The Partnership Brings Researchers Closer to Industry

Since its inception in 2006, the Carnegie Mellon Portugal program has increased the connection between academic and industrial communities in key focused areas of information and communication technologies. One of the results of this partnership is DognÉdis, a start-up founded by Mário Zenha-Rela, faculty, and Francisco Rente, a Ph.D. student at Faculdade de Ciências e Tecnologia da Universidade de Coimbra (FCTUC).

“The most fundamental role of the Carnegie Mellon Portugal program was the mindset change, as this partnership brought us much closer to industry,” says Mário Zenha-Rela adding that “before this program much of the faculty activities were centered on research and kept inside the University, and this partnership was designed to break that vicious circle.” Zenha-Rela spent the fall 2007 at Carnegie Mellon and felt it was a stimulating experience in regards to science, technical, management and pragmatic approaches. Zenha-Rela says his “experience of working with some of the world’s top experts,” combined “with the Portuguese easiness with different cultures and practices made this jump into industry almost natural.”

On the other hand, Zenha-Rela is one of the professors involved in the dual degree professional master in Software Engineering (MSE), taught at FCTUC and Carnegie Mellon University. The creation of this professional master, within the partnership, encouraged faculty to look for industry support. Zenha-Rela indicated that by participating as a faculty member in the MSE program made him aware of multiple industrial practices.

DognÉdis, a portmanteau of “Dognitas,” meaning “quality,” and “dis,” meaning place, space or temple in Latin, is a start-up focused on security audit and consultancy, software assurance, and business continuity support. In the beginning of 2011, this start-up launched a security expert review software that is a code verifier of potential security flaws at the source code level. The DognÉdis team designed “the tool to be integrated into a standard software development cycle.” Zenha-Rela says “when a potential security breach is detected, a ‘trouble-ticket’ is sent to the quality or project manager with specific suggestions on how to fix it.” Even inexperienced programmers can develop secure code, especially for web applications. Part of this technology will be deployed under a “free-mium” model, which means that a free version will be available on the web.

Currently, DognÉdis is working in two directions: to create partnerships abroad (Brazil, Angola, Dubai), and to develop other products using state-of-art technology. Zenha-Rela says that “since we have a very strong research background, the point is selecting wisely the ideas to pursue further, not lack of them.”
Faculty Exchange Gives an Intellectual and Cultural Enriching Experience

Vitor Grade Tavares, professor at the Faculdade de Engenharia from Universidade do Porto (FEUP) and senior researcher at INESC Porto, spent the 2010 Fall Semester at the Carnegie Mellon University, participating in the Faculty Exchange Program, launched by the Carnegie Mellon Portugal Program. He has called the experience “enlightening.”

During his stay, Tavares had the opportunity to teach a few lectures of 18-623, a graduate course on Analog Integrated Circuit Design. The class is regularly taught by Larry Pileggi, Tanoto Professor of Electrical and Computer Engineering at Carnegie Mellon University.

“From the teaching experience it was possible to understand the common practices and course organization at this level,” says Tavares.

Tavares is the Portuguese principal investigator of the new research project called SELF-PVP: Self-organizing power management for photo-voltaic power plants. This project presents a line of research that aims to achieve at least 15% increase in power efficiency in a photovoltaic (PV) power plant, using a novel, distributed, real time and on-line, adaptive network controller of sensors/actuators to bring optimality to the overall power output of the panels’ array.

His stay at the Carnegie Mellon University coincided with the project kickOff, so he had “several meetings to redefine the strategy and to start the preliminary studies.” This project also involves two faculty members from Carnegie Mellon, Shawn Blanton and Peter Steenkiste, and the Portuguese company Autonomia - Renewable Resources.

Tavares also worked closely with a dual degree Ph.D. student in developing his doctoral thesis. To this end he had regular weekly meetings with the student and his advisors Miguel Coimbra, from the Faculdade de Ciências da Universidade do Porto (FCUP), and Xin Li from Carnegie Mellon in the Electrical and Computer Engineering department.

With this experience Tavares hopes to strengthen his current level of cooperation with Carnegie Mellon University as well as apply new practices upon his return to Portugal.” He says that the exchange is “difficult to handle from a family perspective, but it is a highly intellectual and cultural enriching experience.”

Ana Groznik Experience

Ana Groznik is an assistant professor at Católica - Lisbon School of Business and Economics (FCEE) who spent the fall 2010 Semester at Carnegie Mellon’s Tepper School of Business, one of the top business schools in the world. She considered her experience “very positive.”

Ana’s goals were to start a new research stream, adopt new research tools, expand her personal network, and get a fresh perspective on teaching quantitative courses.

“I had an excellent chance to broaden my research experience, as well as to observe and learn from one of the best teaching practices in the field”, concludes Groznik.
Doctoral Student is Revisiting Firm Size and Job Creation

André Regateiro, a dual degree Ph.D. student in the Technological Change and Entrepreneurship (TCE) program, is studying the relationship between firm size and job creation. During his studies he discovered that “the relationship between firm size and firm growth is mediated by the industry conditions,” because “in declining or low-growth industries smaller firms grow faster than larger ones, but that relationship reverses for faster growing industries.”

