology, USA: *Lagrangian Dynamics on an Infinite-dimensional Torus*
Fabio Chalub, Universidade Nova de Lisboa: *From Discrete to Continuous Models in Evolutionary Dynamics*
Isabelle Choquet, University West, Trollhattan, Sweden: *TBA*
Christian Ringhofer, Arizona State University: *Transport in Narrow Geometries under Strong Confinement*
Rui Vilela Mendes, CMAF and Universidade de Lisboa: *Stochastic Solutions of Charged Kinetic Equations*
Juan Acebron, Instituto Superior Tecnico: *New Challenges in Parallel Scientific Computing*
Jian-Guo Liu, University of Maryland at College Park: *A Simple Proof of Cucker-Smale*

Wednesday

Michael Loss, Georgia Institute of Technology, USA: *Low Energy Properties of the Random Displacement Model*
Vladislav Panferov, California State University, Northridge: *TBA*
Filipe Oliveira, Universidade Nova de Lisboa: *Discrete Kinetic Models for Chemically Reacting Gases*
Dejan Slepcev, Carnegie Mellon University: *Global-in-time Weak Measure Solutions, Finite-time Aggregation and Confinement for Non-local Interaction Equations*

Thursday

Cedric Villani, ENS Lyon, France: *Landau Damping, Part 1*
M. Puel: *Decoupling Homogenization and Diffusion Approximation for the Linear Boltzmann Equation*
Marzia Bisi, Universita di Parma, Italy: *Kinetic Relaxation Models for Chemical Reaction*
Giuseppe Toscani, Universita di Pavia, Italy: *Kinetic and Hydrodynamic Models of Flocking Phenomena*
Patricia Gonçalves, Universidade de Minho: *A Non Ergodic Interacting Particle System*
Lisa Santos, Universidade de Minho: *Quasi-variational Solutions to First Order Quasilinear Equations with Gradient Constraint*
António Câmara: *Keynote Lecture: Digital Media & Mathematics*

Friday

Bernt Wennberg, Chalmers University, Sweden: *A Model for Sympatric Speciation*
Maria C. Carvalho, CMAF and Universidade Nova de Lisboa: *On Strong Convergence to Equilibrium for the Boltzmann Equation with Soft Potentials*
Ana Jacinta Soares, Universidade de Minho: *Gas systems with Chemical Reactions: Kinetic Modeling and Dynamical Properties*
Ana Bela Cruzeiro, GFM and Instituto Superior Tecnico: *Some Results on Langrangian Navier-Stokes Flows*
Clement Mouhot, Université de Paris IX, Dauphine, France: *Landau Dumping, Part 2*
Stephane Mischler, Université de Paris IX, Dauphine, France: *New Challenges in Parallel Scientific Computing*
Miguel Escobedo, Universidad del Pais Vasco, Spain: *A Simple Proof of Cucker-Smale*

PhD students attend the new joint degree program initiated in September 2009 in Lisbon (upper) and Porto (lower).

Summer Institute classes are also planned that will include media-making courses in screenwriting, animation, sound, interactive music, and digital production as well as more theoretical courses examining how people interact with the new media, online journalism, new media industries, and how digital media challenge the task of storage and retrieval, especially in the framework of the archive.

Advanced Computing Strategies

Year 3 involved graduate students from computer science and from science and engineering fields with computational needs in advanced courses and seminars. Junior scientists, although not the audience target of these events, illustrated high motivation to attend all sessions. A selected number of students received internships in Austin and left a positive impression on the UT Austin faculty mentors and advisors. It's planned that during Year 4, research internships will be enriched through the following additional actions:

(i) Extend research internships into non-academic environments, mainly into leading Austin-based IT companies such as Intel, Dell, National Instruments, AMD, Motorola, and IBM;

(ii) Organize educational events and advanced schools/seminars in Portugal, through university centers at Lisbon, Coimbra/Aveiro and Porto/Braga; focus will be placed on a PS3 Workshop designed to attract a young audience;

(iii) Engage more young advanced computing students through

the organization of a Manycore Campus Effort, such as gpGPU, and following a mixed approach, between the LAN & game-oriented approach of the oldest Portugese event, the Minho Campus Party (MCP; see http://en.wikipedia.org/wiki/Minho_Campus_Party) and a combination of formal talks with a programming contest, such as the recent edition of SAPO Codebits (details in http://en.wikipedia.org/wiki/SAPO_Codebits).

