

UT Austin | Portugal

INTERNATIONAL COLLABORATORY FOR EMERGING TECHNOLOGIES, CoLab



R&D PROJECT HIGHLIGHT

Project: iDTV-Health: Inclusive services to promote health and wellness via digital interactive television

Principal Investigator: Manuel José Damásio

The television of the future will certainly be different from what we now know and a substantial part of this difference will be its ability to offer services and con according to their preferences and attitudes. The iDTV-Health project has as main objective to assess the potential of interactive digital television in order to promote services, formats and original content that may be relevant in the context of support for personal health care and well-being of people over 55 within Portugal.

The main question that guides us is not so much the fate of television as a form of content, but the mapping of the precise nature of one of its possibilities for future display and distribution of information. This project emerged in a context of profound transformation of the medium due to the emergence of new digital distribution platforms, such as digital terrestrial television (DTT) and IPTV, and increasing transmission of content via mobile, particularly due to the WiMAX and LTE technologies. Thus we intend to evaluate the satisfaction and potential resulting from the introduction of an interactive digital TV service as a complementary follow-up to personal health care. We will especially examine access and visualization of content and specialized information in the medical field, with respect to older adults. The focus of the project is concentrated in populations with low level of technological literacy, particularly those over 55 years of age as well as health professionals.



Workshop Health Literacy: New Directions in Health and Communication Research

The project is currently at an early stage of studies involving a large-scale survey of the Portuguese population about their attitudes and behaviors regarding this possible new facet of television. The investigator responsible for the project is Manuel José Damásio, researcher at Centre for Research in Applied Communication, culture and new technologies (CICANT) at Lusófona University of Humanities and Technology (ULHT) and the promoter consortium also includes the Center for Research and Studies in Sociology of Higher Institute of Labour and Business (CIES / ISCTE), the Center for the Study of Language and Communication, New University of Lisbon - Faculty of Social Sciences and Humanities (CECLA FCSH-UNL), University of Texas at Austin (UT Austin), the Health Group São João de Deus, the video production company Duvídeo, (UT Austin|Portugal associated company) and the company Flux, which works in the areas of processing bio-signals with wireless sensors.

Over the first months of work the project has been developing a strong collaboration between the national team and the researchers involved in the Austin project, and the first tangible results of this collaboration included a workshop on July 19, 2011 at the Lusófona University attended by national researchers and North Americans. Work to date was presented and the group tackled the broader issue of health literacy and the role of media in this context. Attendees also discussed the publication of a work dedicated to the themes of accessibility and use of media by people with special needs.

Gary Chapman International School on Digital Transformation



The Gary Chapman International School on Digital Transformation began on Sunday, July 17 in Porto.

Fifteen faculty - professors, activists, people associated with NGOs - joined 40 students from around the world for a week-long discussion of subjects defining digital transformation, ranging from biometrics to the nature of participation in the online world to video games and new models for education. Several doctoral students from the

UT|Portugal program attended. The participants organized numerous affinity sessions throughout the week in order to investigate a broad array of interests.

ISDT's accomplishments will be explored in the next issue of our newsletter.



Prof. Artur Pimenta Alves, U. Porto

Digital Media Summer Institute returned to Lisboa and Porto

Rosental Alves' Entrepreneurial course

Entrepreneurial Journalism for the Digital Age was taught at the U.Porto and had the participation of 14 students with a very interesting mix of backgrounds, including economics, multimedia production and journalism, with some of the students coming from media companies. This combination of students led to a course full of vibrant discussions that students and instructor found very stimulating.



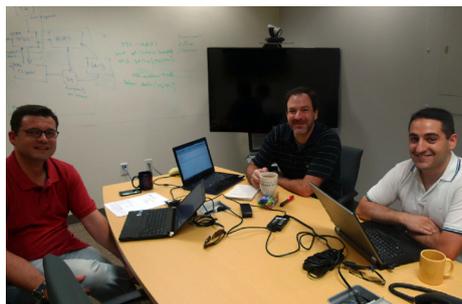
Jeanne Stern's Animation course

The Course in Experimental Animation started in June with a group of 12 students with previous experience in animation. The course continued for three weeks. At the end of the course, on the 16th July, a final show open to the public exhibited student work. Additional work by animators from Austin, Texas accompanied the screening.



