TDS - Temperature Offset Calculation

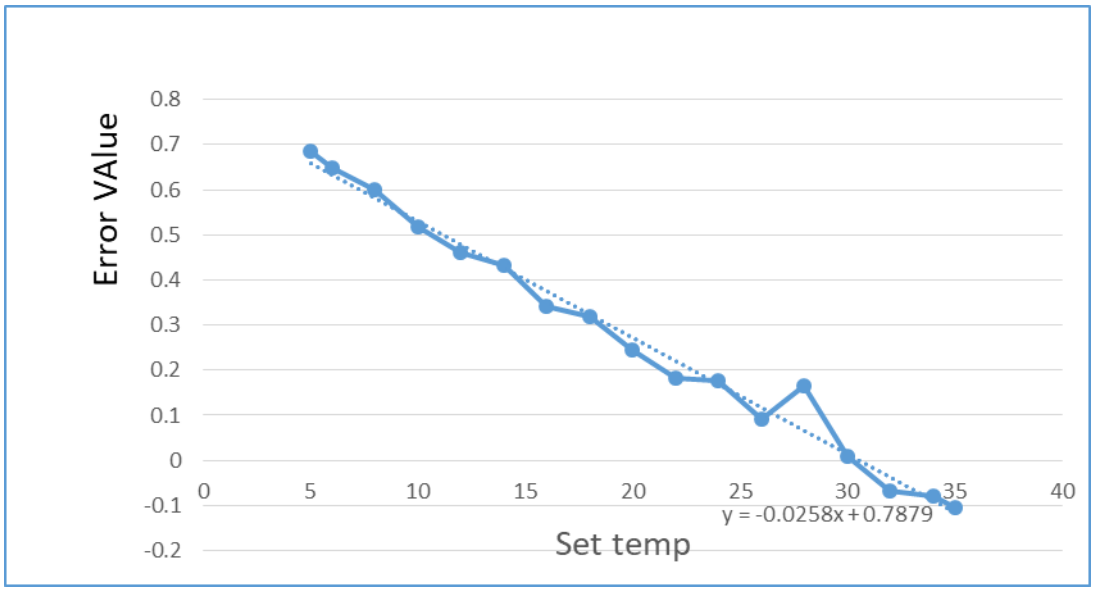
The offset value at specific temperatures has been determined based on the **Error rate versus Set temperature** (Refer file AvgErrorValue.xlsx).

With respect to Linear Equation of **Error rate (Y) Vs Set Temperature (X)**:

Y = (-0.0258(X)) + 0.7879

Y = Avg Error for Set temperature

X = Temperature measured from sensor



Offset Value:

Offset value = (-0.0258 * Raw_temperature) + 0.7879.

Raw_temperature = Temperature measured from sensor

Calculating Temperature after Calibration:

Calibrated Temperature Value = Raw _temperature – Offset value

= Raw_temperature – (-0.0258 * Raw_temperature + 0.7879)

Examples:

Raw_temperature = 1:

Calibrated Temperature Value = 1 - (-0.0258 * 1 + 0.7879)
= 1 - (-0.0258 + 0.7879)
= 1 - 0.7621
= 0.2379

Raw_temperature = 3.3:

Calibrated Temperature = 3.3 - (-0.0258 * 3.3 + 0.7879)
= 3.3 - (-0.08514 + 0.7879)
= 3.3 - 0.70276
= 2.59724

Raw_temperature = 7.5:

Calibrated Temperature = 7.5 - (-0.0258 * 7.5 + 0.7879)
= 7.5 - (-0.1935 + 0.7879)
= 7.5 - 0.5944
= 6.9056

Raw_temperature = 13.9:

Calibrated Temperature = 13.9 - (-0.0258 * 13.9 + 0.7879)
= 13.9 - (-0.35802 + 0.7879)
= 13.9 - 0.42912
= 13.47088

Raw_temperature = 18:

Calibrated Temperature = 18 - (-0.0258 * 18 + 0.7879)
= 18 - (-0.4644 + 0.7879)
= 18 - 0.3235
= 17.6765

Raw_temperature = 23.5:

Calibrated Temperature = 23.5 - (-0.0258 * 23.5 + 0.7879)
= 23.5 - (-0.6063 + 0.7879)
= 23.5 - 0.1816
= 23.3184

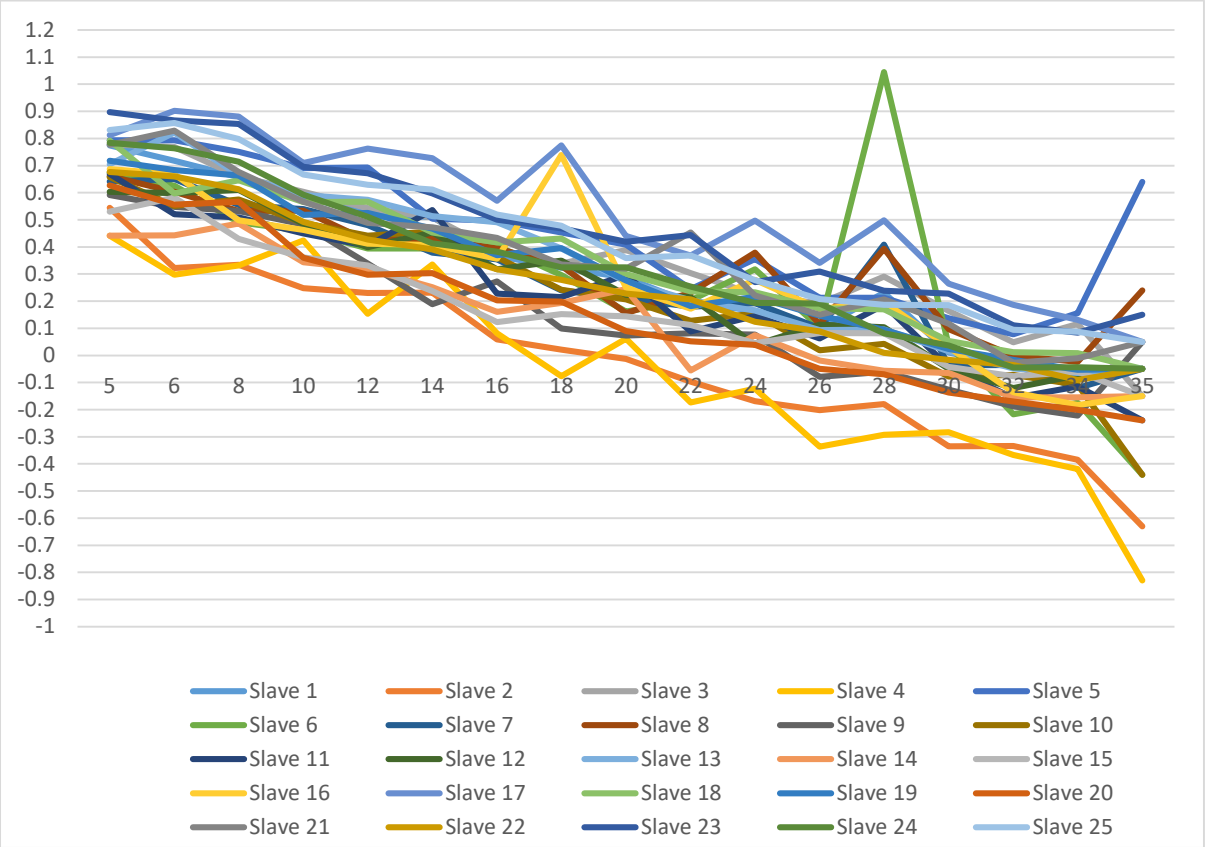
Raw_temperature = 33:

Calibrated Temperature = 33 - (-0.0258 * 33 + 0.7879)
= 33 - (-0.8514 + 0.7879)
= 33 - 0.0635
= 32.9365

Raw_temperature = 40:

Calibrated Temperature = 40 - (-0.0258 * 40 + 0.7879)
= 40 - (-1.032 + 0.7879)
= 40 - (-0.2441)

Temperature Calculation For Each Slaves:



The Offset value at specific Temperatures for each Slaves has been determined based on the **Error rate versus Set temperature** (Refer file *AvgErrorPerSlave.xlsx*)

Offset Linear Equations of each Slaves:

Slave 1 Offset Equation : y = -0.0542x + 0.7984

Slave 2 Offset Equation : y = -0.0607x + 0.5258

Slave 3 Offset Equation : y = -0.0495x + 0.8077

Slave 4 Offset Equation : y = -0.0667x + 0.555

Slave 5 Offset Equation : y = -0.0387x + 0.7965

Slave 6 Offset Equation : y = -0.0476x + 0.7092

Slave 7 Offset Equation : y = -0.0462x + 0.6916

Slave 8 Offset Equation : y = -0.0351x + 0.6391

Slave 9 Offset Equation : y = -0.0488x + 0.5956

Slave 10 Offset Equation : y = -0.0578x + 0.7333

Slave 11 Offset Equation : y = -0.0509x + 0.6789

Slave 12 Offset Equation : y = -0.0487x + 0.6869

Slave 13 Offset Equation : y = -0.0574x + 0.8361

Slave 14 Offset Equation : y = -0.043x + 0.5225

Slave 15 Offset Equation : y = -0.0408x + 0.5369

Slave 16 Offset Equation : y = -0.0512x + 0.7473

Slave 17 Offset Equation : y = -0.0506x + 0.9799

Slave 18 Offset Equation : y = -0.0495x + 0.7756

Slave 19 Offset Equation : y = -0.0516x + 0.7678

Slave 20 Offset Equation : y = -0.0543x + 0.6311

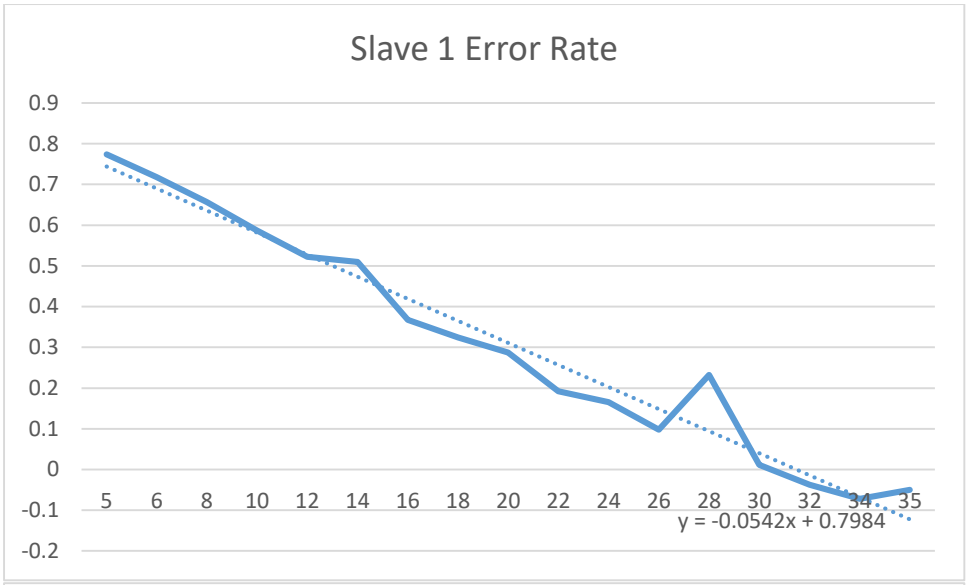
Slave 21 Offset Equation : y = -0.0504x + 0.8102

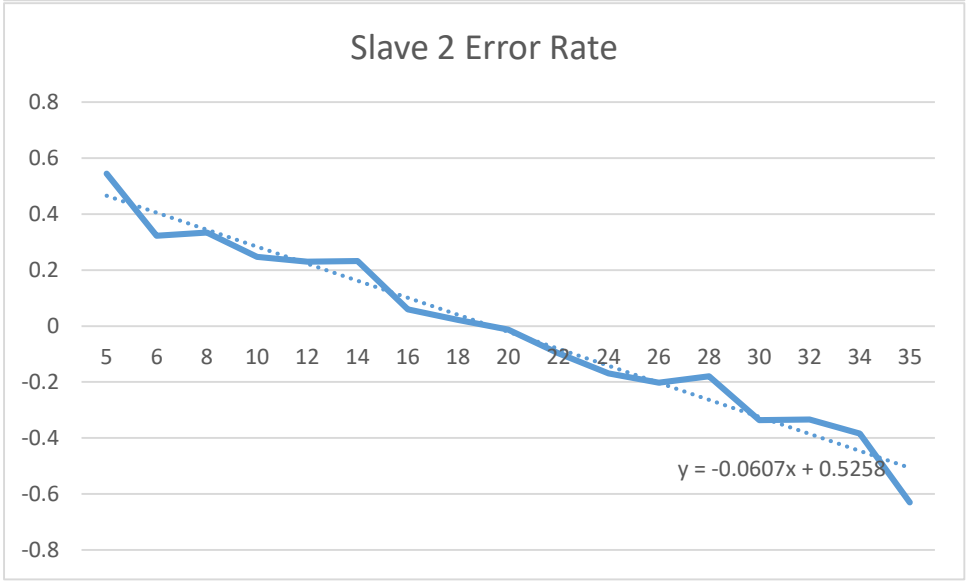
Slave 22 Offset Equation : y = -0.0503x + 0.7073