Policy makers typically focus on Small and Medium Enterprises (SME) as the engines of economic growth and job creation. Examples of this can be seen in practically every job related to legislation of most countries. Regateiro’s work intends to “put this reasoning to the test.”

Regateiro is working with a detailed Portuguese database, which covers the entire Portuguese economy from 1986 to 2008 and provides details on both firms and workers. Through this database, he found that “the relationship between firm size and firm growth is not such a simple story as saying that small firms grow faster.” In particular, Regateiro found that the “relationship between firm size and firm growth is mediated by the industry conditions: In declining or low-growth industries, smaller firms grow faster than larger ones but that relationship reverses for faster growing industries.”

Regateiro says “this effect seems to be caused by a greater ability of larger firms to adapt to the economic climate. Small firms are always job creators while large firms switch from job destroyers to job creators as industry conditions improve.” One of the main impacts of the the research that Regateiro is carrying out is that it could “force the government to rethink on how we support job creation.”

“We used to think that small firms grew faster, now we now that it just happen in low growth industries,” says Regateiro, adding that “now we know that large firms are also very important creators of new jobs.”

André Regateiro started his Ph.D. in 2008/2009, and he is co-advised by Rui Baptista, from Instituto Superior Técnico da Universidade Técnica de Lisboa (IST/UTL), and by Lee Branstetter and Serguey Branguinsky, both from Carnegie Mellon. Regateiro’s says that the amount of information on any academic subject out there is staggering. Therefore, “the advisors role is to direct you, as quickly as possible, to the knowledge frontier, showing you how you can make your own contribution,” says Regateiro adding that “my advisors have been great in that role.” Regateiro also emphasizes the different background of his advisors, which help him to get “different perspectives on the subject.”

In the future, Regateiro plans on getting a job at a University “that has a strong focus on research.”

Full article available at: http://www.heinz.cmu.edu/research/398full.pdf

Who are the Carnegie Mellon Portugal Program Ph.D. Dual Degree Students?
Find more at http://www.calameo.com/read/0005669937efa9b189298
Researchers at the INTERFACES project, funded by the program, will present a paper entitled “Type-Based Access Control in Data-Centric Systems in Proceedings” at the European Symposium on Programming (ESOP). The conference will be held on March 26 to April 3, 2011, in Germany.

This paper was written by 5 researchers, Luís Caires, João Costa Seco, Jorge Perez and Hugo Vieira, from CITI and Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa (FCTUNL), with Lúcio Ferrão, from the OutSystems company. This is the industrial partner of the INTERFACES project which aims at the development of new techniques for enforcing security, integrity, and correctness requirements on distributed extendable web-based applications. It introduces novel, semantically rich notions of interface description languages, based on advanced type systems and logics.

In the paper the authors introduce a new programming language approach for enforcing access control policies in data-centric programs by static typing. According to the paper’s abstract, this language “is based on the general concept of refinement type, but extended so as to address realistic and challenging scenarios of permission-based data security, in which policies dynamically depend on the database state, and flexible combinations of column- and row-level protection of data are necessary”.

Throughout this paper the authors state and prove the soundness and safety of their system, maintaining that “well-typed programs never break the declared data access control policies.”

The Universidade de Coimbra has a New Rector

João Gabriel Silva, one of the most enthusiastic members of the Carnegie Mellon Portugal program, is the new rector of the Universidade de Coimbra (UC). When he presented his project, titled “Universidade de Coimbra – A Place of Knowledge and Initiative”, to become the rector of this higher education institution, he argued that the Universidade de Coimbra must take a "leading role" in the development of Portugal, “transforming knowledge into something that is socially relevant.”

While he was head of the Faculdade de Ciências e Tecnologia da Universidade de Coimbra (FCTUC), João Gabriel Silva was the principal leader of the dual degree Professional Master in Software Engineering (MSE) between the Universidade de Coimbra and Carnegie Mellon. This professional master has been a great success in both academics and industry, causing many Portuguese companies to become actively involved in the Program. Currently, the FCTUC has 30 students who have graduated from the program, and entered into the workplace to implement their research with various companies such as Portugal Telecom (PT), Novabase, Critical Software, and others. Last year, during the Student Orientation Day in Coimbra, he praised the progress of the Program, and emphasized the commitment of the Universidade de Coimbra to the partnership.

João Gabriel Silva, born in 1957, in Pombal, Portugal, completed his graduation at the Universidade de Coimbra in 1980, and ended his Ph.D. eight years later. He was director of FCTUC since 2009. In 1998 he was part of a team that won an award for the business ideas with the project "Critical Software - Information Technology for Critical Systems," and this consequently led to the creation of the company with the same name "Critical Software".