(iv) Plan course modules for selected MSc degrees (in Spring or Summer 2010), particularly those that include a fair component of parallel/distributed computing and parallel numerical methods/algorithms courses.

MSc programs in Computer Science: Portuguese computer science students who participate in CoLab (as doctoral students in Advanced Digital Media, Advanced Computing, or during their internships) have a solid background for research problems using innovative computer science approaches. Seminars and TACC workshops on Advanced Computing have clearly contributed to this reality. These positive experiences should be repeated in an integrated way, starting at the MSc level. Current MSc degrees with courses on parallel computing and numerical methods will benefit when more faculty from Austin visit Portugal for short stays to deliver course modules on these subjects.

New dual PhD degree: The Advanced Computing department at UT Austin and several computing departments in Portugal are exploring the possibility of a dual doctoral program between selected Portuguese institutions and UT Austin. This agreement will not require structural changes to current doctoral programs in computer science, provided the thesis focuses on the main areas of advanced computing. The internship work that several Portuguese students performed during the Summer of 2009 in Austin (working as part of CoLab research teams at ICES and TACC for 5-week stays) provided a very positive insight into a successful future arrangement to accommodate post-graduate students. Current education requirements to apply for a doctoral program in Portugal are based on 5 years of University training, including an introduction to research activities through the delivery of a master thesis. A careful selection of the candidates with the strongest qualifications will contribute to successful achievements in a 4-year long doctoral program, making this approach sustainable in a long term perspective. A 3-in-1 package could be arranged, so that each candidate will only apply once for his/her admission at UT Austin, a Portuguese University from a selected list and for a CoLab/FCT PhD scholarship. Mixed evaluation teams that will include members of all doctoral program Board of Directors will prioritize the candidates, pending a determination of the number of CoLab grants to be awarded.

Mathematics Strategies

Building on the past success of workshops and summer school courses, the mathematics group has fostered several value-added collaborations among Portuguese and UT Austin research teams. The mathematics group foresees expansion and strengthening of the vertical integration of the program from undergraduate students to senior scientists. Plans are to continue successful workshop and summer school integration, initiating the topic of Mathematical Physics against the successful model employed in the Spring 2009 events. Events currently in planning include:

1) UT Austin, March 30 - April 3, 2010, *Classical and Random Dynamics in Mathematical Physics Workshop*

2) University of Coimbra, June 15-23, 2010, *Imaging Sciences and Medical Applications Summer School.*

The mathematics group continues to encourage UT Austin professors who collaborate on current research projects to visit Portuguese universities. Several visits are planned for 2010 and some have already occurred, including Professor Bjorn Engquist, a collaborator on a new R&D project based at the University of Coimbra. Professor Engquist presented a colloquium to the Center of Mathematics at the University of Coimbra (CMUC) in November 2009. Professor Omar Ghattas and Dr. Georg Stadler of ICES also plan to visit CMUC.

Expansion of the undergraduate component is also planned. To date, undergraduates have been included in the 3-week summer schools in Portugal and UT Austin. The directors of UT Austin CoLab Mathematics represent UT Austin's component as associates of the ERASMUS program, whose aim is to encourage and support academic mobility of higher education students and teachers within the European Union. It is hoped to leverage inter-programmatic synergies along these lines.

