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DETERMINATION OF PLANIMETRIC FEATURES BY

INTERACTIVE IMAGE PROCESSING

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ABSTRACT

In aerial photography since roads and
other man-made structures are small com-
pared to natural features, their edges are
usually indistinct from the background
and are often undetected by automatic sys-
tems. A major problem in the development
of such systems is the delineation of
boundaries around areas containing features
of interest. The computer is often unable
to accomplish the detection process alone.
Therefore, it is reasonable to combine
the superior pattern recognition abilities
of a human being with the computational
power of a digital computer to form an
interactive system.

In this paper, an interactive feature
extraction system is discussed. The hard-
ware consists of a CDC-6400 sequential
computer, a Goodyear STARAN associative
array processor, a DEC PDP 11/50 minicom-
puter, image display, digitizing and re-
cording devices. The feature extraction
program for the interactive system consists
of a series of routines which were installed
in the system. The routines were written
in FORTRAN and/or the STARAN assembly
language according to the intended applica-
tion in order to efficiently use the com-
puters.

GENERATING CHARACTER MAPS ON A

REMOTE TERMINAL BY USE OF SIMPLIFIED SOFTWARE

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ABSTRACT

By use of a simple function to be
known as a Natural Classification Function,
multispectral signatures of 13910 LANDSAT
pixels were classified into categories
each of which when plotted on a character
map, was found to correspond with a defin-
able ground feature. Classification of
the multispectral signatures was done in
two stages. In the first stage, 65 cate-
gories were generated on the basis of the
Natural Classification Function in which
the independent variables are the reflec-
tance values of multispectral signatures
of pixels. In the second stage the 65
categories were merged into seven realistic
categories on the basis of the variance
of pixels within each category. The ground
features represented on the character map
are six plant associations and open bodies
of water.

At a cost of less than $50 for analy-
sis of data and generating character maps
for about 20 square miles, the method is
considered to be a good tool for rapid
exploration using LANDSAT Multispectral
Data.