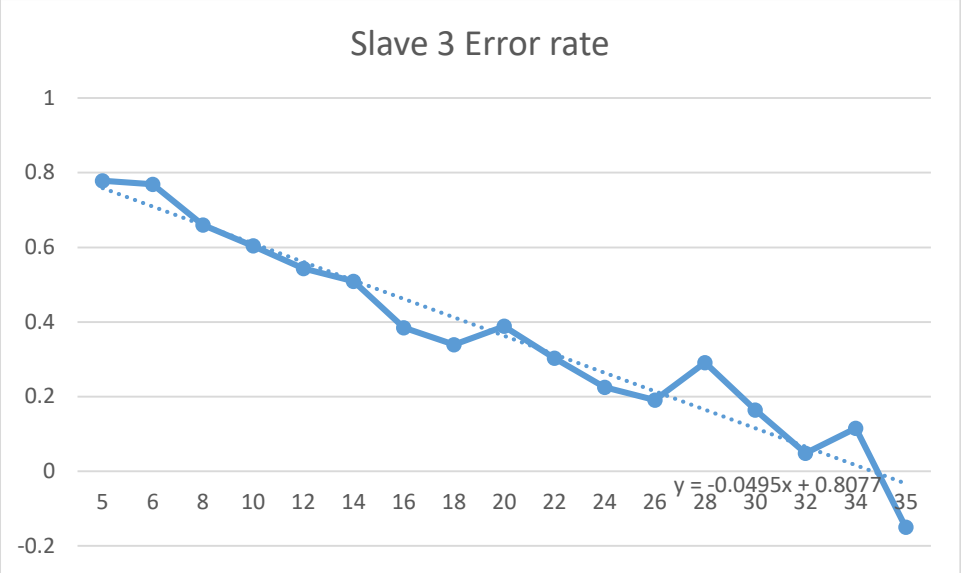
Slave 23 Offset Equation : y = -0.0523x + 0.9299

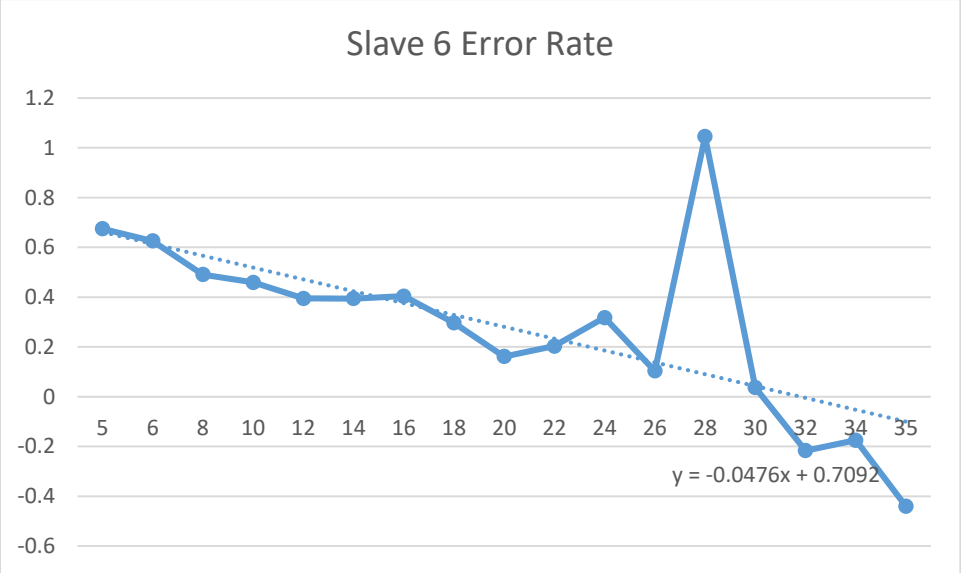
Slave 24 Offset Equation : y = -0.0551x + 0.8156

Slave 25 Offset Equation : y = -0.0535x + 0.9058

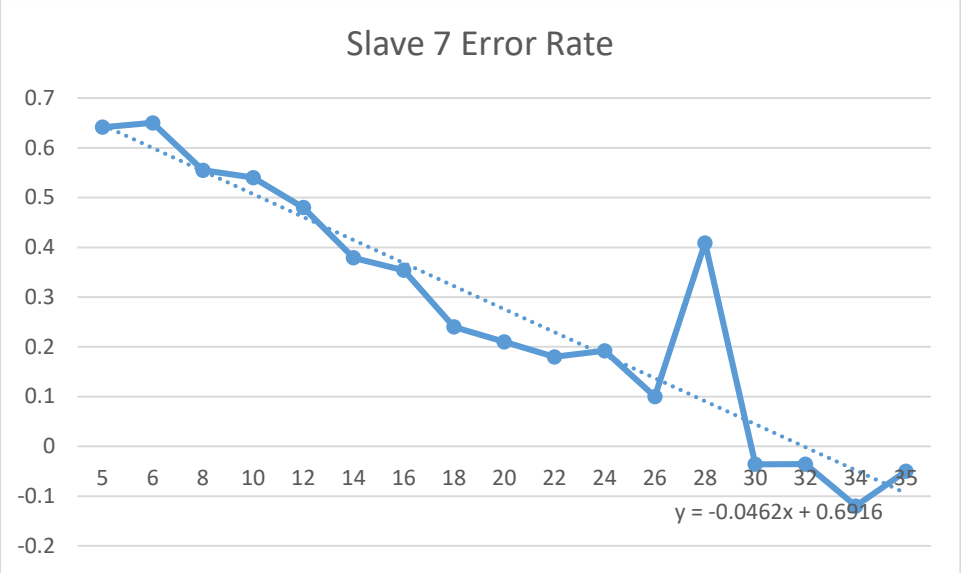

Slave 1 Error Rate
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0542x + 0.7984

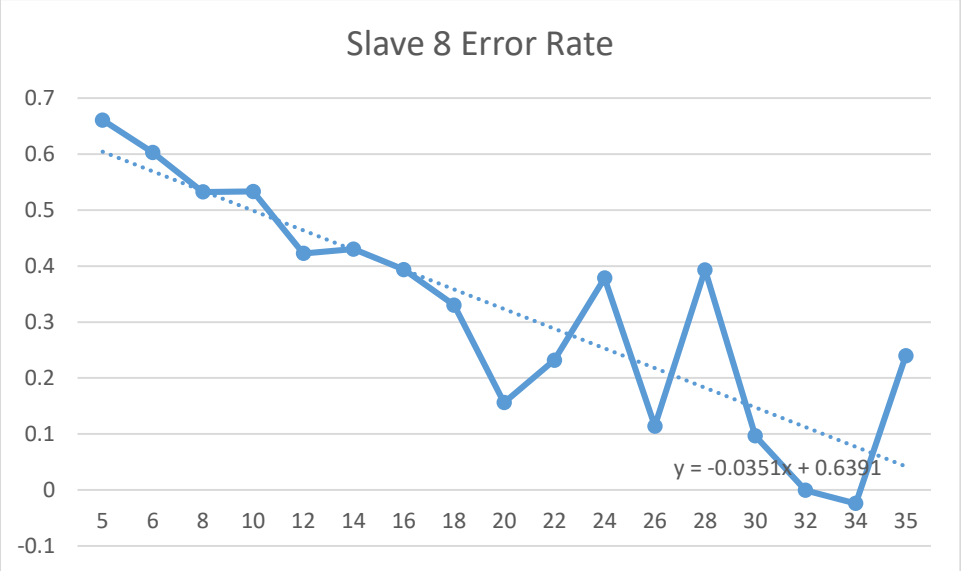

Slave 2 Error Rate
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0607x + 0.5258