Full article available at: http://ctp.di.fct.unl.pt/~jcs/bib-Index/papers/DATAREFN.pdf
Portugal has the Largest Vehicular Network Testbed in Europe

The Future Internet Forum, in association with ceFIMS FP7 Coordination Action, published, in February 2011, its first Newsletter with a special feature about the Largest Vehicular Network Testbed in Europe which is taking place in Portugal.

The name of the project that is responsible for this initiative is Drive-In - Distributed Routing and Infotainment through Vehicular InterNetworking. The project is affiliated with the Carnegie Mellon Portugal program.

The article published explains the particularities of the Drive-In project that has a large-scale vehicular ad-hoc network of 500 taxi cabs, which offer practical examples of the economic and social benefits of intelligent transportation systems. These cabs are circulating in the city of Porto, Portugal, with a prototype that helps researchers to collect and test data for improving security and efficiency of vehicular transportation. The intelligent vehicles will provide real-time information pertaining to the conditions of the pavement, noise levels, and traffic accidents which will affect the quality of life.

The Drive-In project involves researchers from Portuguese universities (Porto and Aveiro), research institutions (Instituto de Telecomunicações), public administration (Instituto de Mobilidade e dos Transportes Terrestres), companies (NDrive, Geolink, RadiTaxis), and Carnegie Mellon University.

The Future Internet Forum (FF) is composed by representatives of the Member or Associated States initiatives and activities on Future Internet, like UMIC - Knowledge Society Agency from Portugal. It consists of either high-level officials from the competent ministries or experts from a public or private institution mandated specifically to represent national Future Internet (FI) initiatives.

Future Internet Forum

Cars that Talk

The Future of Intelligent Transportation Systems

Imagine a not so distant future when almost all massive urban scanner, providing real-time foundations and applications of inter- vehicles communicating

Other Articles

February, 2011, Jornal I, I Online and Fibra Online
Facebook: What if we could timely manage the information that we share?

January 2011, Sábado Magazine
Computers that Talk with People

January 2011, Única Magazine, at Expresso Newspaper
Portuguese Researcher Talks about Life as a Scientist
Upcoming Events

ICT PORTUGAL WORKSHOP:
Research Talks by Faculty Exchange Members

Date: March 18, 2011 (11:00 to 16:30)
Place: Faculdade de Engenharia da Universidade do Porto (FEUP), Portugal
url: www.cmuportugal.org

The goal of this thematic workshop is to present and discuss the outcomes of the research developed by the Faculty Exchange Members and the impact of the Carnegie Mellon Portugal experience.

This event will gather researchers from different areas, namely Computer Science, Software, Electrical and Computer Engineering, Knowledge Management and Innovation, Artificial Intelligence and Robotics, Interactive Technologies, and others.

Speakers and Presentation Titles:
- Optimizing Vehicles Communication, by Susana Sargento, UA
- The Pittsburgh Chronicles, by Mário Zenha-Rela, FCTUC
- Applied Machine Learning: Enterprise Networks, by Ricardo Morla, FEUP
- Three Things CMU Reminded me Of, by Alysson Bessani, FCUL

Crowdsourcing and Organizational Memory: My Research Experience at CMU, by Isabel Ramos, UMinho
Faculty Exchange: Lessons & Achievements for Software Quality Improvement, by Rui Maranhão, FEUP
Robots Among us, by Rodrigo Ventura, IST/UTL*
The role of Interactive Technologies for Rehabilitation, by Sergi Bermúdez, UMa*
Software Engineering: from Teaching to Research: my Experience in Faculty Exchange, by José Maria Fernandes, UA
Multiresolution Redundant Transforms for Critical Diagnosis, by Pedro Quelhas, FEUP*
Matelas: A Formal Framework for Social Networking, by Carla Ferreira, FCTUNL*

*by video conference

1st Lisbon Machine Learning School

Date: July 20-25, 2011
Place: Instituto Superior Técnico (IST), Universidade Tecnica de Lisboa, Portugal
Organizers: jointly by IST, the Instituto de Tele comunicações and the Spoken Language Systems Lab - L2F of INESC-ID
url: http://lxmls.it.pt/

“What Learning For the Web,” is the theme for the 1st Lisbon Machine Learning School, which will happen on July 20-25, 2011, at Instituto Superior Técnico (IST) and will cover a range of Machine Learning (ML) topics, from theory to practice, that are important in solving Natural Language Processing (NLP) problems that arise in the analysis and use of Web data.

This event will bring together several experts on these matters from recognized Worldwide Universities and Companies, like for example IST, Carnegie Mellon University, Technion - Israel Institute of Technology, University of Pennsylvania, Universitat Politècnica de Catalunya and Google.

This event is oriented to:
- Researchers and graduate students in the fields of NLP and Computational Linguistics
- Computer scientists who have interests in statistics and machine learning
- Industry practitioners who desire and need a more in depth understanding of these subjects.

The application deadline is March 31st, 2011. To apply, please visit http://lxmls.it.pt/Application.html.

What do you think of our Newsletter? Share your thoughts and concerns about articles, suggest topics, or contribute with articles and pictures. Please send your feedback to: news@cmuportugal.org

6 • www.cmuportugal.org