Researchers Visit Austin for Project Breadcrumbs

The contemporary online news environment presents readers with a flood of articles and information; it's now rarely a matter of whether something's online, but if something *interesting* is online. Researchers funded through the Digital Media Program are developing a system to help readers find content that suits their interests.



Professor Álvaro Figueira from the Faculty of Sciences, University of Porto, came to Austin this month to meet with his Austin-based collaborator, assistant professor Luis Francisco-Revilla of the School of Information. One of Figueira's project grant holders, Henrique Alves, also came to Austin to join the meetings and for an exploratory visit. Francisco-Revilla said that the ability for Portuguese researchers to visit Austin is invaluable for pursuing this research. Although it's possible to do some coordination via email or Skype, it is difficult to brainstorm or work out problems on the whiteboard without meeting face to face.

The members of Project Breadcrumbs are developing a web-based application for the social sharing and recommending of news stories. Users of the system identify news stories that suit their interests, and they can bookmark and

tag the stories in the application. The system then uses this information, as well as their social contacts, to organize the personal news collection and to recommend similar stories in the future. The purpose of this project is to see whether this hybrid system can provide a better news-reading experience for ordinary users.

The application is being developed on a number of different web-based programming and scripting languages. The heart of the system being developed in Porto is written in Java, but the researchers are also using Javascript and PHP for the web-based interface, which is being developed in Austin. Unlike older systems such as del.icio.us, the software features a drag-and-drop interface, which provides an intuitive way for users of all skill levels to save and bookmark articles.

Project Breadcrumbs is one of the research projects recommended by the Digital Media program and funded by FCT during the 2010 academic year. These projects require investigators in Portugal to identify faculty at UT Austin and another Portuguese institution as potential collaborators and then work with these faculty to complete the research.

News from Digital Media doctoral students



Ana Cabral Martins

This spring, several Digital Media doctoral students came to Austin to sit in on classes and use UT's research facilities as they developed their research projects. One of the students who spent the semester is Ana Cabral Martins, who researches digital cinema at UNL.

Martins audited three classes in the department of Radio-TV-Film this past semester. She sat in on Classical Hollywood Cinema with Tom Schatz, Alternative Poetics with Charles Ramirez Berg, and Mary Kearney's

Introduction to Research Methods. Martins said that Kearney's research methods class was particularly useful in helping her think through what ways she can approach her research.

Although Martins describes her project as a "classical theoretical thesis," it examines rapid changes in showbiz, asking "How has digital technology changed the way we see movies." In particular, Martins is looking at 3D cinema, Netflix, and alternative exhibition spaces such as the Alamo Drafthouse Cinema as case studies for her work.

On leaving Austin, Martins praised the research facilities at UT Austin. "I'm going to miss that library so much," she said of the main Perry-Castaneda Library, adding "I had everything I need there." She spent most of her time working on the sixth floor of the building. "In Lisbon, it's so hard to find a comprehensive film archive," she explained, agreeing that her time in Austin gave her a unique opportunity to pursue her work.

Brett Caraway Defends File-Sharing Dissertation

Digital Media specialist Brett Caraway, a UT Austin PhD Student in Radio-TV-Film, defended his dissertation in June. Titled "Resistance Commons: File-Sharing Litigation and the Social System of Commoning," it investigates the phenomenon of illicit file-sharing with a unique economic perspective. In the dissertation, Caraway frames the legal campaigns of

the content industries as a negative reaction to emerging commons-based social relations. In it he argues the defense was held June 22, and the committee was chaired by Digital Media co-director Sharon Strover and associate professor of Radio-TV-Film Laura Stein.

ZON Digital Animation Advanced Lab Continues

The ZON Digital Animation Advanced Lab at UT Austin is now in its second month, as 10 professional animators visiting from Portugal take part in an intensive program of study led by UT instructors Geoff Marslett and Ben Bays. For the past several weeks, the participants have studied a variety of animation processes and techniques and met with some of Austin's top animation experts. In addition to the program's intense work schedule, the visitors have gone on recreational trips – such as a day on the nearby Comal River – and professional visits, including a tour of Sony Online Entertainment studios.