Academic Challenge

One key administrative challenge among all of CoLab's PhD programs centers on graduate students who are accepted into degree programs with FCT grants. Currently these student applicants are expected to familiarize themselves with the application procedures for admission to the Graduate School at The University of Texas at Austin, and be attentive to application deadlines. CoLab needs to be more proactive to facilitate students through this rather complex process, particularly early initiation of the UT Austin admissions process, which is a prerequisite for participation in the program. While the need for early application to UT Austin might seem to be a non-issue since it is not in the direct purview of CoLab strategy, this immovable reality can result in a very real barrier to students' participation and ultimately minimize the overall program in a measurable way.

The 2009 FUTURE PLACES festival. MORE DESCRIPTION HERE, PLEASE.

Special Events & Communication

National accessibility to CoLab programs by qualified Portuguese particpants is a key goal of the FCT and CoLab. This is facilitated by increasing general awareness of CoLab through public venues and publications and by providing publicly accessible calendar information.

SPECIAL EVENTS

Special events that display students' and faculty projects help increase notoriety for individuals as well as all CoLab programs, especially when combined with a competition-based awards processes. Similarly CoLab's coordinated participation in external (non-CoLab) events increases the organization's public profile, as both faculty and students receive recognition and/or acclaim from *outside* CoLab's sphere of direct influence and non-CoLab audiences. Some of these external venues incorporate multiple events with a wide international audience, such as the internationally known *South by Southwest (SXSW) Interactive, Film, and Music* festivals, held in Austin, Texas every March, www.sxsw.com. The following paragraphs describe select CoLab events including FUTURE PLACES in Porto and the Creative Cities Network. Table 11 provides a brief description of CoLab's participation in a range of external events.

FUTURE PLACES Festival

The Digital Media Festival event, FUTURE PLACES unites art, technology, culture from both the academic and practitioner communities. Its international media competition, workshops, exhibition and talks enhance Portugal's reputation as a significant site in the digital media world.

In October 2009, the second annual Future Places digital media festival and competition was held in Porto, offering workshops, networking activities, media exhibits, screenings, and performances.

Manuel Heitor, Portugal's Secretary for Science, Technology, and Higher Education, addresses the Creative Cities Conference in March 2009. Also shown are xx; Antonio Câmara, CoLab Director; and Will Wynn, former mayor of Austin, Texas.

Future Places was created to bring together emerging and established digital media artists, scholars, and industry actors to learn about different advances in the digital technologies and production techniques, build professional relationships, and showcase innovative applications of digital media from around the world. The festival brings global attention to Portugal's status as a rising center of high tech creativity and production, and features the work of Portuguese artists, technologists, and academics within an international context.

The Future Places 2008 festival and digital media competition made a promising debut in 2008 with interest coming from respondents in Portugal, Brazil, the United States, Turkey, and Canada, as well as other countries. Artists, advanced media production students, and technology and design professionals submitted work to the festival in a variety of formats, including experimental digital videos, prototypes of new social networking platforms and media distribution software, and artistic installations. The workshops fostered participants' professional development and included an introduction to physical computing, an advanced workshop on interface design for mobile devices, and a seminar that examined theories of interactive digital environments. Participants, who also attended lectures and performances, included advanced university students and those already working in the field of digital media.