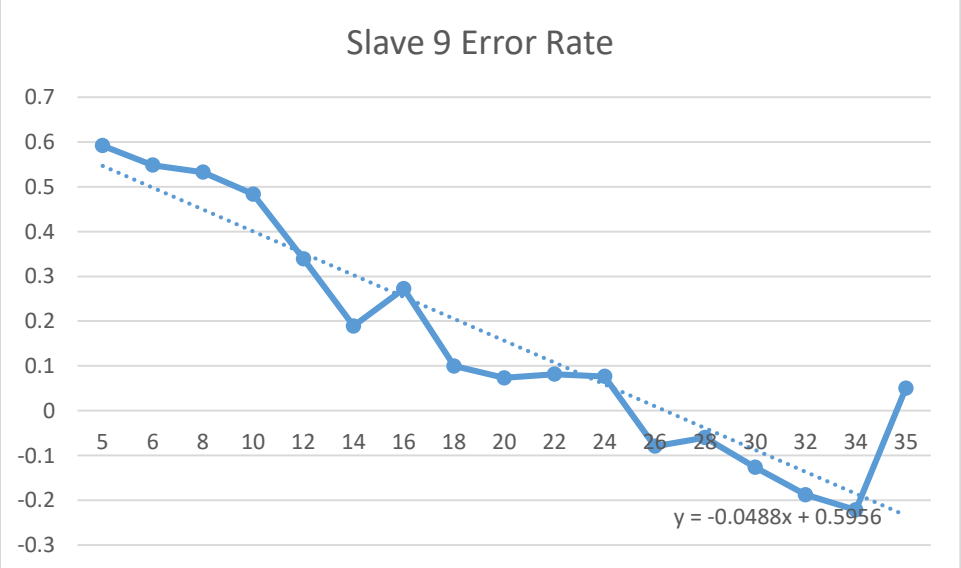

Slave 3 Error rate
1
0.8
0.6
0.4
0.2
0
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0495x + 0.8077

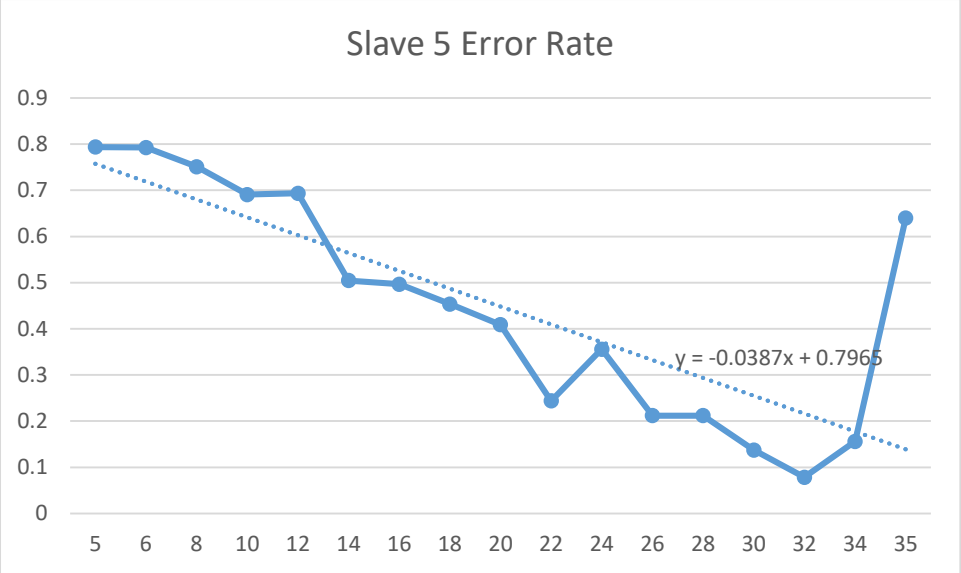

Slave 6 Error Rate
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0476x + 0.7092

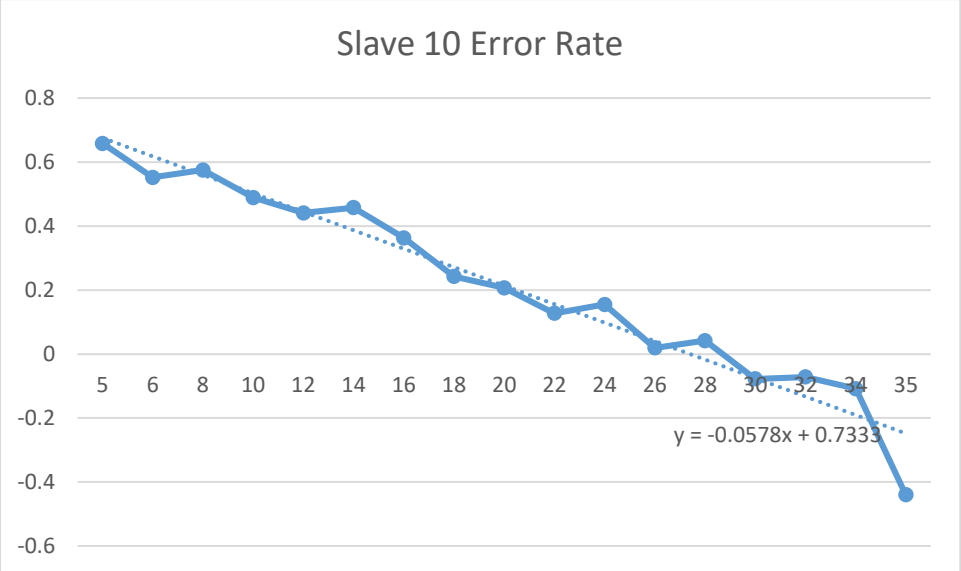

Slave 4 Error rate
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0667x + 0.555