Participant João Alves of Lisbon Labs noted the advantages of working with such a diverse group, stating, "Just having a talented group of people together, in the same space, everyone with different backgrounds and goals, makes the Animation Lab a constant learning experience. The teachers – both the regulars and the guests – take it to a whole other level, due to their vast experience of working in both the film and gaming industries."

Professional freelancer Diana Salavisa likewise noted the broad range of experiences and skills represented in the

program. She said, "For a 2D drawing professional, it is a wonderful and enriching experience... Geoff Marslett and Ben Bays not only showed us the primary software and techniques in the digital world, but they are also giving us new ways to explore our ideas and concepts through diverse animation programs and tools, and I can now implement and explore those techniques on my films."



On July 15th, the ZON Animation Lab participants spent two hours touring the Austin studios of Sony Online Entertainment, a company known for major videogame titles including the massively multiplayer classic game Everquest, Star Wars Galaxies, and the recently released DC Universe Online, current-

ly SOE's top title. The students saw live game demonstrations, examples of pre-rendered sequences, and learned about the studio's techniques for particle animation, character rigs, and voice recording.

■ PhD Student Researcher Visits UT Austin for LIFEisGAME Project

University of Porto PhD student Nuno Monteiro Barbosa, a member of the UT Austin-Portugal LIFEisGAME research project team, visited Austin for the month of July. The project, led by University of Porto faculty member Verónica Costa Orvalho with UT Austin faculty members Jake Aggarwal and Yan Zhang, uses a serious games approach to teach people with Autism Spectrum Disorder (ASD) to recognize facial emotions using real time synthesis and automatic facial expression analysis. To do this, the researchers will develop several game modes to improve the gamer's interactive experience.

The team is currently integrating the facial motion capture system developed by the UT Austin's Computer and Vision Research Center team into the LIFEisGAME game engine, enabling the replication of user facial expressions on the virtual avatar. This integration will be performed by both the U. Porto and UT teams since the process requires computer graphics and computer vision knowledge. Barbosa has worked on this intensively during his visit. He commented, "This one-month experience at Austin was an opportunity to acquire new scientific knowledge and academic partners, as also to establish entrepreneurial bonds with local and foreign companies and professionals."

■ UT | Portugal Faculty Attend International Conference in Istanbul

Several faculty involved in the UT-Portugal program participated in the International Association of Media and Communication Research (IAMCR) annual conference in Istanbul, Turkey. UT faculty members Joe Straubhaar and Laura Stein, who are both also working on research projects within the collaboration, presented some of their work, as did Sharon Strover, director of the digital media program, and Karin Wilkins. Dr. Wilkins also recently co-taught a research methods class for Porto-based doctoral students. Portugal faculty Cristina Ponte (FCSH/UNL) and José Azevedo (U.Porto) presented their findings at IAMCR, and also took advantage of the conference to have a working meeting on their research project with UT Austin team members. Graduate student Laura Dixon also

attended IAMCR to share some conclusions from the joint research project led by Drs. Ponte, Straubhaar and Azevedo.

Dr. Stein continued on to Portugal from IAMCR, where she participated in the Gary Chapman School on Digital Transformation as well as met with her research team in Lisbon. The research project team, led by Manuel Damásio of Lusófona, will spend a day sharing some preliminary findings on their health and interactive media project. Sharon Strover also is arriving in Porto to convene the School along with Dr. Artur Pimenta Alves (U.Porto). Approximately 37 students and 16 faculty are attending this year.

■ UTEN CORNER

UTEN Portugal: Upcoming events after the summer

Enjoy the summer now because UTEN Portugal will be back strong in September.

During the last four months of the year, UTEN Portugal will organize: two workshops, one Training Week and the Annual Conference.

The 4th UTEN Workshop 2011 will start on 26 September, at the Universidade Nova de Lisboa (Lisbon). With the theme "Nanotechnology and Life Sciences - Increasing Commercialization Outcomes for University Nanotechnology Laboratories", this training session will focus on the best practice models used to showcase how university nanotechnology facilities can improve commercialization outcomes through the leveraged use of industrial inputs, focused research and key staff. The Workshop's keynote speaker is Bruce E. Gnade, Ph.D., Vice-President for Research at the University of Texas at Dallas.