Table 11. CoLab Participation in External Events

Oct 1 - 5, 2008	**U.Frame Festival 2008:** Two of the main prizes were awarded to UT Austin students participating through CoLab: • Marianela Vega Oroza took Best Documentary Award with *Conversations ll* • Nazanin Shirazi received Audience Award for *Red Wednesday*.	Univ. of Porto
Oct 16, 17, 2008	**SHiFT (Social and Human ideas For Technology) Conference:** Geoff Marlsett (UT Austin) presented *Digital tools as an extension of animated ideas* presentation and workshop.	Lisbon
Nov 18 - 23, 2008	**Portugal Tecnológico:** Future Places festival winners presented their interactive digital media projects as part of the conference events: • Filipe Pais *(Living Room Plankton)* • Rodolfo Quintas *(Burning the Sound)* • Rui Penha *(Digitopia)*	Lisbon
Dec 10 - 13, 2008	**Futurália 2008**: CoLab was represented by an information booth at this high profile student event.	Lisbon
Dec 11, 12, 2008	**I International Online Journalism Congress:** *Rosental Alves (UT Austin Digital Media) addressed the ways the digital revolution is removing barriers in journalism, especially in the way the role of the journalist has become an open public forum.*	Porto
Mar 13 - 22, 2009	**SXSW Interactive, Film, & Music Festivals:** • Bruce Pennycock (UT Austin) and Ivan Franco (YDreams, Portugal) spoke on *New Interfaces for Performance*. • Kirk Woolford (University of Sussex) and Professor Carlos Guedes (University of Porto) provided interactive music technology with *Echo Locations,* as part of the opening session of the SXSW Interactive track. • ZON prize award winner Nuno Rocha's winning film was screened at the Alamo Ritz downtown as part of UT Austin's Radio-Television-Film department's showcase.	Austin, Texas
Apr 22-25, 2009	**Black & White Audiovisual Festival 2009:** Several films by RTF UT Austin Students were screened as part of the SADDLE UP program.	Porto
Apr 27, 28, 2009	**Artibytes 2009:** CoLab's Executive Director in Portugal, Pedro Madeira, served on a debate panel to discuss *International Partnerships for Art & Technology*.	Santarém
Jul 22 - 25, 2009	**6th Sound, Music and Computing Conference 2009:** UT Austin Professor Bruce Pennycook was a keynote speaker.	Porto
Sep 30- Oct 4, 2009	**U.Frame Festival 2009:** Five UT Austin students attended this event.	Porto

Sep 17, 2009	**Stories of Art & Science Conference (Launch of Nomadic.0910):** Maria Esteva, a Research Associate/Data Archivist in the Visualization and Data Analysis group of TACC provided a remote-accessed address on the topic *Endless Possibilities: Digital Collections as Crossroads between the Humanities and the Sciences.*	Univ. of Porto

Participants interact with *Echo Locations,* a piece installed by Kirk Woolford (University of Sussex) and Professor Carlos Guedes (University of Porto) for an opening event of the *South by Southwest* festivals (Austin, TX March 13-22, 2009) which draw an annual attendance of over 10,000; see www.sxsw.com.

Table 12. Agenda: Future Places Festival 2008 (Digital Media)

Thursday, October 9
Official opening ceremony of FUTURE PLACES (Reitoria)
- Keynote by UT Austin-Portugal representatives
- Caroline Frick, *Texas Archive of the Moving Image*
- Ana Nassar, *The Museum of the Person* (video conference)
- Joana Miranda, *U.Frame Festival*
- Welcome reception with concert by BJNilsen (Casa da Música)
- *U.Frame and Black & White film retrospectives,* Dee-Jaying by PhDee-Jay Cruz (Passos Manuel)

Friday, October 10
Session 1: Viewpoints on Digital Media and Local Cultures (School of Fine Arts)
- BJ Nilson, MSC Harding, Heitor Alvelos: *Work processes in field recording and digital music composition*
- Stephan Baumann, Head of Competence Center Computational Culture, German Research Center for Artificial Intelligence: *Recent research on gathering of urban signals for well-being*
- Nuno Correia, *Work developed at the UT Austin-Portugal Summer Institute 2008*
- Pedro Leão, *CCRE and online platform for urban reinvention*
- Presentation of Interface Design workshop outcomes
- Steven Devleminck, *Transmedia program (Sint-Lukas Academy, Brussels)*
- António Câmara, *YDreams and national strategies for the development of Digital Media*
- Heitor Alvelos and MSC Harding, social network project: *The Kingdoms of Elgaland-Vargaland*
- Stop NonStop: *Elgaland-Vargaland anthem event (STOP Shopping Center)*
- Screening of competing films and presentation of competing performance pieces *(Passos Manuel and Maus Hábitos)*

Saturday, October 10
Session 1: Viewpoints on Digital Media and Local Cultures (Reitoria)
- Philip Dean, *MediaLab Helsinki program and projects*
- Pedro Custodio, *SHiFT conference, and how to address local cultures*
- Open forum led by representatives of Portuguese Universities: *MAPA event: how Portuguese Education is handling digital media*
- Exhibition Opening and Award ceremony (Reitoria)

Exhibitions remained open until October 19.