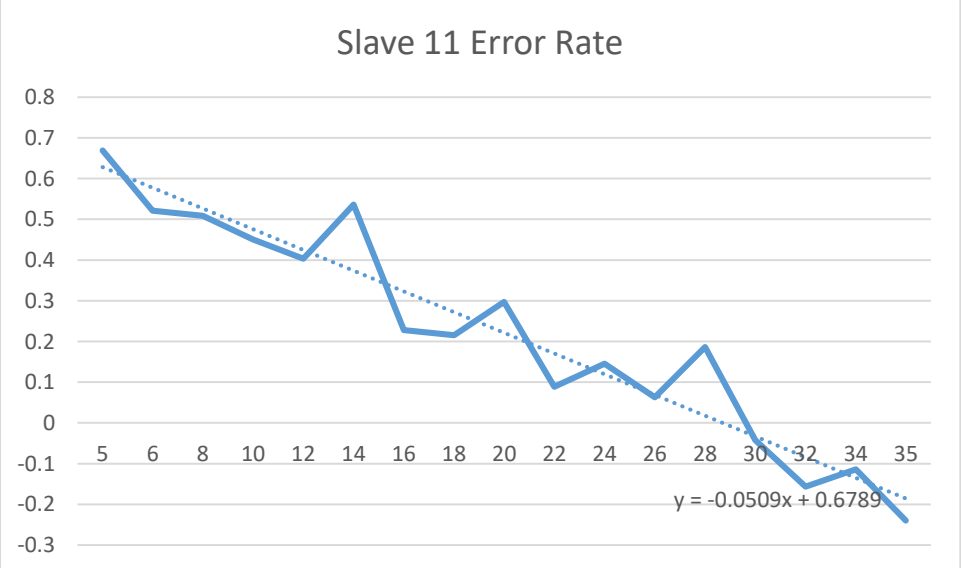

Slave 7 Error Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0462x + 0.6916

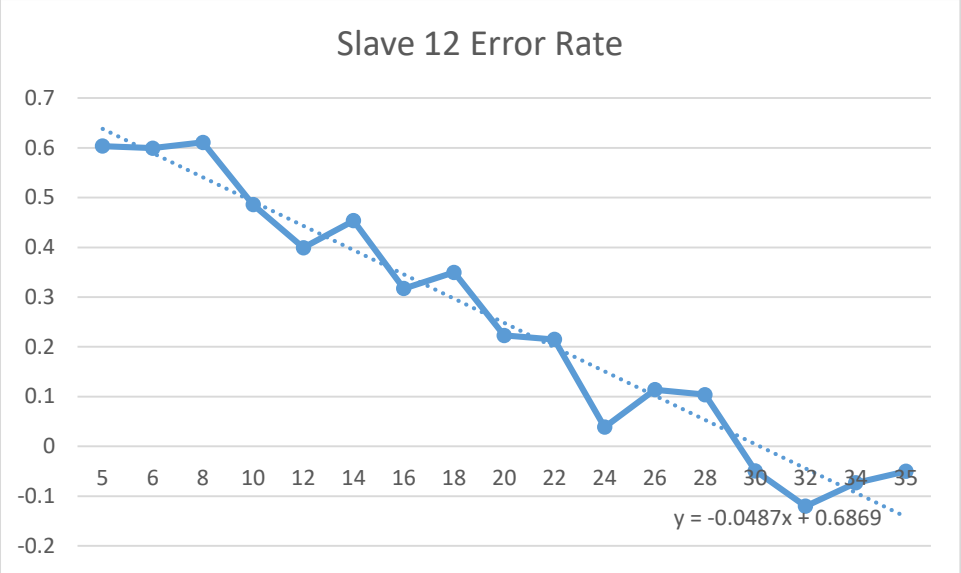

Slave 8 Error Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0351x + 0.6391

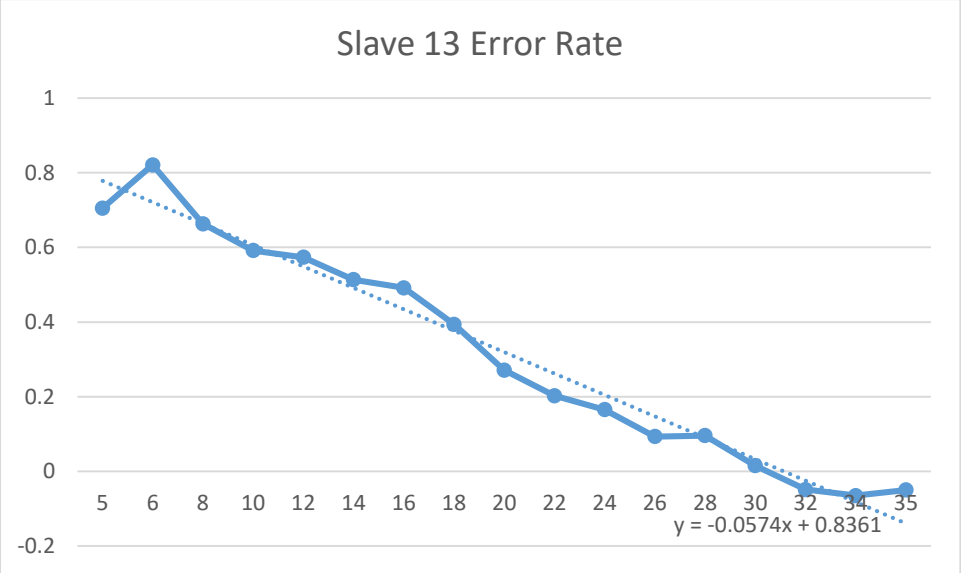

Slave 9 Error Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0488x + 0.5956

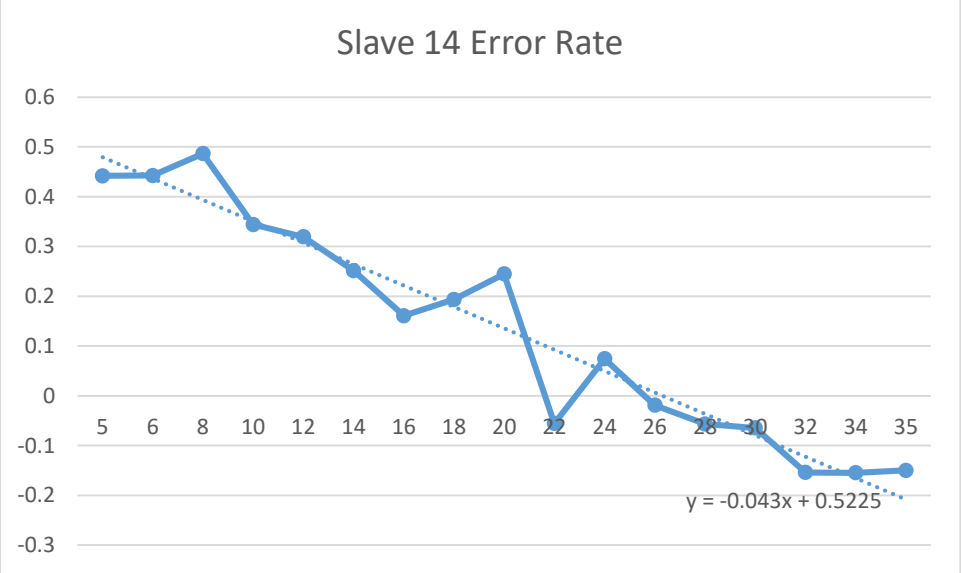

Slave 5 Error Rate
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0387x + 0.7965

