

UT Austin | Portugal INTERNATIONAL COLLABORATORY FOR EMERGING TECHNOLOGIES, CoLAB



■ Gary Chapman, Rest In Peace

Gary Chapman, Director of the UT-Portugal International School on Digital Transformation and long-time faculty member at the LBJ School of Public Affairs at the University of Texas at Austin, died Tuesday, December 14. He was kayaking in Guatemala with friends when he suffered a massive heart attack.

At a memorial service for him on January 8 in Austin, several of his good friends and longtime colleagues shared their memories of Gary's passion, his engagement with students and friends, and his commitment to social justice. From his early years in the military through his time working with Computer Professionals for Social Responsibility and then teaching his classes at UT and elsewhere, Gary was a constant advocate for using new digital tools to improve society, and particularly for helping people whose voices often go unheard. The service celebrated his integrity, honesty, and passion for cultivating a better and more humane world.

Chapman was a Senior Lecturer at the LBJ School, Associate Director of the Telecommunications and

Information Policy Institute at UT Austin and an internationally recognized expert on Internet policy, telecommunications and technology policy. His role with the UT Austin | Portugal program included the founding of the International School on Digital Transformation (<http://digitaltransformationschool.org/2010/>), an intensive summer program on the democratic transformation of society through digital media, and teaching a class on Internet policy. Gary and his wife Carol made several lasting friendships during the course of their work in Portugal.



"Gary was a natural leader and a quiet, persuasive visionary - a model of the power of humility and one of the warmest, most giving instructors and a wonderful research partner," said CoLab Digital Media Director Sharon

Strover. "Saying he will be missed doesn't begin to express the ache and loss. He was instrumental in our summer Institute for Digital Transformation, reaching many, many teachers, scholars, activists from around the world, and inspiring all of us to use new tools to improve society and create a just and more democratic world."

STUDENT Highlight

Verónica Quítalo - Free boundary problems and fully nonlinear elliptic equations (Mathematics)

Verónica Quítalo, currently in Austin (Texas) is a PhD student at IST/UT Austin. Her work focuses on the analysis of partial differential equations. For her Master Degree at Lisbon University (FCUL) she studied a homogenization problem for elastic materials and her current topic of research is free boundary problems motivated by the problem of segregation of species with high competition.

Partial differential equations can be used to describe many problems arising in physics, industry, finance, biology and other areas. Free boundary problems are problems with partial differential equations that involve finding a boundary or interface as part of the solution. A typical example of a free boundary problem is the time evolution of a solid-liquid configuration (the melting of a solid, for example). Other examples include the study of flame propagation, obstacle and contact problems, cavitations, crystal formation, tumor growth, incompressible or compressible flow in porous media and hypothesis testing. The common feature in all these problems is the fact that an a priori unknown geometric feature (a set) has to be found as part of the solution. These features can, for example, be interfaces, moving boundaries or shocks at which fundamental properties of the partial differential equation can change. To study and understand free boundary problems and describe solution properties it is important to study the regularity of these geometrical features, the so called free boundary.

Veronica Quitalo's work targets the analysis of the regularity of the solution and of the free boundary for a system of fully nonlinear equations that describe the asymptotic behavior of certain models of population dynamics. The results will generalize findings by L. Caffarelli, A.L. Karakhanyan, Fan-Hua Lin (2009) to the fully nonlinear case.



R&D Project Highlight

Project: PRIA – Parallel Programming Refinements for Irregular Applications

Principal Investigator: João Luís Sobral

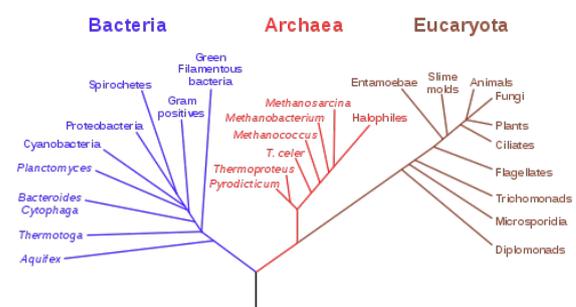
Given current trends, it can be expected that general-purpose processors will be not only many-core processors but also heterogeneous processors, in which the number of cores is likely to double every 1.5 years. This move towards many-core architectures has shifted the burden of improving program execution speed from chip manufactures to software developers, requiring a fundamental change in the way that software is developed, maintained, and how it evolves during its lifetime.

Due to this variety of platforms a new challenge arises: – How to write portable and efficient programs that could evolve easily through time and across platforms? This is even more complex when dealing with programs based on irregular data structures. Nowadays, enterprises such as Intel and Qualcomm are deeply interested in having a better understanding on how to improve performance in these irregular applications.