Table 13. Agenda: Future Places Festival 2009 (Digital Media)

Thursday, October 15
Session 1: Archiving and Accessing Local Cultures
Hugh Forrest (Keynote): *An Insider´s View of SXSW*
Juan-Gil Lopez & Horacio González: *Escoitar-Galicia Soundscapes*
Silvia Garcia: *WikiMap Galiza Culture*

Session 2: Creative uses of Hybrid Media
David Gunn: *CincoCidades and other Cities*
Zach Smith: *Thingiverse-Open Source Everything*
Marc Behrens: *Musical Composition with Field Recordings*

Session 3: Academic Approaches
Luís Sarmento: *DIY Digital Creativity*
Phil Taylor: *Creative Uses of Digital Technology in Curricular Environments*
Boris Debachere: *New Mappings of Academic Cooperation in Europe*

Friday, October 16
Exhibition Presentations and Judging (Maus Hábitos)
Future Places 2009 Workshop Outcomes (Faculdade de Belas Artes, University of Porto)
ProtoPorto: Porto graduate students exhibit *Visions of the Future City* (Faculdade de Belas Artes, University of Porto)
Open Cities: Performance by David Gunn and Guillermo Brown (Passos Manuel)

Saturday, October 17
WIFP: Presentation of Digital Media Research Projects in Progress (Maus Hábitos)
The Future Will Go Backwards: Seminar by Jon Wozencroft (Maus Hábitos)
Future Places Awards Gala and Launch of 2008 Proceedings (Maus Hábitos)

Note: Neither of these agendas show peripheral activities such as special concerts and parties.

Prominently known jurors were on the agenda, including Hugh Forrest, Event Director of the renowned South by Southwest Interactive festival, Portuguese researcher and interactive media artist Cristina Sá, and award-winning documentarian Karen Kocher, who teaches at the University of Texas at Austin. In addition, the 2009 festiva scheduled three workshops (described in detail in the educational section): one led by artist and engineer Golan Levin, Director of the STUDIO for Creative Inquiry and Associate Professor of Electronic Art at Carnegie Mellon University; another headed by Professor Valentina Nisi of Madeira University, whose expertise includes location-aware narrative and service design; and a third by Dr. Nuno Correia, on the facuty of the The festival will also feature concerts at Porto's Casa da Música, and speaker panels and performances around the city. To enhance the potential for outreach, this year's event will focus on attracting the general public, including local students and professionals, who will be welcome at speaking panels and other events. The FUTURE PLACES festival agendas are shown in Tables 12 and 13.

Creative Cities Network
The International Network of Creative Cities was launched on July 7th at an event promoted by the UT Austin Portugal CoLab program, CCDR-LVT and the City of Lisbon. The conference featured a keynote by the former Mayor of Austin, Will Wynn.   The city of Austin enjoys an international reputation as a city with high creativity, and a competitive technology-based economy. The event took place at the Portugal Pavilion at Parque das Nações, in Lisbon. The Network of Creative Cities Conference also featured Manuel Heitor (the Portuguese Secretary of State for Science, Technology, and Higher Education), Professor Antonio Câmara (CoLab's Digital Media Director in Portugal), Portuguese mayors, and representatives of active municipalities in terms of creativity and innovation including Guimarães, Óbido, and Paredes.   Academia was represented by faculty from the New University of Lisbon and the Technical University of Lisbon, who provided the Creative Cities Contest and discussions on the how the theme of creativity is being developed in Portuguese high schools and universities.