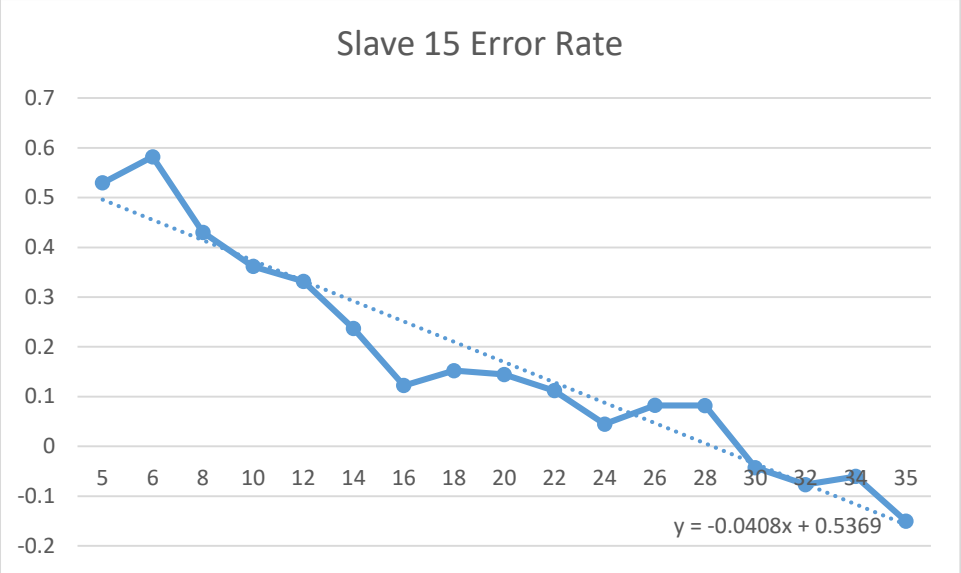

Slave 10 Error Rate
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0578x + 0.7333

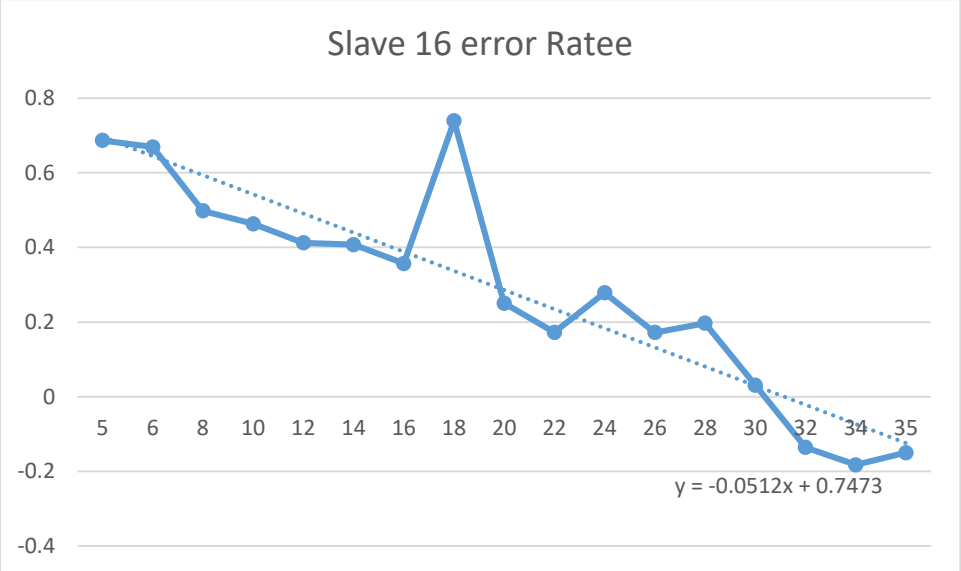

Slave 11 Error Rate
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0509x + 0.6789

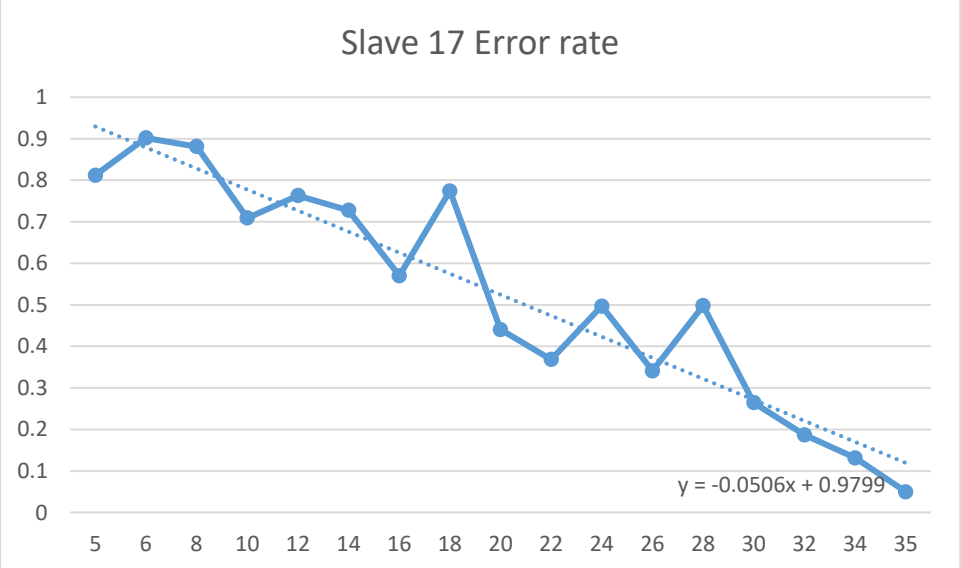

Slave 12 Error Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0487x + 0.6869

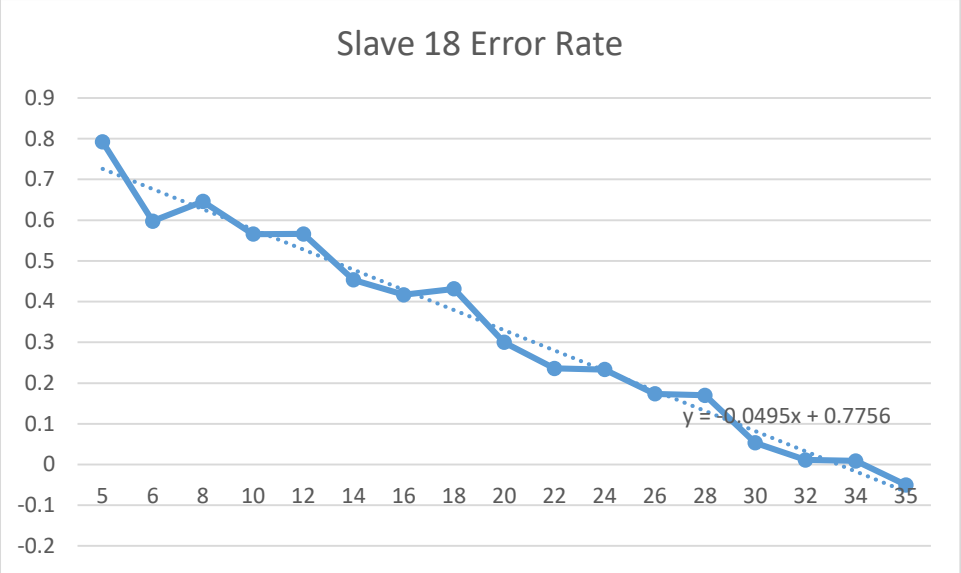

Slave 13 Error Rate
1
0.8
0.6
0.4
0.2
0
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0574x + 0.8361

