Eight Portuguese MSE Students
Spent the Spring Semester at CMU

From January to April, 2011, eight students enrolled in the dual degree Professional Masters in Software Engineering (MSE) were in Pittsburgh to make their second semester. They spent the spring semester at Carnegie Mellon University before returning to the Universidade de Coimbra, Portugal, to complete the degree.

The MSE program is comprised of 16 months of both course work and a studio project. Students begin their studies in the Fall semester at the Universidade de Coimbra, moving to Carnegie Mellon in the Spring. Upon graduation the following December, they receive a diploma in Software Engineering, from both institutions.

Hugo Cabral is one of the eight students. The program is designed to expose students to a multi-cultural environment, thus strengthening their communication and leadership skills. As a newcomer to the Carnegie Mellon campus, Cabral is embracing the experience. “We have had a lot of opportunities [at Carnegie Mellon],” Cabral says. “There was a real sense of a lot of things happening here.”

The dual degree component also allows students to come in contact with a diverse array of teaching and learning styles. Many students, like João Osório, find the program to be intensely challenging for this reason. Osório says that his experience in the program so far has been “very different from both my previous studying and working experiences.

A key aspect of the program is the studio project, which allows students to work closely with one of the Partnership’s corporate affiliates in developing and implementing a real-world project. Osório and Paulo Patricio are currently working with Novabase, a provider of information technology services in Portugal, to develop a project called “Social Insight- Social Mining Module.” They will use the rigorous summer semester that follows their stay at Carnegie Mellon to focus on this project.

This relationship between the Partnership and its industry affiliates is an important part of the program. Cabral, having come to the program as an employee of Portugal Telecom, will return to the company and act as an “agent of change.” Patricio has plans to work with Novabase upon graduation. Patricio also says that he would highly recommend this program.
Engineering and Public Policy
Deals with Real Problems

The passion for Engineering and Public Policy (EPP) is a common thing among Colleen Horin, Alexandre Mateus and Brandon Mauch. Horin and Mauch are dual degree doctoral students, in the second and third year respectively. Alexandre Mateus finished his Ph.D. program in April and became the first graduate in the dual degree Ph.D. program of the Carnegie Mellon Portugal program.

Alexandre Mateus enrolled in Carnegie Mellon University. Later he found out about the Carnegie Mellon Portugal program and transferred into the program. He enrolled in the CMU Portugal program after finishing his first academic year. Four and a half years later he graduated and considers the experience "rewarding", but very hard. Advised by two professors, Pedro Ferreira (IST/UTL) and Jon Peha (CMU), Mateus studied the Copyright Violation on the Internet: Extent and Approaches to Detection and Deterrence. Mateus says that “it is not possible to determine with accuracy the impact of Peer-to-Peer (P2P) file-sharing on sales, but it is common to say that P2P leads to fewer sales.” Mateus’ work yielded significant findings that can contribute to a better understanding of the impact of Peer-to-Peer on sales of content and to enhance the effectiveness of Deep Packet Inspection (DPI). Most of the claims are made by Music, Movie, TV, Book and Software industries. Based on the behavioral study conducted at the University of Illinois, Mateus found out that usually students became P2P users prior to college, and they obtain “a diverse mix of content from P2P [including music, video, and software] with a heavy-tailed distribution of popularity, but close to one fourth of P2P users also purchased content from the iTunes Store, each buying about as much as iTunes Store customers who didn’t use P2P.” On the other hand, the research team found out that “current DPI technology identifies most users attempting to transfer copyrighted material, out of users whose P2P traffic it can detect.” These findings result from a large-scale quantitative assessment of online exchanges of copyrighted material on a college campus based on network data collected using deep packet inspection. In the future, Mateus would like to work in this area because he knows that efficient policy can improve people’s life.

Reconfigurable Networks and Integration of Intermittent Renewable Energy
Colleen Horin became a dual degree Ph.D. student in EPP at Instituto Superior Técnico da Universidade Técnica de Lisboa (IST/UTL) and at Carnegie Mellon University, in 2009. Horin has a Bachelor’s degree in Aerospace Engineering from MIT and a Master’s in EPP from the University of Maryland. Her goal is to show that reconfiguration allows a grid operator to reduce operational losses and costs as well as accept more wind than a static configuration can. Therefore, she is repeating the analysis using data from a solar photovoltaic (PV) generator instead of a wind farm. Horin explains that “net present value analysis of automated switched technology shows that the return on investment when using reconfiguration for load reduction is not positive under most conditions, but would be very attractive when reconfiguration is used to minimize wind curtailment.”

Brandon Mauch already started his internship at BOSH - Research and Technology Center, in Pittsburgh. His goal is to “try to understand how industry values the management of the demand side, and how appliances can be configured to control the reliability”. This internship will finish on August, and on September 2011, he will return to Portugal to spend one more semester.

He considers that “wind power uncertainty creates reliability problems for electric grids,” – therefore, “I am examining a way to deal with this uncertainty.” Mauch explains “the first part of this project was to model the economics of collocating energy storage with a wind farm in order to sell wind power in the day-ahead electricity market.” Currently, he is working to quantify the cost that short term wind forecast errors impose on an electric grid. During his research, Mauch discovered that although forecasting models are becoming better at predicting wind power, uncertainty will always exist. Therefore, “the ability to determine probabilities of wind shortfalls for different conditions and incorporating these probabilistic models into reserve requirement calculations, will allow more effective use of energy resources.” Furthermore, Mauch with his advisors Paulo Carvalho (IST/UTL) and Jay Apt (CMU) wrote a paper titled “Can a Wind Farm with Storage Survive in the Day-Ahead Market?” The research team concluded that: “At current electricity prices, selling wind power on the day-ahead market is not justifiable without subsidies.” Additionally, when they estimated electricity prices to include a carbon cost, they found that “revenue is still not enough to cover costs. Income from the day-ahead market alone is not sufficient for wind with CAES without financial assistance.” However, “storage will provide additional income on Regulation Markets and on the Capacity Markets,” they think.
How Should We Value the University Assets?

