First Announcement

International Summer School on

Data Fusion of Synthetic Aperture Radar Data

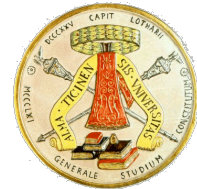at the University of Pavia (Italy), 16th – 20th September 2013

In cooperation with

Lombardy Aerospace Industry Cluster
(Distretto Aerospaziale Lombardo)

SARMAP S.A.

Dipartimento di Ing. Industriale e dell'Informazione, Università di Pavia

Introduction

The "**Pavia 2013 International Summer School on Data Fusion of Synthetic Aperture Radar Data**" is the third in a series of International Summer Schools on Data Fusion held in Pavia in September, following the first edition in 2011 on "Data Fusion and High Performance Computing", and the second one in 2012 on "Data Fusion and Target Detection", which were very successful and appreciated.

The new edition aims at providing to the interested students the basic knowledge on:

- problems related to fusing radar spaceborne data coming from different sources;
- fusion approaches to different Earth Observation applications, especially thematic classification and interferometry;
- SARSCAPE as an effective environment and tool for research and operational use in this context.

Rationale

This year's school will offer an exploration on the "thematic" capabilities of SAR data and then on how to use such data for advanced interferometric applications, in a purposedly-built software environment called SARSCAPE.

The generation of thematic maps from satellite is one of the primary objectives of remote sensing from space, since the earliest spaceborne missions for Earth observation. When multispectral optical data are available, SAR data is generally considered as a "second choice" for basic land cover classification (forest, agricultural crops, urban areas, etc.). It is however commonly used as a complementary or alternative data source under adverse atmospheric conditions (e.g. cloud cover), and for particular applications where it is particularly suitable (e.g., flood mapping). The contribution made by SAR to basic land cover classification has been greatly enhanced by the introduction of different polarisation modes (eg dual, full) provided in a systematic manner by several EO missions. Additionally, the importance of SAR data at different frequencies and polarization (i.e., multi-parameter data), as well as

providing the complete polarimetric characterization of the surface targets, is largely recognized in the scientific community. The use of multi-parameter SAR data in conjunction with optical data, possibly high-resolution optical images, offers a relatively new opportunity to map the land cover and detect its changes.

The interferometric applications will instead relate to detection and measurement of deformation processes (eg. earthquakes, natural and human induced subsidence, landslides) by applying advanced methodologies on stacks of SAR data to generate deformation time-series. Advanced approaches will be used, such as the PS (Permanent Scatterers), SBAS (Small BAseline Subset) and their combinations, on ENVISAT-ASAR by European space Agency (C band), the Japanese ALOS PALSAR (L band) and the Italian COSMO/SkyMed (X band). This will offer to the students some opportunities to evaluate differences and complementarity in results related to the various methodologies and sensors.

This year's edition of the school will focus on fusion of multiparameter SAR and advanced interferometric applications data through the use of one specific software for handling remotely sensed data, i.e. SARSCAPE. The School aims at providing the interested attendee sufficient knowledge on the tools that SARSCAPE puts at his/her disposal to fully exploit the potential of multiparameter/multipolarization radar data and, possibly, also optical data. The school will be application-oriented and strongly characterized by hands-on experience and examples

Format
The core of the course will be from Tuesday 17th to Thursday 19th, preceded by an introductory session on Monday 16th afternoon and a wrap up session on Friday 20th morning. Lectures will be a mix of theoretical lessons and hands-on activities. The programme will include a networking session devoted to presentation of attendees' activities.

Application
Interested students are encouraged to send their application to **pavia2013rsschool@gmail.com** and cc: to Fabio Dell'Acqua (fabio.dellacqua-at-unipv.it) and Francesco Zucca (francesco.zucca-at-unipv.it) including a short note on their motivations, and a CV, no later than 1st June, 2013. Candidates will be screened based on the information provided, and accepted attendees will be notified within 15th June 2013.

A registration fee of 500€ will be charged to confirmed participants. **Accommodation options at special prices are available at a very convenient location.**

Organization and Chair

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