The PRIA team is developing a methodology where parallelization (i.e., enabling programs to run efficiently on a many-core platform) is a process of mapping a program into a target platform. In this ap-

proach, developers start with a base program, specified in a platform independent manner, and progressively increment its functionality towards a more platform specific version. The methodology has been already applied with success to develop many-core enabled versions of two programs: (i) part of the FLAME (<http://z.cs.utexas.edu/wiki/flame.wiki/>), a linear algebra library; and (ii) SuperFine (<http://www.cs.utexas.edu/~phylo/research/projects.html>), which is an algorithm used to build phylogenetic (super)trees. Currently the PRIA team aims to use it in other case studies, namely the Galois system (<http://iss.ices.utexas.edu/galois/index.php/>). The new case studies, Flame, SuperFine and Galois, appear due to the tight collaboration that was established with scientists from UT Austin, such as Robert van de Geijn, Tandy Warnow, Don Batory and Keshav Pingali.

Phylogenetic Tree of Life



Finalists for the 2010 Prémio ZON Criatividade em Multimédia Prize Announced

Finalists for the 2010 Prémio ZON Criatividade em Multimédia prize have been announced, and three are alumni of UT-Austin Portugal programs! The 32 finalists for the three categories - Applications and Multimedia Contents, Short-Films and Digital Animation - include ZON Intensive Script Development Lab participants Ricardo Filipe Feio and Pierre-Marie Jézéquel and UT Austin-Portugal internship program alumnus Pedro Resende. The contest offers the largest monetary award in Portugal for a multidisciplinary competition, with prizes totaling 200.000€ and a single grand prize of 50.000€.

Feio and Jézéquel were accepted into the ZON Script Development Lab last summer based upon the short film treatments they submitted to their home universities in the spring. During their two-month stay in Austin, they worked with University of Texas production faculty members Stuart Kelban, Steve Mims, and Richard Lewis, studying different aspects of narrative film-making and transforming their story ideas into fully developed scripts. Once back in Portugal, they had about three months to finish pre-production, shoot, and do post-production before the ZON competition deadline.

Feio's submission, "O Dia do Desassossego," or "A Restless Day," tells the story of a street artist performing as a living statue on the sidewalks of the Chiado neighborhood of Lisbon. As he encounters others on the street, his performance gets more and more challenging! Regarding his experience making the film, Feio stated, "The experience of writing, directing, producing, editing and acting in "A Restless Day" was physically, mentally, and emotionally very demanding but also very rewarding. I'm very proud of my film and of working with such talented and dedicated colleagues who helped me so much



throughout these past six months, making a dream come true." Stills from the film and a video showing the production process are available at <http://odiadodesassossego.blogspot.com/>.

Jézéquel's film "De Castigo," or "Grounded," depicts the life of a boy who, due to a tragic family accident, is locked in his rural home's basement for years, mistakenly believing that he is being punished for a broken window. The film had two separate shooting periods, with exteriors filmed on the plains of Portugal's Alentejo region and interiors filmed in a private house. The small cast includes veteran actor João Didelet.



Pedro Resende, who interned in 2009 at the post-production company 501 Post, returned to Austin last year to continue working in the film community. In October 2010, he filmed his submission "Talvez..." ("Maybe...") in three days with a crew of UT film students and alumni. Despite the challenging short schedule, the shoot was a great success. Resende commented, "'Maybe...'" was written, produced and directed in a very little time, being my first experience in making a movie.... After I learned the craft last

year in RTF, I wanted to experience all production stages. More than once I had people telling me that it would be impossible to make this movie in such schedule. I did my best and so did my team, against all odds." A trailer for the romantic comedy will be available at www.maybe-short.com later this month.

All the information about this prize can be found at: <http://www.zon.pt/Premio/>.

Colab panels accepted for SXSW Interactive 2011

Two panels proposed by Advanced Digital Media collaborators in Portugal have been accepted for South by Southwest Interactive, March 11-15, 2011 in Austin.

"Big Brother Goes Green: Surveillance for Sustainable Forests" was proposed by PhD student Mónica Mendes and UNL professor Nuno Correia. Their panel will explore their research on Real-Time Video Interactive Systems for Sustainability (RTVISS), systems which offer participants a way to remotely monitor natural environments for forest protection. Collaboratively developed by artists, activists and technologists, these new systems strengthen environmental awareness through "the emotion of real-time". For more on their panel, see: <http://tinyurl.com/26dfm2u>

"Neither Moguls nor Pirates: Grey Area Music Distribution" was proposed by futureplaces director Heitor Alvelos of the University of Porto. The panel will discuss emerging modes of music distribution which cannot easily be lumped with either side of the conflict between music piracy and the music industry.

