

Reprinted from

Symposium on

Machine Processing of

Remotely Sensed Data

June 27 - 29, 1979

The Laboratory for Applications of
Remote Sensing

Purdue University
West Lafayette
Indiana 47907 USA

IEEE Catalog No.
79CH1430-8 MPRSD

Copyright © 1979 IEEE
The Institute of Electrical and Electronics Engineers, Inc.

Copyright © 2004 IEEE. This material is provided with permission of the IEEE. Such permission of the IEEE does not in any way imply IEEE endorsement of any of the products or services of the Purdue Research Foundation/University. Internal or personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution must be obtained from the IEEE by writing to pubs-permissions@ieee.org.

By choosing to view this document, you agree to all provisions of the copyright laws protecting it.

MACHINE PROCESSING ISSUES IN CROP TYPE IDENTIFICATION AND ESTIMATION

FORREST G. HALL

NASA/Johnson Space Flight Center

Machine processing techniques which utilize remotely sensed data to estimate crop acreage have been extensively evaluated in several large scale experiments, beginning in 1972 with the Crop Identification Technology Assessment for Remote Sensing (CITARS) and more recently, the Large Area Crop Inventory Experiment (LACIE). Landsat multispectral scanner data acquired over several major global agricultural regions, has been processed using state-of-the-art technology. The performance has been quantified in two important situations (1) using insitu acquired ground observations to obtain classifier training samples; (2) using image analysis of Landsat data to obtain classifier training samples without the aid of ground observations. This collection of experiments has produced a considerable body of knowledge regarding the performance of machine processing technology under these conditions and have defined and prioritized areas for further needed research.

This paper will review and summarize the results of these experiments, discuss the nature of the problems surfaced by them, and address potential directions for current and future research.

Dr. Hall joined the Earth Observations Division at NASA JSC in 1970 upon completion of the Ph.D. in physics from the University of Houston. From 1972 to 1974, he served as technical leader for the Crop Identification Technology Assessment for Remote Sensing (CITARS) project, a joint effort involving NASA, LARS, and ERIM. In 1974, Dr. Hall was appointed to serve as Project Scientist for the Large Area Crop Inventory Experiment (LACIE) and served in that capacity through the completion of LACIE in 1978. For this role he received NASA's Medal for Exceptional Scientific Achievement. Dr. Hall currently serves as Chief Scientist for the Earth Observations Division.