

Reprinted from

**Symposium on
Machine Processing of
Remotely Sensed Data**

June 21 - 23, 1977

The Laboratory for Applications of
Remote Sensing

Purdue University
West Lafayette
Indiana

IEEE Catalog No.
77CH1218-7 MPRSD

Copyright © 1977 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.

EFFECT OF THE SIZE OF TRAINING SAMPLES ON CLASSIFICATION ACCURACY

R. KUMAR, M. NIERO, M.S.S. BARROS, L.A.M. LUCHT AND A.P. MANSO

Instituto de Pesquisas Espaciais (INPE)
Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) 12.200 -
Sao Jose dos Campos, SP-Brasil

Cloud free multispectral scanner (MSS) data of LANDSAT were analysed for studying the effect of the size of training samples on classification accuracy over the following test sites: Sao Jose dos Campos ($23^{\circ} 10' S, 45^{\circ} 50' W$), Cachoeira Paulista ($22^{\circ} 40' S, 45^{\circ} W$) Jardinopolis ($21^{\circ} S, 47^{\circ} 50' W$).

With the help of ground observations and aerial photography, Sao Jose dos Campos and Cachoeira Paulista were divided into their respective land use classes whereas Jardinopolis was divided into its agricultural classes. LANDSAT MSS data were used to divide each of these classes into two independent data sets -- training fields (about 20 percent of the area) and test fields. Using training fields of each class, test fields were classified using the single-cell option of the Image-100 as well as a sample classifier based on Bhattacharyya distance. An identical analysis will be done using about ten percent, as well as one percent of the area, for training. This work has many applications since the training phase of the data analysis of earth resources is expensive in the digital as well as the analog mode. If time permits, the effect of the distance of the training samples on the classification accuracy of the test samples will be investigated.