

Report CMU-Portugal Faculty Exchange Program

João Manuel Xavier

I spent the Spring semester of 2010 at CMU, from January to May.

During this period, the following activities were carried out:

- I lectured the ECE PhD course “18799 - Nonlinear Optimization”. The lectures were broadcasted by video also to PhD students at Instituto Superior Técnico, Lisbon.
- I pursued research on distributed optimization in sensor networks with random links with Prof. José Moura (CMU) and our PhD students Dusan Jakovetic and Augusto Santos. This resulted in the following outcomes:
 1. The previously submitted journal paper “Weight optimization for consensus algorithms with correlated topology” by D. Jakovetic, J. Xavier and J. M. F. Moura was revised, and got accepted for publication in the IEEE Transactions on Signal Processing;
 2. A new journal paper “Cooperative convex optimization in networked systems: augmented Lagrangian algorithms with asynchronous gossip communication” by D. Jakovetic, J. Xavier and J. M. F. Moura, was completed and will be submitted shortly (July 2010).
- I pursued research on distributed inference on sensor networks with Prof. Bruno Sinopoli (CMU) and our PhD student Dragana Bajovic. This resulted in the following outcomes:
 1. A journal paper “Robust sensor selection for binary Gaussian hypothesis tests in sensor networks” by D. Bajovic, B. Sinopoli and J. Xavier, was completed and will be submitted shortly (July 2010);
 2. A conference paper “Distributed detection over random networks: large deviations analysis” by D. Bajovic, D. Jakovetic, J. Xavier, B. Sinopoli and J. M. F. Moura was written and will be submitted to the 48th Allerton conference on Communication, Control and Computing.
- I pursued research on distributed algorithms for sparse signal processing with Prof. Markus Pueschel (CMU), Prof. Pedro Aguiar and our PhD student João Mota. A journal paper “Distributed Algorithms for Basis Pursuit” by J. Mota, J. Xavier, P. Aguiar and M. Pueschel, was prepared and will be submitted shortly (July 2010).
- I pursued research on high-level interpretation of 2D images with Prof. Takeo Kanade (CMU), Prof. Pedro Aguiar and our PhD student Jerónimo Rodrigues. Several algorithms have been developed and are now being currently tested.