

LSGI Distinguished Lecture

Topic: Spatio-Temporal Sub-Pixel Mapping of Time-Series Images

Overview

It was our pleasure to invite Prof. Peter M. Atkinson, Dean of the Faculty of Science and Technology, Lancaster University, UK, to deliver a seminar of the LSGI Distinguished Lecture Series on 30 May 2016.



Image fusion has been a common problem in the field of remote sensing. It usually could be conceived as the joining together of a coarse spatial resolution image of a band of direct interest with a fine spatial resolution image of another band to create a fine resolution image of the band of interest. There were many different approaches for the task. Super-resolution image fusion, also known as downscaling, predicted an image at a spatial resolution that was finer than any of the two or more input images. Several geostatistical methods including area-to-point cokriging (ATPCK) (downscaling cokriging), and area-to-point regression kriging (ATPRK) (which combined the benefits of the popular regression kriging with area-to-point kriging, ATPK), had been proposed for this task. The benefits included explicit handling of the sample support through the definition of a Random Function model and perfect coherence (upscaling led to the original images).

Extension of these approaches to the space-time domain, the objective was to downscale coarse images at a fine temporal frequency by injecting a few images at a fine resolution, but with low temporal frequency required further development of the fusion scheme. The challenges and the evidence base for the choices that had been made so far in developing such approaches were discussed. The generalisation of information and the character of the uncertainty associated with such predictions were also talked in the lecture.

Prof. Peter M. Atkinson



Prof. Peter M. Atkinson is a Geographer with an international reputation for research into remote sensing, geographical information science and spatial statistics. He was previously Professor and Head of the School of Geography at the University of Southampton, where he was part of the central team leading Southampton University's REF2014 submission. He holds the Belle van Zuylen Chair in the Faculty of Geosciences at Utrecht University, the Netherlands and was also recently Visiting Fellow at Green-Templeton College and the Department of Zoology, Oxford University.

Professor Atkinson has published around 180 scientific papers in international journals and is currently Associate Editor for Computers and Geosciences and sits on the editorial boards of journals including Geographical Analysis, Spatial Statistics, the International Journal of Applied Earth Observation and Geoinformation, and Environmental Informatics.