

Radio Frequency Fingerprinting

Generated dataset: <https://raw.githubusercontent.com/jayluxferro/RFF/master/dataset.csv>

Initial Attributes or Features Considered

Attributes	Category
Mean	Calculating Averages
Geometric Mean	
Harmonic Mean	
Median	
Low Median	
High Median	
Median Group (50th Percentile)	
Variance	Calculating variability or spread
Standard Deviation	

I run the dataset through Weka (<https://www.cs.waikato.ac.nz/ml/weka/>) to optimise which attributes will give a higher accuracy.

Test 1: Blind attribute selection

Blind attribute selection (without selecting the class label) selected only the **Label**, **Group Mean** and **Variance**.

=== Run information ===

Evaluator: weka.attributeSelection.CfsSubsetEval -P 1 -E 1

Search: weka.attributeSelection.BestFirst -D 1 -N 5

Relation: dataset

Instances: 3985

Attributes: 10

Label

Mean

GMean

HMean

Median

MedianL

MedianH

MedianG

Variance

Stdev

Evaluation mode: evaluate on all training data

=== Attribute Selection on all input data ===

Search Method:

Best first.

Start set: no attributes

Search direction: forward

Stale search after 5 node expansions

Total number of subsets evaluated: 51

Merit of best subset found: 0.992

Attribute Subset Evaluator (supervised, Class (numeric): 10 Stdev):

CFS Subset Evaluator

Including locally predictive attributes

Selected attributes: 1,3,9 : 3

Label

GMean

Variance

Test 2: Attribute Selection (selected class Label)

The following attributes were selected:

Mean, Group Mean, Median, Low Median, Variance and Standard Deviation

=== Run information ===

Evaluator: weka.attributeSelection.CfsSubsetEval -P 1 -E 1

Search: weka.attributeSelection.BestFirst -D 1 -N 5

Relation: dataset

Instances: 3985

Attributes: 10

Label

Mean

GMean

HMean

Median

MedianL

MedianH

MedianG

Variance

Stdev

Evaluation mode: evaluate on all training data

=== Attribute Selection on all input data ===

Search Method:

Best first.

Start set: no attributes

Search direction: forward

Stale search after 5 node expansions

Total number of subsets evaluated: 53

Merit of best subset found: 0.858

Attribute Subset Evaluator (supervised, Class (numeric): 1 Label):

CFS Subset Evaluator

Including locally predictive attributes

Selected attributes: 2,3,5,6,9,10 : 6

Mean

GMean

Median

MedianL

Variance

Stdev

Sunday, April 4, 2021