University of Pavia

Ph.D. School of Electrical and Electronics Engineering and Computer Science

SEMINAR

Effortless huge imagery processing in the Cloud - The case of the Image Processing Service (IPS)

Dr. André Lage-Freitas
Universidade Federal de Alagoas (Brazil)

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Seminar Room of former Dept of Electronics

The use of remote sensing data from Synthetic Aperture Radar (SAR) sensors allows to retrieve valuable information from various types of objects. For instance, Polarimetric Synthetic Aperture Radar (PolSAR) sensor enables to identify changes on terrain and urban areas as well as detect earthen sleeve slides. These sensors provides complex data sets hence making data storage, processing, and visualization not trivial. This problem is more complex when considering huge amount of data since this requires using distributed execution infrastructures for data storage and processing. In the context of distributed infrastructures, Cloud computing technologies provides on-demand services for computing and storing huge remote sensing data. Nevertheless, using these services implies handling low-level operational details such as creating, starting, stopping virtual machines in addition to dealing with data storage issues. Current work on remote sensing has used Cloud computing as underlying processing infrastructure, however it does not address the problem of easing the processing of huge remote sensing data sets. In this seminar, I'll present the Image Processing Service (IPS) which enables the processing of huge remote sensing data sets by providing an easy user interface. We validated the IPS by implementing and assessing a research prototype which processes gigabytes of fully PolSAR data sets in the Microsoft Azure Cloud. The evaluation uses actual PolSAR data collected from the NASA Unmanned Aerial Vehicle SAR (UAVSAR) Project. The methodology employed is fully reproducible and is freely available for tests and further evaluations.

Bio: Dr. André Lage-Freitas is an Assistant Professor of Universidade Federal de Alagoas (Brazil) and member of LaCCAN lab (Laboratório de Computação Científica e Análise Numérica). He holds the Research Coordinator position under the UFAL Vice-Presidency of Research and Graduate Course. He also holds a Ph.D. in Computer Science from the Institut National des Sciences Appliquées de Rennes (INRIA, France), a Master Degree in computer Science from the Universitée de Rennes 1 (France) and a Bachelor Degree in Computer Science from the Universidade Federal da Bahia (Brazil). The main research problem he is working on is how to ease the use of Cloud computing infrastructures for Data Science applications by focusing on big remote sensing data sets. Dr. André Lage-Freitas has experience in international research projects such as CloudArray project (coordinator) funded by Microsoft Azure Research and further international projects funded by European Union and Latin America, e.g., EOxposure H2020, S-CUBE FP7, CONICYT (Chile), and FAPEAL (Brazil). He reviews research projects for FAPESP (São Paulo Research Foundation) and he is a reviewer of the IEEE Geoscience and Remote Sensing Letters journal.

Organizer	**Ph.D. Coordinator**
Prof. Fabio Dell'Acqua	Prof. Paolo Di Barba

Seminar in English
For more information: fabio.dellacqua@unipv.it