See: <http://tinyurl.com/6f2kzzh>

In addition, former UT Austin | Portugal post-doc Derek Lackaff, now Assistant Professor of Communications at Elon University, has organized a panel for SXSW 2011 entitled "Rebooting Iceland: Crowdsourcing Innovation in Uncertain Times". The panel will reflect his research on Iceland's experiments with models of governance emerging from social media and the tech entrepreneurial sector. See: <http://tinyurl.com/2dr8tpz>

Mónica Mendes attended SXSW 2010 as part of an exploratory visit of Austin funded by the UT Austin | Portugal Program. Her experience at the conference inspired her to make a panel proposal about her own research. You can read her blog posts from SXSW 2010 at: <http://monicamendes.wordpress.com/category/sxsw>

To discuss how your interests could be turned into a proposal for a future edition of SXSW, feel free to contact Prentiss Riddle of the UT Austin CoLab office (priddle@ic2.utexas.edu).

■ ISDT Spawns Transatlantic Hackathon Collaboration

Hackers and government transparency advocates convened around the world Saturday Dec. 4 for the International Open Data Hackathon. Its organizers intended the event to be a workday for computer applications that refine and display government data to educate the public on a variety of issues. Two speakers from this year's International School on Digital Transformation, Pedro Markun and Daniela Silva helped organize the global event. In addition, Portuguese digital media PhD students Tiago Assis and Eduardo Moraes organized a local hackathon at the Porto hackerspace Hacklaviva. ISDT brought these groups together this summer, and the relationship continued during the hackathon with live digital links between the Porto and São Paulo sites.

The Porto group at Hacklaviva has been working to convert

government data about Portuguese ministers of parliament into machine-readable formats and publish this information to the public on the web. They used the event as a public launch of their web project which includes information about each MP. Tiago Assis says he first started thinking about open data at ISDT, and plans to use software developed by the organization of another ISDT speaker, Eric Gunderson to manage the content online. One of the goals of ISDT is to nurture relationships and collaborations that lead to computer-based projects that serve the public good, and this collaboration is evidence ISDT is working toward that goal. To learn more about the International Open Data Hackathon, please visit <http://www.opendataday.org/> or the Hacklaviva wiki at http://w.hacklaviva.net/P%C3%A1gina_principal.

■ Hu@ree – A RTiVISS experience on tour

Hug@ree, an interactive installation by Mónica Mendes, Pedro Ângelo and Nuno Correia, has recently premiered at the Pop Up City in Lisbon, from November to December 2010 (<http://goo.gl/7mzAq>). The participation in this exhibition was followed by a portable version at AZ Labs hackmeet in Porto

(<http://www.audienciazero.org>), and is also confirmed to be at the conference on Tangible, Embedded, and Embodied Interaction – TEI'11 – Art Explorations in January 23-26, 2011 (<http://goo.gl/3meTA>).

Hug@ree is an experience to provide a bond between urban beings and the forest. In an outdoor space, participants hug a real tree instrumented with capacitive sensors that communicate with an indoor installation space. When a hug trigger reaches the wireless radio receiver, the video is sent to an interactive tangible projection. Then, participants may access and place the video loop of their own hug on the displayed real-time video projection of the tree, becoming leaves of a collective experience.



Hug@ree is part of Real-Time Interactive Video Systems for Sustainability — RTiVISS – Mónica Mendes' PhD in Digital Media exploratory research in the scope of the UT Austin|Portugal Program. The project proposes to investigate innovative concepts and design methods regarding environmental and sustainability issues, with Nuno Correia and Sílvia Chicó as thesis advisors.

Hug@ree was developed with the collaboration of AZ Labs members Ricardo Lobo, João Correia, Maurício Martins, and Margarida Correia, and the support from Subvertice, FBAUL and Media Ground for the exhibition equipment.

Here is the resulting screen timelapses at PopUp: <http://vimeo.com/18009040> and at AZ hackmeet: <http://vimeo.com/18268496>, and

the photos on and after implementation: <http://www.flickr.com/groups/hugatree>. The project page is <http://www.monicamendes.info/rtiviss/hugatree>.

■ UT AUSTIN | Portugal News

The beginning of a new semester at UT Austin also heralds the beginning of another set of internship experiences for Portuguese and RTF undergraduate participants in the Digital Leadership Media Program. This semester, UT Austin | Portugal has placed Ioli Campos at public radio station KUT, where she will be working on web journalism as part of KUT's new web initiatives. Also coming from across the Atlantic are ZON winners Cintia Moraes and Paolo Martins, who will be working for the Knight Center for Journalism in the Americas. There are other outstanding internship candidates that we are actively looking to place here in Austin, particularly in the realms of radio and design. We also have two undergraduate interns this semester who will be working for 510 Post and SolarWinds in various capacities.

