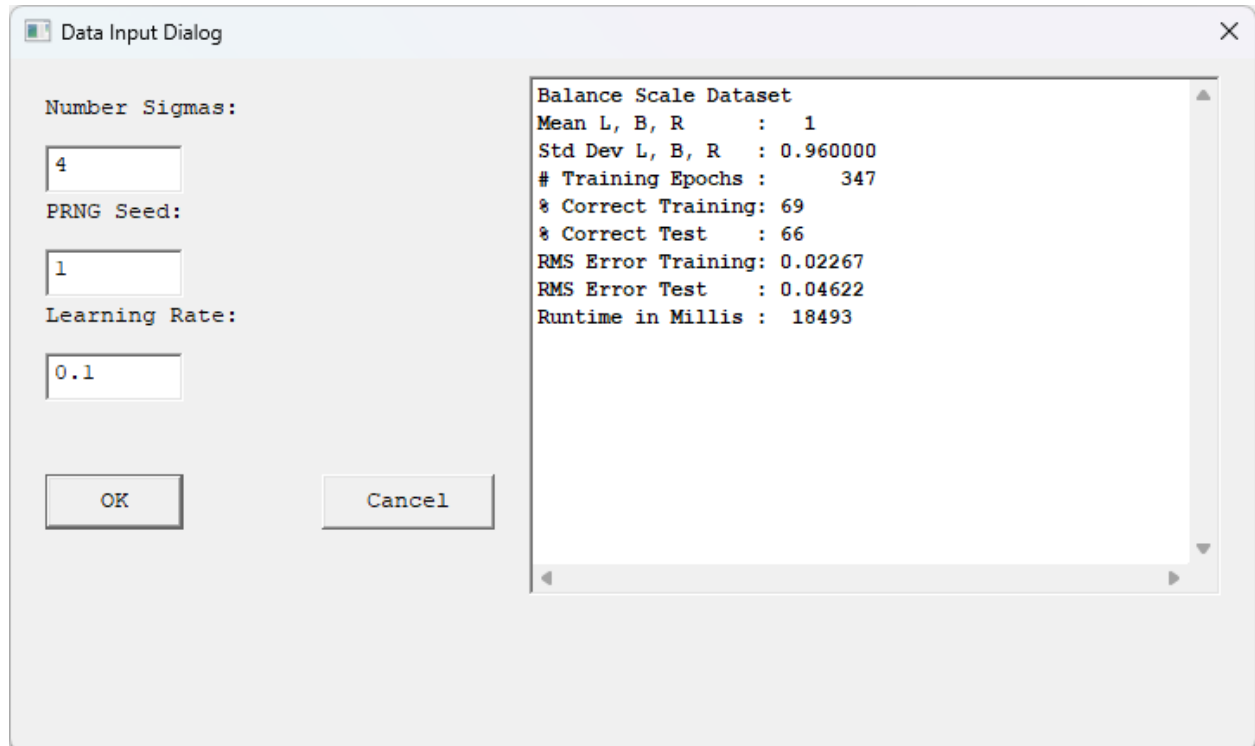


Blog Entry © Saturday, August 30, 2025, by James Pate Williams, Jr., Balance Scale Classification Problem Solved Using a Radial Basis Function Neural Network

Reference: ***Computational Intelligence An Introduction*** © 2002 by Andries P. Engelbrecht Chapter 5 Radial Basis Function Networks. The balance scale can be in one of three states: Left (L), Balanced (B), or Right (R).



The image shows a 'Data Input Dialog' window with a light gray background. On the left, there are three input fields: 'Number Sigmas:' with the value '4', 'PRNG Seed:' with the value '1', and 'Learning Rate:' with the value '0.1'. Below these fields are two buttons: 'OK' and 'Cancel'. On the right, there is a text area displaying the following information:

```
Balance Scale Dataset
Mean L, B, R      :   1
Std Dev L, B, R   : 0.960000
# Training Epochs :   347
% Correct Training:  69
% Correct Test    :  66
RMS Error Training: 0.02267
RMS Error Test    : 0.04622
Runtime in Millis : 18493
```

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 345
% Correct Training: 25
% Correct Test : 69
RMS Error Training: 0.05539
RMS Error Test : 0.03716
Runtime in Millis : 33988

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 66
% Correct Test : 78
RMS Error Training: 0.02482
RMS Error Test : 0.03076
Runtime in Millis : 48771

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 62
% Correct Test : 80
RMS Error Training: 0.02677
RMS Error Test : 0.03109
Runtime in Millis : 89861

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 58
% Correct Test : 80
RMS Error Training: 0.02846
RMS Error Test : 0.03158
Runtime in Millis : 133486

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 58
% Correct Test : 80
RMS Error Training: 0.02846
RMS Error Test : 0.03158
Runtime in Millis : 133486

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 56
% Correct Test : 82
RMS Error Training: 0.02899
RMS Error Test : 0.03163
Runtime in Millis : 134498

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 55
% Correct Test : 82
RMS Error Training: 0.02924
RMS Error Test : 0.03168
Runtime in Millis : 149073

Data Input Dialog

Number Sigmas:

PRNG Seed:

Learning Rate:

OK Cancel

Balance Scale Dataset
Mean L, B, R : 1
Std Dev L, B, R : 0.960000
Training Epochs : 347
% Correct Training: 54
% Correct Test : 82
RMS Error Training: 0.02949
RMS Error Test : 0.03176
Runtime in Millis : 148661