ZON Award, Digital Media
The ZON award for Creativity in Multimedia is co-financed by ZON Multimedia, Portugal and the FCT through the concession of CoLab research grants, with the commitment to promote the integration of the winners into a UT Austin | Portugal CoLab Digital Media research project. The prize carries a cash award of 100,000 € and includes the opportunity to spend time at the The University of Texas, as well as the opportunity to air the winning entry on television and in movie theaters. The first winner of this award was announced December 15, 2008. Nuno Rocha, a graduate of the Polytechnic of Porto (ESMAE), received the award for his short film, *3 x 3*. As part of Nuno's prize, his film was screened at the South by Southwest Film festival, in Austin, Texas, at the Ritz Alamo Drafthouse downtown.

Student Concerts, Digital Media
Technically framed within Year 4's agenda, faculty members Carlos

Guedes of INESC-Porto and Bruce Pennycook of The University of Texas at Austin have collaborated to produce a concert of student compositions to take place in both Austin and Porto. The concerts provide the opportunity for student musicians to work with one another and visit each other's home cities. The first performance of the concert was presented on September 29, 2009, at the Butler School of Music at UT Austin, and Porto music student Duarte Silva visited Austin to participate. The University of Texas at Austin students Luis Passos and Steven Snowden traveled to Porto for the second performance of the concert, at the Casa da Musica on October 14, 2009, opening the second FUTURE PLACES digital media festival.

COLAB COMMUNICATION
CoLab Square monthly newsletter
CoLab Square monthly newsletters serve two major purposes for the UT Austin | Portugal program. First, they capture *archival information* on a monthly basis for events and accomplishments as they occur, across all three academic areas and the University Technology Enterprise Network (UTEN). This is an important tool for public transparency and accountability. Second, the newsletter provides a method for sharing information on *current and pending opportunities (both national and international),* from open calls for research and interns, to workshops and other events. The newsletter is distributed

UT Austin | Portugal Web Presence, September 2009

MAIN SITE

UT Austin | Portugal CoLab
http://www.utaustinportugal.org
The UT Austin | Portugal CoLab site provides a centralized source for calendar information, open calls, information on people and institutions affiliated with CoLab, and much more. The site features program links to Digital Media, Advanced Computing, Mathematics, UTEN, and informational links including *About the Program, Governance, Media,* and *Contacts.*

PROGRAM SITES

UT Austin | Portugal CoLab: Math
http://math.utaustinportugal.org

Digital Media Blog
http://colab.ic2.utexas.edu/dm/

UTE*Network*
http://utenportugal.org

EVENT SITES

Future Places Festival 2009
http://futureplaces.org

Int'l School on Digital Transformation
http://digitaltransformationschool.org

Creative Cities Lisbon 2009
http://creativecitieslisbon.org

SOCIAL MEDIA

UT Austin | Portugal on Twitter
http://twitter.com/UTPortugal

UTEN on LinkedIn
www.linkedin.com/groups?gid=1910362

PhD Digital Media Google Group
http://groups.google.com/group/
digitalmediaphdstudents-utaustin_pt

Future Places on Flickr
www.flickr.com/photos/tags/futureplaces

Future Places on Facebook
www.facebook.com/group.php?gid=
217301415595

Future Places on LinkedIn
www.linkedin.com/groups?gid=
2048035

Future Places on MySpace
www.myspace.com/futureplacesfestivalpt

Future Places on Twitter
http://twitter.com/FuturePlacesPT

Future Places on YouTube
www.youtube.com/
futureplacesfestival

(both national and international), from open calls for research and interns, to workshops and other events. The newsletter is distributed at no charge, both by email and hard copy, to all interested parties.

CoLab online presence

The online presence of CoLab has been considered a primary and essential communication tool from the program's inception. In response to a largely static original main site, CoLab has increasingly supported a decentralized web presence in order to place control and access closer to the people who maintain and use information relating to the program.

