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A SOFTWARE SYSTEM FOR THE DIGITAL ENHANCEMENT AND CLASSIFICATION OF MULTI-EMULSION PHOTOGRAPHIC DATA

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A software system for the digital enhancement and classification of multi-emulsion photographic data has been developed utilizing the University of New Hampshire's DECsystem-10. Input is from high altitude color infrared photography scanned by a high resolution rotating drum microdensitometer. The digitizing process utilizes color separation filters to measure optical densities from each film emulsion layer. The analysis software is generalized, and with little modification will accept and process other multi-spectral data, such as that of Landsat.

Subscenes of interest are extracted from the raw data files on magnetic tape and written out as disk files for easy access. Preprocessing methods useful in enhancing the image data for the benefit of the analyst include contrast stretching, edge enhancement, spatial filtering, and band ratioing. Classification capabilities include an unsupervised algorithm based upon Euclidean distance and utilizing a spatial mask for generating "seed cluster" centroids. Supervised classification is by either Euclidean distance or Parallelepiped decision rules. Output products are classification statistics and line printer gray shade/character maps.

The nature of the software, capabilities, and output products has been strongly influenced by the attempt to develop a readily transportable FORTRAN software system with minimal core requirements, rapid processing capabilities and a wide range of applications.

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