Workshop #5, entitled "Technology Transfer within Creative Industries, Arts and Humanities", will take place on 21 October 2011 at the University of Porto (Porto).

Training Week #3, entitled "From the Lab to the Market - Deep Analysis of a Real Case", will be the last Training Week of 2011, and it will take place between 24 and 28 October in Faro.

All of the events will be organized in collaboration with the CoLab - UT Austin-Portugal Program.

The event we highlight for 2011 is the annual conference. This will be the third edition of the conference, and should take place on 14 November. Don't miss these opportunities!

■ WORKSHOP ON GPU PROGRAMMING FOR SCIENTIFIC APPLICATIONS

The *Workshop on GPU Programming for Scientific Applications* took place at the University of Coimbra, from 6th to the 8th July, in the framework of the UT Austin | Portugal Program.

During three days about 75 scientists of several areas learned how to develop high-performance applications using the latest GPUs in the market. This unique workshop counted with world-class experts: Jonathan Cohen from NVIDIA Inc.,

Donal Fussel and Peter Ruyngaert from UT Austin and Martin Burtscher from Texas State University.

The workshop was divided in 3 morning presentations by our invited speakers and 3 practical workshops in the afternoon, where participants joined a programming competition. Attendees were divided into teams, supervised by Alcides Fonseca (DEI/FCTUC), Nuno Subtil (NVIDIA), João Barbosa

(UMinho) and Gabriel Falcão (DEEC/FCTUC). The challenge for the workshop was to implement the Floyd-Warshall algorithm that finds the shortest paths in a weighted graph. The contestants had to parallelize the algorithm and tune it to take the best performance out of the GPUs available. For the problem given, a quad-core i7 CPU would take over 6 minutes computing. Most participants improved the execution down to 80 seconds using a Tesla GPU. The winner got just 16 seconds with further optimizations.

Organized by the members of the CoLab of the University of Coimbra, the GPU workshop gathered almost 90 people in a unique atmosphere, and ended with a dinner by the river in a wonderful environment, where awards were presented to the winners of the competition: 1st place to Paulo Flores and Gil Lacerda, from IST Lisbon, 2nd place to Luís Ribeiro (DEEC/FCTUC) and 3rd place to José Rui Faustino and Micael Oliveira, Physics Department FCTUC.



Jonathan Cohen, NVIDIA



Donald Fussell, UT Austin



Peter Ruyngaert, UT Austin



The Competition Winners, Paulo Flores and Gil Lacerda from IST

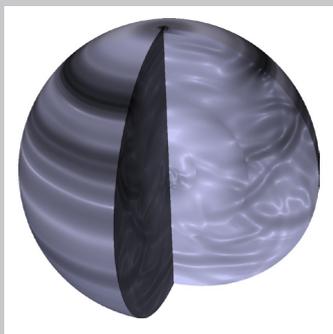


Martin Burscher, Texas State University San Marcos

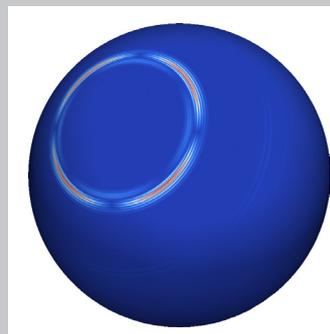
Plenary talk of Dr. Georg Stadler at the Congress on Numerical Methods in Engineering - CMNE 2011

The talk of Dr. George Stadler took place at the Congress on Numerical Methods in Engineering - CMNE 2011 on past June. This talk presented the current status of an interdisciplinary cooperation in inverse wave propagation, which is pursued at the Institute for Computational Engineering and Sciences (ICES) at UT Austin, in collaboration with the Institute for Geophysics at UT. The team combine efficient numerical methods (discontinuous Galerkin discretization for coupled acoustic/elastic wave equations) and use parallel HPC resources (as for instance provided by TACC) to approach a so-called inverse problem, whose ultimate goal is to improve our knowledge about the interior of the Earth. Below is the Technical abstract.