Digital Media, Mathematics and UTEN have individual sites supplementing the main CoLab web site. Individual sites are also developed for major CoLab events such as festivals and conferences. In addition, audience outreach has been facilitated through widely-used social media such as Twitter, Facebook, LinkedIn, and YouTube. Finally, Google Groups and the courseware system Epsilen have provided private collaborative spaces as needed during Year 3.

STRATEGY FOR FUTURE
FUTURE PLACES Festival

FUTURE PLACES 2010 will build on the success of the first festival, and is set to develop into an established annual festival, continuing to attract some of the most innovative artists and researchers from around the world and providing a venue for building sustained relationships between researchers, artists, and members of the creative industries. The festival is meant to become a fixture on the international digital media scene, fostering artistic, commercial,

and technological development, and reinforcing Porto's emerging identity as a center for emerging digital technology.

Monthly newsletter

Email subscriptions to *CoLab Square* have increased by about 50% in the past year, from about 300 to about 450. Hard copy issues are provided at all CoLab events. However, a key challenge for Year 4 is to effectively increase the national and international email distribution of *CoLab Square.*

Online presence

At the end of 2009 a new version of the central CoLab site was launched with improvements including more user-focused information for students and interns, better news coverage of CoLab activities and better visibility to search engines. Operationally, the new site is hosted at the University of Texas under the direct control of CoLab staff in Austin and Portugal, hopefully eliminating past difficulties. (See www.utaustinportugal. org.)

CoLab's continued reliance on popular external social media tools serves two strategic functions: (1) it avoids the duplication of effort of developing or buying comparable stand alone services; and more importantly, (2) our stakeholders are more likely to engage with tools they already know and networks in which they are already participants. This principle has been born out by a Google group that was launched by Digital Media PhD students. This has become an active online gathering place for the geographically dispersed students in the CoLab Digital Media program.

CoLab Governance

Table 14. CoLab Governance

Digital Media
Directors
António Câmara, Professor, Faculty of Science and Technology, New University of Lisbon
Sharon Strover, Professor and Chair, Department of Radio-Television-Film, UT Austin
Co-Directors
Artur Pimenta Alves, Professor, Department of Electrical and Computer Engineering, University of Porto
Nuno Correia, Assistant Professor of Computer Science, Faculty of Science and Technology, New University of Lisbon

Advanced Computing
Directors
Alberto Proenca, Professor in Computing Engineering, Dept. of Computer Science, School of Engineering, University of Minho
Keshav Pingali, Professor, Chair of Advanced and Distributed Computing, Dept. of Computer Science and ICES
Co-Directors
Pedro Medeiros, Assoc. Professor, Dept. of Informatics Engineering, Faculty of Science & Technology, New University of Lisbon
Luís Silva, Associate Professor, Dept. of Informatics Engineering, Faculty of Science and Technology, University of Coimbra
John (Jay) Boisseau, Director, Texas Advanced Computing Center (TACC), The University of Texas at Austin

Mathematics
Directors
Diogo Gomes, Professor. Center for Mathematics Research, Instituto Superior Técnico (IST/UTL)
Luis Caffarelli, Professor, Dept. of Mathematics and ICES, The University of Texas at Austin
Co-Directors
Luís Nunes Vicente, Professor, Dept. of Mathematics, School of Sciences and Technology UC (FCTUC)
Irene M. Gamba, Professor, Dept. of Mathematics, The University of Texas at Austin

Board of Directors
João Sentiero, Chair, President of the Portuguese Science and Technology foundation (FCT)
Luís Magalhães, President of the Portuguese Knowledge Agency (UMIC)
António Câmara, School of Science and Technology, New University of Lisbon
Juan M. Sanchez, VP for Research, The University of Texas at Austin
Robert A. Peterson, Principal Investigator, Associate VP for Research, The University of Texas at Austin
David V. Gibson, CoLab Director and Associate Director IC^2 Institute , The University of Texas at Austin

