ECS 256 Project Presentation

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Yacht Hydrodynamics

308 full-scale experiments: Prediction of residuary resistance of sailing yachts at the initial design stage is of a great value for evaluating the ship's performance and for estimating the required propulsive power.

Both parsimony and significant testing approaches reduces the predictors to one: the **"Froude Number"**.

Pima Indians Diabetes

All patients here are females at least 21 years old of Pima Indian heritage.

Parsimony:

k=0.01: Number of Pregnant, Plasma Glucose, Body Mass Index, Diabetes Pedigree Function

k=0.05: Plasma Glucose, Body Mass Index

Significant Testing:

Number of Pregnant, Diastolic Blood Pressure, Plasma Glucose, Body Mass Index, Diabetes Pedigree Function

Car Prices

Data with 26 attributes for 205 different cars:

Parsimony:

Normalized Loss, Make, Fuel Type, Curb Weight, Engine Size, Fuel System, Compression Ratio

Significant Testing:

Normalized Loss, Make, Curb Weight, Number of Cylinder, Engine Size, Fuel System

Climate Model Simulation Crashes

Data with 18 attributes and 540 instances

Parsimony:

vconst corr vconst 2 vconst 5 convect corr bckgrnd vdc1 bckgrnd vdc eq bckgrnd vdc psim k=0.01

vconst corr vconst 2 convect corr bckgrnd vdc1 k = 0.05

Significant Testing:

vconst corr

vconst 2

convect corr

bckgrnd vdc1

bckgrnd vdc eq

Physicochemical Properties of Protein Tertiary Structure

Data with 9 attributes and 45730 instances

RMSD-Size of the residue.

F1 - Total surface area.

F2 - Non polar exposed area.

F3 - Fractional area of exposed non polar residue.

F4 - Fractional area of exposed non polar part of residue.

F5 - Molecular mass weighted exposed area.

F6 - Average deviation from standard exposed area of residue.

F7 - Euclidian distance.

F8 - Secondary structure penalty.

F9 - Spacial Distribution constraints (N,K Value).

Parsimony: F1, F2, F3, F4, F6, F8, F9 (k = 0.01) F1, F3, F4, F8 (k = 0.05)

Significant Testing: F1, F2, F3, F4, F5, F6, F7, F8, F9

Banknote Authentication

Data with 5 attributes and 1372 instances

Parsimony:

B, G, R (k = 0.01)

B, R (k = 0.05)

Significant Testing:

B, G, R

Parkinsons Telemonitoring

subject ID, age, gender, time interval, plus 16 biomedical voice measures for 42 people in six months: **total 5875 records**.

- To predict subject's UPDRS scores from the 16 voice measurements.

Parsimony:

subject, age, sex, test-time, Jitter.Abs,Jitter.DDP*, ShimmerAPQ3, NHR, HNR*, DFA, PPE (*k=0.05)

Significant Testing:

subject, age, sex, test-time, Jitter.Abs, Jitter.DDP, ShimmerAPQ3, NHR, HNR, DFA, PPE

EEG Eye State

Data with 15 attributes and 14980 instances

Parsimony:

EEG1, EEG2, EEG3, EEG5, EEG6 (k = 0.01)

EEG1, EEG2 (k = 0.05)

Significant Testing:

EEG1, EEG2, EEG3, EEG4, EEG5, EEG6, EEG7, EEG8, EEG9, EEG10, EEG11, EEG12, EEG13, EEG14