LARSYSAA EXAMPLE AND DESCRIPTION
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Description of Example Control Cards

1. Statistics Processor

This processor calculates the statistics (mean vectors and covariance matrices) to be used in the subsequent processors.

The options on the OPTION card can be punched in any order and must be separated by commas. Note that HIST=C is required on the option card if histograms for classes are desired. Otherwise the HISTO card will be ignored and no histograms will be printed.

SIZE XLO=79 sets the low end of the X-axis of the histogram.

The SPEC cards request coincident spectral plots of the classes specified. (In this case classes 3, 4, 5, 6 and classes 1, 2, 5, 6). If this card is omitted, spectral plots of all the classes, four at a time, are produced.

PUNCH requests the program to punch out the statistics or each class so that they may be used in other processors at a later time.

2. Feature Selection Processor

This processor ranks the combinations of feature according to divergence criteria calculated for each (pairwise) combination of classes.

On the first pass, the fifth combination (feature 9, 10, 12) was preceded by three stars since this combination was to be shown regardless of its rank, as requested by the SHOW card.

On the second pass, the following options were typed in:

MAX/200/,PRINT/30/,SC/20/,EXC/1,2/,DIV/20/,RESTORE,END

MAX/200/ - All divergence which were greater than or equal to 200 were made equal to 200. This fact is denoted by replacing these divergence by... .

PRINT/30/ - Thirty combinations of features are printed.

SC/20/ - The class combination with symbols SC (soybeans, corn) has its weight doubled. The standard weight is 10.

EXC/1,2/ - Any feature combination containing both features 1 and 2 is ignored.

DIV/20/ - A list of the combinations whose first N (where N is the number of combinations printed out) divergences are less than or equal to 20 is generated. This is very useful when attempting to combine classes that are similar.

RESTORE - Because of the tremendous number of combination that can be generated, it's necessary to save most of them on the scratch tape. The RESTORE option enables the program to test all features combinations (after the options have been typed in) and not just those stored in core.

END - End of options for this pass.

3. Classification Processor

This processor classifies the area designated (in this case lines 345 to 515, every other line, and columns 101 to 219 every other column).

OPTION NOCALIB - Since the statistics used were not calibrated, the data to be classified should not be calibrated either.

DATE - In this processor, the date is essential.

FEATURE 1, 7, 10 - This combination was chosen as the optimium for the classification. Notice (in the selection processor -

second pass) that this combination gives a significantly larger divergence for soybeans and corn without changing the divergence for the other combinations by much.

4. Display Processor

This processor displays the classification with symbols selected by the user and calculates the percent correct recognition for either training or test fields (not both in the same pass).

On the first pass shown, training fields are evaluated but no map is printed. Though sixteen training fields are supplied, only four are tabulated since there are the only fields in the section classified.

TRAIN MIX,5,6 combines classes 5 and 6 into a single class called MIX for the purpose of calculating correct recognition. For example, if a point that properly belongs to class 5 is classified as class 5 or 6, it will not be counted as an error.

On the second pass, test fields are evaluated OPTION OUTLINE outlines the training fields with *.

$EXIT will cause the job to be terminated and the tapes rewound.