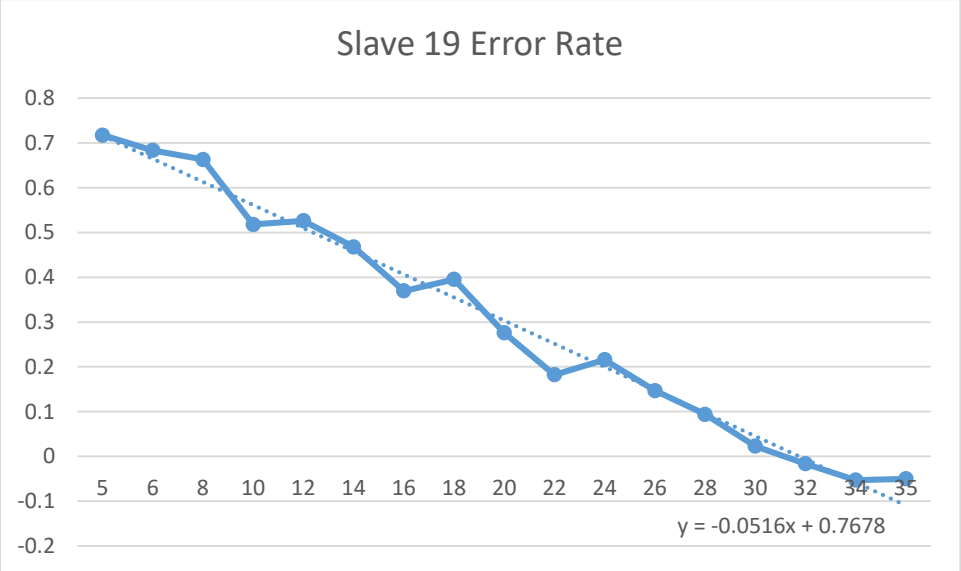

Slave 14 Error Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.043x + 0.5225

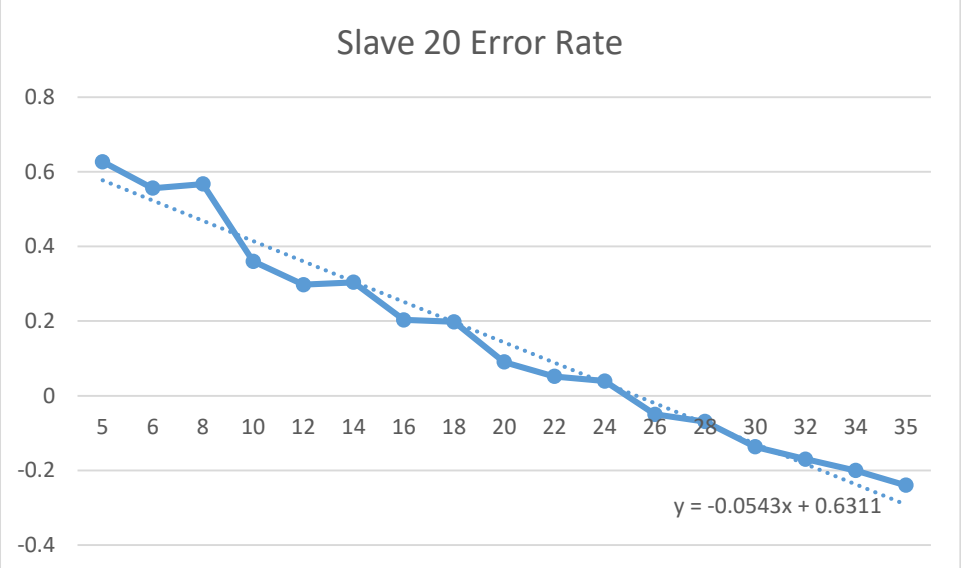

Slave 15 Error Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0408x + 0.5369

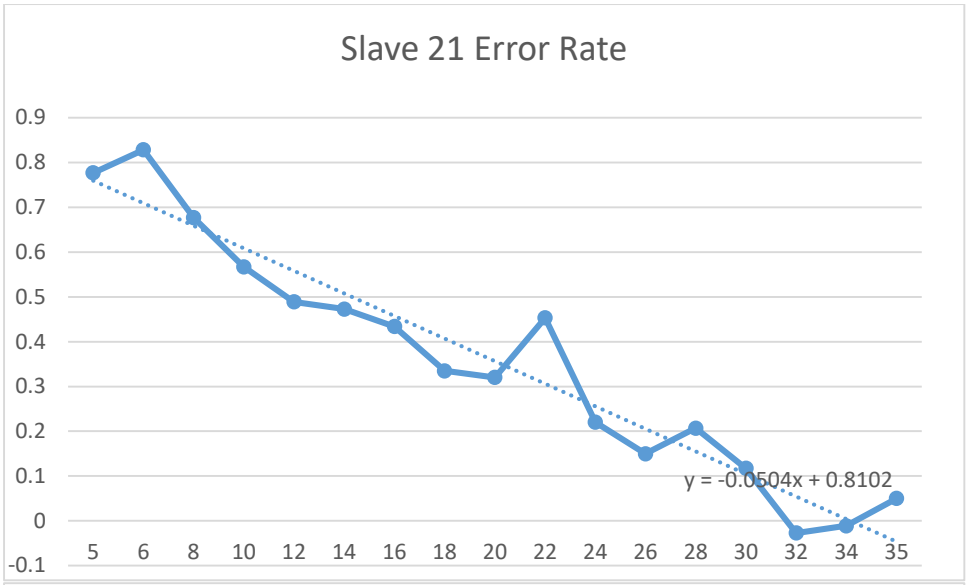

Slave 16 error Ratee
0.8
0.6
0.4
0.2
0
-0.2
-0.4
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0512x + 0.7473

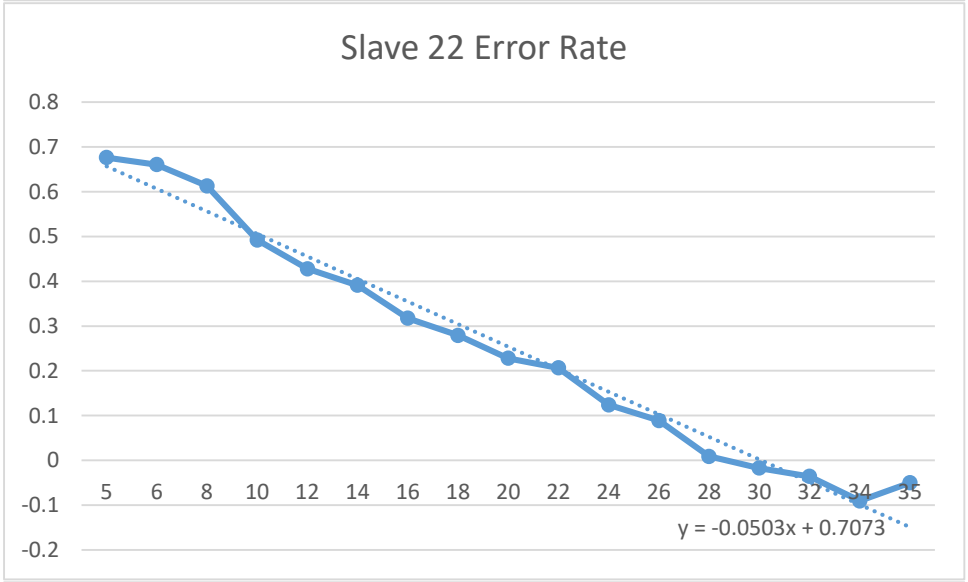

Slave 17 Error rate
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0506x + 0.9799

