Image Algorithms and Systems Research

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Abstract

Nowadays, many imaging systems produce such a flood of digital data that a new style of collaboration is emerging to meet two increasingly common challenges: the difficulty of extracting knowledge from the data, and the need to make the data widely available. Examples will be discussed in which the difficulty of knowledge extraction results primarily from the quantity of data generated, while the broad access to the data is required both by the data's intrinsic "reusability" and by the high cost of its acquisition.

These new, emergent collaborations typically have three classes of stakeholder.

Specialists in an application area (which might be astronomy, or remote sensing, or biology, or one of a wealth of other possibilities), set the agenda on the issues to be explored, and define the requirements on the experimental data needed.

Specialists in the design and operation of the hardware, computer systems, software and data storage build and operate the system to gather and analyze the data.

Specialists from a broad community of users greatly enlarge the value of the enterprise by proposing new hypotheses and experiments. The cost of major instruments is often such that the general community must be included to make the project worthwhile

We have been working for several years to develop a methodology that supports collaborations between these various specialists without forcing them either to change their habits or to adopt "service" roles within the collaboration. Rather, we keep the perspective that each of them brings equally important insights. Practical examples of our methods will be given.

Biography

Ian Gatley is the Dean of the College of Science at the Rochester Institute of Technology in Rochester, New York. He received his PhD in Physics from the California Institute of Technology in 1978 and his BSc, 1st Class Honors in Physics from the University of London, England in 1972. From 1986-1997, he was Astronomer, Chair of NOAO Infrared Steering Committee at the National Optical Astronomy Observatories. In 1997, he was appointed Director of the Chester F. Carlson Center for Imaging Science at the Rochester Institute of Technology. Dr. Gatley has established an international collaboration in Color Science between the Rochester Institute of Technology, Chiba University, Japan, and the Unversity of Derby, England, as well as, an international collaboration between the United Kingdom Infrared Telescope and Nobeyama Observatory, Japan. He also developed the first simultaneous multicolor IR array camera for Kitt Peak Observatory in collaboration with the Space Telescope Science Institute, and pioneered the use of PtSi array detectors for astronomical imaging in collaboration with the Hughes Aircraft Corporation.