Career Development Plan-Year 1
(Subject to updates)

Name of fellow:

Maciel Zortea

Department:

Neural Networks and Signal Processing Group (GRNPS)
Department of Technology of Computers and Communications
University of Extremadura
Avda. de la Universidad s/n,
10.071 Cáceres, SPAIN.

Name of Supervisor:

Prof. Dr. Antonio Plaza

Date:

16 May 2008

BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS EXPECTED:

Dr. Zortea is integrated in a research effort oriented towards the definition and implementation of advanced hyperspectral image processing techniques, in the context of remote sensing applications, by making use of the complementary nature of spatial and spectral information available in the data.

The main research activities in course of developed as part of the team include the development of new algorithms that uses spatial information to solve the specific problem of endmember extraction (selection of pure signatures in hyperspectral data). Endmember extraction is one of the fundamental and crucial tasks in hyperspectral data exploitation. An important issue with most of current state of art algorithms for endmember extraction and spectral unmixing is the fact that they do not make use of the spatial correlation present in the input data. Currently, the use of spatial information for endmember extraction is a topic little investigated in literature, but believed to be able of providing very interesting results

In this regard, the major expected accomplishment will be the incorporation of spatial information to the process of endmember extraction, either as a pre-processing prior to spectral analysis or as a combined spatial-spectral analysis.

LONG-TERM CAREER OBJECTIVES (over 5 years):

1. Goals:

   Senior researcher / Spin-off creation.

2. What further research activity or other training is needed to attain these goals?

Acquire experience in identify new problems and innovative solutions. Acquire experience in organization and management, as well applying for research projects. Acquire experience on patenting new solutions.

SHORT-TERM OBJECTIVES (1-2 years):

1. Research results
   - Anticipated publications:

     M. Zortea, A. Plaza "Spatial Preprocessing for Endmember Extraction", IEEE Transaction on Geoscience and Remote Sensing (to be submitted)

   - Anticipated conference, workshop attendance, courses, and /or seminar presentations:

     1st HYPER-I-NET School on Hyperspectral Imaging, Cáceres, Spain October 29-31, 2007.

     2nd HYPER-I-NET Summer School, Wageningen University, 15-19 September 2008.

2. Research Skills and techniques:

   Relevant research on methodologies for endmember extraction and hyperspectral unmixing.

3. Research management:

   Help in the organization of the 1st HYPER-I-NET School.

4. Communication skills:

   Attendance to Spanish language course (beginning level).

5. Other professional training (course work, teaching activity):

   Teaching of a practice section during the 1st HYPER-I-NET School.

6. Anticipated networking opportunities

   Short visits to other research institutions.

7. Other activities (community, etc) with professional relevance:

21-05-2008
Date & Signature of fellow:

21-05-2008
Date & Signature of supervisor