In other news, current intern Nuno Martins has launched a blog detailing his internship experience with the DMLP in Austin that can be found at: <http://colab.ic2.utexas.edu/dm/>. He will be regularly updating the blog, so we encourage everyone to comment and submit blog post ideas. The UT Austin | Portugal community is very broad and diverse, so we hope the blog becomes a place to share ideas and feedback. There is also a Facebook group for UT Austin | Portugal to further our efforts to create a community environment for our program. The Facebook group is located at - <http://www.facebook.com/group.php?gid=113733505303970> - and all content is public. Please join and get the conversation started.

THE UTEN CORNER

UTEN presents Activity Plan for 2011

UTEN Portugal
University Technology Enterprise Network

The University Technology Enterprise Network (UTEN) has recently made its 2011 Activity Plan public. The keyword for this year's strategy is "consolidation" and the work plan presented by UTEN will strengthen the goal of establishing a professional, internationally competitive, and sustainable technology transfer (TT) network in Portugal and in close collaboration with international partners. The final goal is to improve knowledge transfer and technology commercialization in association with the increasingly national scientific and technological capacity, helping transform the results of scientific research into new commercial products, and maximize related social and economic benefits.

Programs and activities will be organized under the following structure: ACTIVITY 1: "International internships program"; ACTIVITY 2: "Networking – thematic workshops, training weeks, in-situ training, leaders roundtables and initiation brainstorming with students"; ACTIVITY 3: "Technology ventures competition"; ACTIVITY 4: "International business development (pilot program)"; ACTIVITY 5: "UTEN Institutional building"; and ACTIVITY 6: "Observation, assessment, reporting and annual conference".

"International internships program" focuses on the sup-

port to short and medium-term internships (i.e., from 3 to 6 months) for professionals and researchers to work in ongoing projects at host institutions, as well as on devoting efforts to licensing and on-shoring of technologies and ideas developed in Portuguese institutions. Within the context of Activity 2, "Networking – thematic workshops, training weeks, in-situ training, leaders roundtables and initiation brainstorming with students", specific themes and subjects associated with the increasing specialization of technology transfer and commercialization will be explored. UTEN will also work closely with ISCTE-MIT's technology ventures competition to help promote this initiative across Portuguese Universities and to foster the development of successful science and technology-based business projects. Activity 4 consists of a pilot program, "International business development", where a team of experts led by the University of Texas at Austin will help a limited number of university-based startups and technology ventures to grow in the US market. One of the main goals for 2011 is to strengthen the UTEN network in terms of structure, organization and leadership. Also key to the overall UTEN effort is the continued observation, assessment and reporting of case studies, projects and ventures, which will be once again presented at the Annual Conference.

WACS – Winter Advanced Computing Seminars

The week of January 10th was the last one with classes for the doctoral students in Computer Science at the joint degree at Minho-Aveiro-Porto. Specially designed for PhD students in Computer Science and in Computational Sciences, this series of Winter Seminars - the WACS - received three faculty members from Texas that came to Braga to give talks on the science of programming.

Participants are already familiar with the high standards that these CoLab events have shown in the past: they came again from as far as the Algarve, but also from Lisbon, Aveiro, Guarda and Porto.

The addressed topics are no longer relevant only for a small community of CS researchers, since processor chips no longer contain a single CPU (or core) but instead are steadily growing to hundreds and thousands of cores, while current development tools are not yet able to produce efficient code for all platforms.

The talk on Monday, by Prof. Keshav Pingali (the Director of the Advanced Computing field in CoLab@Austin), showed that almost all scientific applications are based a small set of basic operations, from which it is possible to abstract rules and to bring reasoning to a higher level of abstraction when developing applications to take advantage of parallel platforms.

On Tuesday, Dr. Martin Burtscher showed that a GPU - that everyone

is now using as a vector co-processor to speed up their scientific computations - can also be quite efficient to run non-regular applications. Results on a n-body simulation case showed that a single GPU device can be faster than 16 of the fastest Intel Xeon devices with 8 cores each. Dr. Martin also gave an extra talk to parallel computing students on a performance analysis tool he developed, and is helping these students to install this tool in a cluster system and take advantage of its outputs to improve the quality of their code.

On Wednesday, Prof. Calvin Lin opened the sessions with an introduction to the current development in parallel languages that contain the best of two competing worlds: a global view of all data, and control on its locality to improve robustness and efficiency. The talks with the other two speakers complemented this first session, by showing how these new devices can be efficiently programmed and how we should move towards a real science of parallel programming. The audience followed all presentations with active interventions, and dialogue was easily accomplished between each speaker and the participants.

The coffee breaks were not long enough for all enquiries from such active researchers.

As a closing remark, we believe that this type of events do really have a strong positive impact on the young generations.



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

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