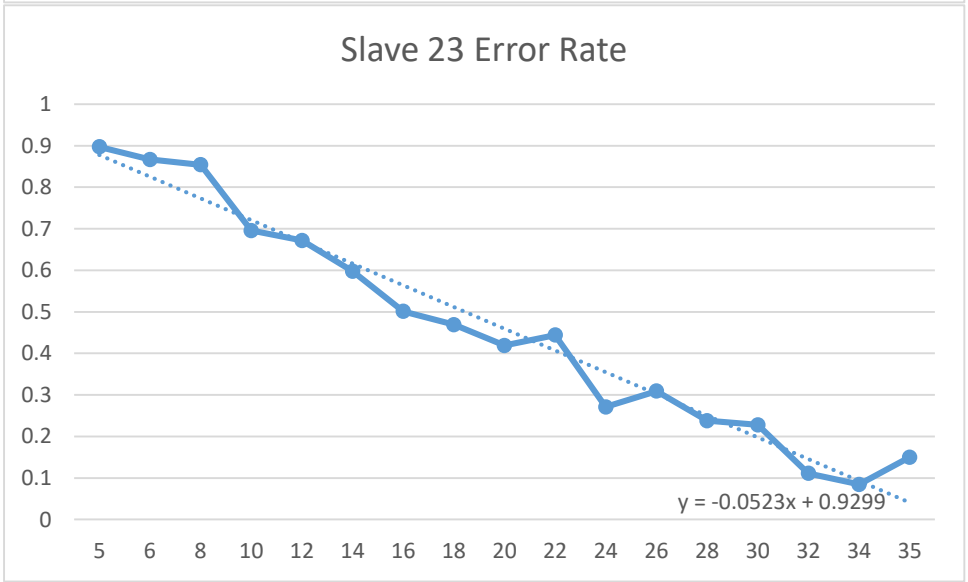

Slave 18 Error Rate
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0495x + 0.7756

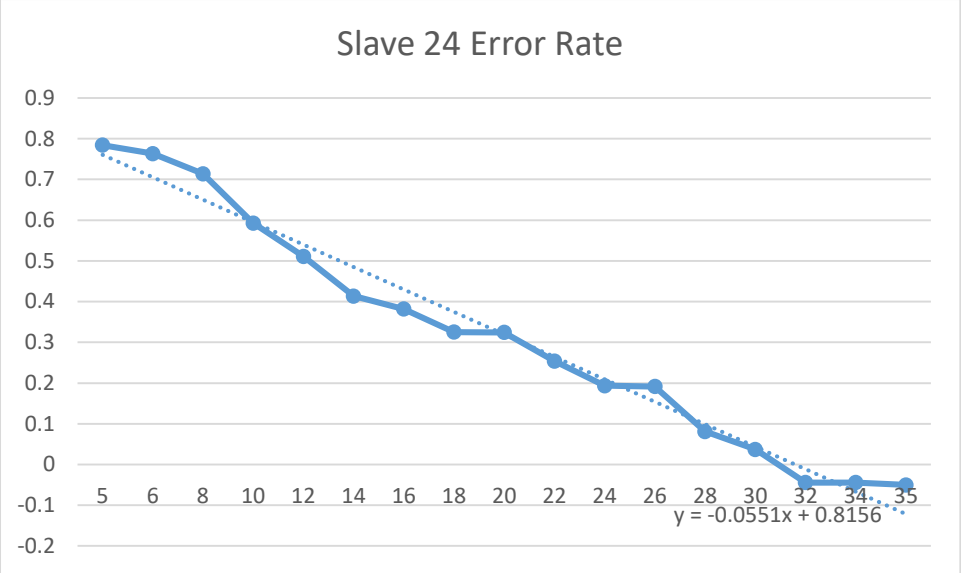

Slave 19 Error Rate
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0516x + 0.7678

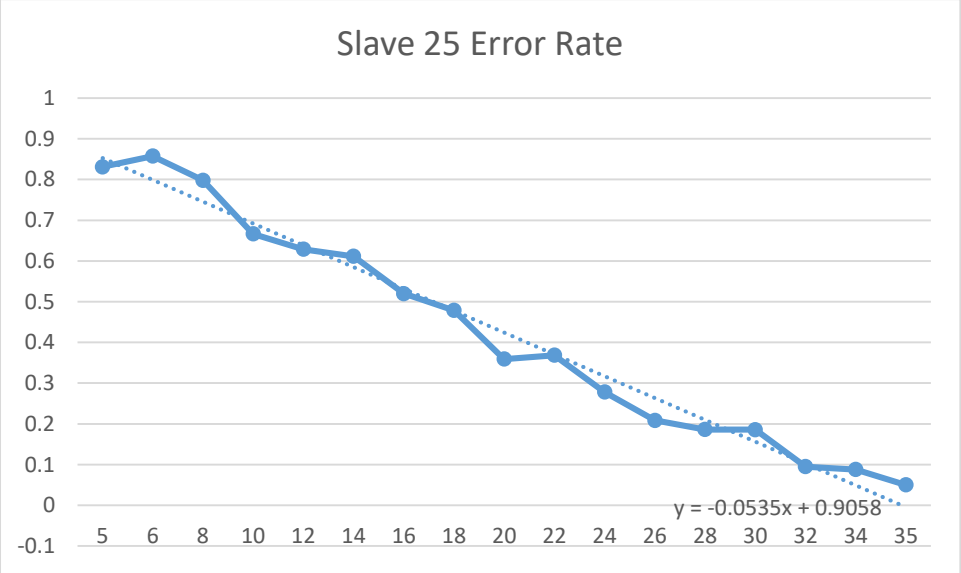

Slave 20 Error Rate
0.8
0.6
0.4
0.2
0
-0.2
-0.4
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0543x + 0.6311


Slave 21 Error Rate
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0504x + 0.8102


Slave 22 Error Rate
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0503x + 0.7073


Slave 23 Error Rate
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0523x + 0.9299


Slave 24 Error Rate
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0551x + 0.8156


Slave 25 Error Rate
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 35
y = -0.0535x + 0.9058