Directorate of the Board of Directors
António Câmara, School of Science and Technology, New University of Lisbon
David V. Gibson, Associate Director, IC^2 Institute

CoLab Staff
The New University of Lisbon (UNL)
António Câmara, CoLab Director and Professor of Environmental Science and Engineering
Nuno Correia, Digital Media Co-Director and Assistant Professor of Computer Science
Pedro Medeiros, Advanced Computing Co-Director and Associate Professor of Informatics
Pedro Madeira, Executive Director
Sofia Santos, Press and Communications Officer
Luiza Oliveira, Administrative and Academic Management

The University of Texas at Austin
Robert A. Peterson, Principal Investigator for CoLab and Associate VP for Research
David V. Gibson, CoLab Director and Associate Director of IC^2 Institute
Prentiss Riddle, Web site development and maintenance
Karen Gustafson, Program Manager
Derek Lackaff, Postdoctoral Fellow
Chris McConnell, Graduate Research Assistant
Janet Tucker, Administrative Assistant
Steve Molloy, CoLab Finances

External Review Committee (ERC)
David W. Walker, Chair ERC and Professor, School of Computer Science, Cardiff University, UK
Josep Blat, Professor, Interactive Technologies Group, Universitat Pompeu Fabra, Spain
Glorianna Davenport, Principle Research Scientist, MIT Media Laboratory
Bob Hodgson, Managing Director, Zernike, UK
Benoit Perthame, Professor Mathematics, Ecole Normale Superieure, Paris

Table 15. Participating Institutions

Digital Media CoLab Universities

New University of Lisbon | The Faculty of Science and Technology (FCT); Faculty of Social Sciences and Humanities (FCSH); and School of Economics

University of Porto | Faculties of Engineering, Fine Arts, Humanities and Economics, and INESC Porto

The University of Texas at Austin | The College of Communication, the Dept. of Radio, Television and Film, the School of Journalism, the College of Fine Arts, and the Dept. of Computer Sciences

Advanced Computing CoLab Universities

New University of Lisbon | Dept. of Computer Science at Faculdade de Ciências e Tecnologia (CS-FCT-UNL);

University of Coimbra | The Dependable Systems Group of the Dept. of Computer Science (DSG-CS-UC); Centre for Computational Physics (CFC-UC)

University of Minho | Dept. of Computer Science (CS-UM)

Laboratory for Particle Physics | Lisbon (LIP)

The University of Texas at Austin (UT Austin) | Dept. of Computer Sciences (CS), Dept. of Electrical and Computer Engineering (ECE), Institute for Computational Engineering and Sciences (ICES), Texas Advanced Computing Center (TACC), Distributed & Advanced Computing Group

Mathematics CoLab Universities

Technical University of Lisbon | Dept. of Mathematics at Instituto Superior Tecnico (IST/UTL)

University of Lisbon | Through the Dept. of Mathematics at the School of Sciences (FCUL)

New University of Lisbon | Through the Dept. of Mathematics at The Faculty of Science and Technology (FCT/UNL)

University of Coimbra | Through the Dept. of Mathematics of the School of Sciences and Technology UC (FCTUC)

The University of Texas at Austin | Dept. of Mathematics, Institute for Computational Engineering and Sciences (ICES)

Industrial Affiliates

Brandia Central	Duvideo	Mog Solutions
Bycom	Fundação de Serralves	Porto Editora
Casa da Música	Innovagency	Público
Critical Software	Inteli	YDreams
	Media Capital Editoral Multimédia	

Creativity

Opening minds & making new connections

Capital

Talent that formulates critical questions and establishes collaborative frameworks for new solutions

Innovation

Transforming knowledge into new academic and commercial applications.

UT Austin | Portugal

INTERNATIONAL COLLABORATORY FOR EMERGING TECHNOLOGIES, CoLab

FCT Fundação para a Ciência e a Tecnologia

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

IC2 INSTITUTE

THE UNIVERSITY OF
TEXAS
AT AUSTIN