Plenary talk Title: Numerical methods for large-scale in-



Seismic wave originating from point source at north pole using a simplified earth model.



Seismic surface wave

verse wave propagation
<http://www.itecons.uc.pt/cmne2011/uk/plenarias.html>

Technical abstract: Inverse wave propagation refers to the inversion of unknown local wave speeds from measurements of waves propagating through a medium. These problems arise, amongst others, in geophysics and engineering, where material properties cannot be measured directly.

This is, for instance, the case in seismic exploration, global seismic inversion or in nondestructive testing of objects.

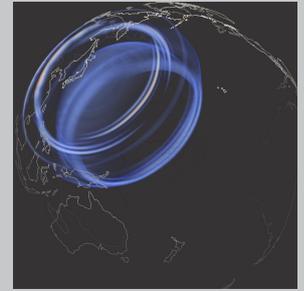
The first step towards scalable methods is the development of a high-order discontinuous Galerkin (dG) method for the propagation of waves in media with fluid-solid interfaces. The method is based on a first-order conservative

form of the wave equation and uses the exact solution of an appropriate Riemann problem for the numerical flux at element faces. Since the method supports h-non-conforming hexahedral meshes, it is particularly effective at allowing local adaptation of the mesh size to resolve the local wavelength. The use of higher-order elements controls numerical dispersion, enabling propagation over many wave periods. A quadrature rule based on Legendre-Gauss-Lobatto (LGL) points enables an efficient implementation of the method, which yields almost optimal parallel scalability to 224,000 CPU and to 480 GPU cores.

In our inversion for the local wave speeds, we use material gradients computed from the discrete dG scheme. The resulting discretization for the adjoint wave equation is a dG scheme based on a downwind numerical flux. This discretely consistent computation of the gradient makes

derivatives meaningful even for coarse discretizations that do not resolve all frequencies properly. To quantify the uncertainty in a reconstruction of the local wave speeds we compute a low-rank approximation of the variance of the reconstructed wave speeds at the maximum likelihood point.

This is joint work with Tan Bui-Thanh, Carsten Burstedde, Omar Ghattas, James Martin and Lucas Wilcox.



Volume rendering of waves originating from a synthetic earthquake. Visualization by Greg Abram (Texas Advanced Computing Center)

Events

- **Futureplaces 2011 - 19-22 October, Porto, Portugal**

More information at: <http://futureplaces.org/>

- **4th Annual Conference of Video Games – 2-4 December 2011, Porto**

The Conference of Video Games is the home of creativity and science that lies behind the promotion of video games and interactive experiences. The main objective of this

event is to stimulate discussion in the field of video game development and to reduce the gap between academia and the entertainment industry. The event organization invites to submit high quality scientific research to help create the basis and set the trends of the future of the videogame industry in Portugal.

More information at:

<http://www.dcc.fc.up.pt/~videojogos2011/>

Ongoing Opportunities

- **Prize “Ser Capaz – Investigação e Tecnologia”**

The Salvador Association intends to stimulate the development of projects that can make life easier for people with physical disabilities through the creation of this Prize. The project winner will receive 10.000€.

This annually award provides funding for projects that contribute to the development of products, tools, technologies, methodologies, equipment or technical systems to prevent, counteract, mitigate or neutralize the inability of a person with physical disabilities.

Deadline for submissions – 14th October 2011.

More information at:

<http://www.associacaoosalvador.com/>

- **Applications for ZON Creativity in Multimedia Award 2011 open until 7th November 2011 at www.zon.pt/premio**

This is one of the largest monetary prizes awarded in multidisciplinary national competitions, reaching a total of 200.000€, divided into three categories: Contents and Multimedia Applications, Digital Animation and Short Films. The prize also includes fellowships at UT Austin.

Useful links

www.utaustinportugal.org

www.fct.mctes.pt

www.utexas.edu

www.ic2.org

www.ati.utexas.edu

www.austin-chamber.org

<http://colab.ic2.utexas.edu/dm/>

www.utenportugal.org

We want to hear from you! Want to share your doubts and concerns about something you read? Want to see other topics featured in next month's newsletter? Want to contribute with articles or art? Please send all your feedback to carolina.enes@fct.unl.pt.

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