Specialists from the Carnegie Mellon University visited Aveiro to present some of the best current practices in negotiation and valuation of assets created within academic contexts, such as new products, services and new start-ups. The workshop was titled «Valuation of Intangibles – Valuation of Licensing Opportunities and Early Stage Companies» and took place at the Technology Transfer Unit (UPTEC) of the Universidade de Aveiro on 10th and 11th May, 2011.

The debates covered various aspects such as capital gains, the benefits that universities can gain from start-ups and the importance of attracting entrepreneurial investors. How universities approach investors to request funding or their ability to develop business plans for new start-up companies were some of the themes discussed over the two days. Tara Branstad and Barbara Carrery, both specialists in entrepreneurship and technology transfer at CMU, presented different models of business strategies that coincide with the objectives of the new companies and also capitalise on and optimise the advantages of inventions or creations developed at universities.

Through his own personal experience from creating five successful companies Raymond F. Vennard, the president and CEO of Thermal-Therapeutic Systems, an entrepreneur and investor, demonstrated real life examples. He demonstrated how an investor or professor should present their product and/or business in terms of competitive advantages, market differentiation, the costs involved (direct and indirect), expectations and valuation – a concrete number that shows the company’s potential and their future returns. This plays a fundamental role in raising funds and in the negotiating processes with investors.

Barbara Carrery, an Adjunct Professor in entrepreneurship and innovation advisor at the Institute of Social Innovation at CMU, highlighted how entrepreneurship has become more apparent in universities: “the youths of today have a strong entrepreneurial spirit and we therefore need to look to the senior researchers because they are the ones that do not come looking for us as frequently.”

Close to 40 individuals attended the workshop including young entrepreneurs, managers of technology transfer offices at universities, professors and researchers, as well as start-up companies and large companies such as Treat U and PT Inovação respectively. The workshop looked at various case studies on subjects such as licensing processes, protecting individual property rights and valuation for start-up companies, approaching the different variables involved that are relevant for each subject.

This initiative was organised by the UTEN Portugal network in partnership with the Carnegie Mellon Portugal Program and aims to raise awareness of the importance of adequate valuation and evaluation of intangibles for start-up companies and the information that is required for this process.

In addition to sharing CMU’s knowledge and experience in this area, the workshop was also an opportunity to encourage flexibility in evaluation and valuation processes for tangible assets. It presented various methods to help universities maximise the profits on their inventions and research results, for example through raising capital, licensing, joint-ventures or sales.

This workshop is part of a group of initiatives that was launched in 2009 within the framework of the UTEN Portugal network to strengthen knowledge and competencies in technology transfer and the commercialisation of technology in Portugal in an international context.

Portuguese CEO Gave Lecture at the Carnegie Mellon University

Rodrigo Costa, CEO of ZON Multimédia, SGPS spoke to an audience of faculty, staff, and graduate students about key aspects of effective management and the growth of his company on April 19, 2011. His presentation was entitled “Innovate, Compete, Motivate” and was part of the Carnegie Mellon Engineering Leadership Speaker Series, a recent Carnegie Institute of Technology initiative.

Costa was a visionary as it relates to the development of the Carnegie Mellon Portugal Program, “who made it happen” said the Dean of CIT Pradeep Khosla, who introduced Costa. “He was a person with execution.”

ZON is currently the largest Triple Play operator (TV, Broadband Internet, and Fixed Telephony) in Portugal. The company has over 700,000 customers in the area of Broadband Internet and has made innovative advances with the launch of its 360 Mbps and 1Gbps ZON Fibra bundles. The company launched a 3D channel in April 2010 making it a pioneer in true 3D technology. ZON emerged as a spin-off of Portugal Telecom.

Costa noted that in its earliest years, ZON was largely regarded as a poor customer service organization. He joked that people doing case studies would often find common ground in their shared opinion of just how “terrible” the service was. However, the company has only grown in size and influence being the only telecom company in Portugal that grew in revenue in the last three years. In April, this year ZON is ranked as one of the top performers in the Portugal stock market.

How did Costa ensure his company’s subsequent improvement? He says that he took to carrying comment cards with him so that every time a disgruntled customer complained to him about bad service he would have them write it down with their contact information, promising that he would personally see to the problem and then follow up with them. This is the kind of transparency and customer service that he strives to maintain even as ZON continues to grow.

“I probably give more advice than I take,” he said. “but overall … I think I am a good listener.”

Effective management also plays a key role in the success of any company, according to Costa. He said that good management requires thorough understanding, thoughtful planning, and “making sure we can understand all deviations” from that plan. There is a time and a place for chaos, he said, but that the key is in knowing where chaos can occur.

Costa is team-oriented and sees working with others as a reward. Collaboration and human resources were a key topic in his presentation. In Costa’s business philosophy, every individual who contributes has the potential to be a key contributor and/or leader. He encouraged audience members to respect and reward employees, to give them reason to have positive feelings about the company.

Life is not just about money; life is about many other things that people value,” Costa said. “We need to feel good about the system we are creating and maintaining.”

Costa also commented on the importance of understanding people’s weaknesses and
Upcoming Event

“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.

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