Subject: Ad: Hyperspectral Postdoc position
Posted by Pete[1] on Mon, 05 Nov 2001 23:53:29 GMT
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CSIRO Mathematical & Information Sciences
and CSIRO Exploration & Mining

Postdoctoral Fellowship in Hyperspectral Image Analysis

$49 - $55K + Superannuation

The Divisions of Mathematical & Information Sciences (CMIS), and Exploration & Mining (CEM) are part of Australia's largest scientific and industrial research organisation - CSIRO. As a world leading and diverse scientific research institution, our emphasis is on bringing teams together from different scientific fields to generate solutions to problems facing Australian industry, and the rest of the world.

We are seeking to appoint a high-calibre Postdoctoral Fellow in the area of hyperspectral image analysis of very large datasets for a period of 3 years, starting in 2002. The position is located at North Ryde in Sydney, Australia.

Airborne and spaceborne hyperspectral images are extremely large, multi-dimensional data sets with spatial structure. CEM have been using them for a number of years to map regions of geological and mining interest. Their customers in the global mining sector are now providing them with even larger hyperspectral data sets, typically many million pixels in 100-200 spectral bands. Single flight-line datasets are thus not uncommonly measured in gigabytes and whole surveys in hundreds of gigabytes. Such huge volumes of data have created the need to automate the processing of such data sets and the creation of information products, and to do so rapidly (ie. in minutes not hours).

While some initial pioneering work has been carried out in this area, by CSIRO scientists and their collaborators, there is a serious need to increase the effort to keep up with the demands of ever larger data sets now routinely being collected by users, and new geological and environmental questions arising from

them.

Particular topics that the successful scientist will address include:

1. The automated identification of landscape materials (e.g. minerals, rocks,
vegetation, man-made targets) in a scene to sub-pixel level with and without the aid of spectral libraries, and with minimal a-priori knowledge.

2. The incorporation of spatial context into the methodologies.

3. The development of hyperspectral data mosaicing and content matching methods.

The scientist will also be expected to implement prototypes of the more important methods he/she develops in C or C++, and assist with their integration into existing packages.

Selection Criteria

Essential

1. A recent Ph.D in a relevant quantitative discipline.
2. Extensive knowledge of modern multivariate statistical methods.
3. Good C programming skills.

Desirable

4. Experience with hyperspectral and/or very large spatial data sets.
5. Experience with packages such as IDL or S-Plus.

For further information about this project, please contact Mark Berman, on (02) 9325 3205, email: Mark.Berman@csiro.au or Jon Huntington on (02) 9490 8839, email: Jon.Huntington@csiro.au .

A comprehensive 3-year Development Plan will be provided, ensuring that over the period of the Fellowship you will develop skills, partnerships and networks
which are valued both within CSIRO and industry.

Applications must include your CV, with a covering letter outlining skills / experience relevant to the project, and the names of at least two professional
referees. Please forward your application, quoting the reference number 01/S46, to jobs@cmis.csiro.au by Tuesday, 13 November, 2001.