

# error count and jadud regression

XXX

2023-07-08

## Error count

### use error count to predict midterm 1

```
# predict midterm1 with both compiler and runtime errors
summary(rfit(Midterm1 ~
             R_totalError_HW3+R_totalError_HW4+
             C_totalError_HW3+C_totalError_HW4,
             data = allError, scores = bentscores3))

## Call:
## rfit.default(formula = Midterm1 ~ R_totalError_HW3 + R_totalError_HW4 +
##             C_totalError_HW3 + C_totalError_HW4, data = allError, scores = bentscores3)
##
## Coefficients:
##             Estimate Std. Error t.value    p.value
## (Intercept)   94.534848   2.157611 43.8146 < 2.2e-16 ***
## R_totalError_HW3 -0.137248   0.138343 -0.9921  0.322313
## R_totalError_HW4 -0.254083   0.152965 -1.6611  0.098216 .
## C_totalError_HW3 -0.055061   0.017845 -3.0856  0.002309 **
## C_totalError_HW4 -0.096316   0.046704 -2.0622  0.040433 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.09644761
## Reduction in Dispersion Test: 5.52393 p-value: 3e-04

# predict midterm1 with only compiler errors
summary(rfit(Midterm1 ~
             C_totalError_HW3+C_totalError_HW4,
             data = allError, scores = bentscores3))

## Call:
## rfit.default(formula = Midterm1 ~ C_totalError_HW3 + C_totalError_HW4,
##             data = allError, scores = bentscores3)
##
## Coefficients:
##             Estimate Std. Error t.value    p.value
## (Intercept)   92.080364   1.801472 51.1139 < 2.2e-16 ***
## C_totalError_HW3 -0.060857   0.017913 -3.3974  0.0008145 ***
## C_totalError_HW4 -0.096988   0.047204 -2.0547  0.0411558 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Multiple R-squared (Robust): 0.07646293
## Reduction in Dispersion Test: 8.65193 p-value: 0.00025
```

## use error count to predict midterm 2

```
# predict midterm2 with both compiler and runtime errors
```

```
summary(rfit(Midterm2 ~
  R_totalError_HW3+R_totalError_HW4 +
  R_totalError_HW5+R_totalError_HW6+
  R_totalError_HW7+R_totalError_HW8+
  C_totalError_HW3+C_totalError_HW4+
  C_totalError_HW5+C_totalError_HW6+
  C_totalError_HW7++C_totalError_HW8,
  data = allError,scores = bentscores3))
```

```
## Call:
```

```
## rfit.default(formula = Midterm2 ~ R_totalError_HW3 + R_totalError_HW4 +
##   R_totalError_HW5 + R_totalError_HW6 + R_totalError_HW7 +
##   R_totalError_HW8 + C_totalError_HW3 + C_totalError_HW4 +
##   C_totalError_HW5 + C_totalError_HW6 + C_totalError_HW7 +
##   +C_totalError_HW8, data = allError, scores = bentscores3)
```

```
##
```

```
## Coefficients:
```

	Estimate	Std. Error	t.value	p.value
(Intercept)	1.0199e+02	3.5425e+00	28.7908	< 2.2e-16 ***
R_totalError_HW3	-1.3634e-01	1.5656e-01	-0.8708	0.385441
R_totalError_HW4	-2.6788e-01	1.6388e-01	-1.6346	0.104539
R_totalError_HW5	-6.2558e-02	1.5321e-02	-4.0831	7.688e-05 ***
R_totalError_HW6	-1.2391e-02	1.3381e-02	-0.9260	0.356159
R_totalError_HW7	-1.7985e-03	2.9560e-02	-0.0608	0.951578
R_totalError_HW8	-9.8046e-02	3.3465e-02	-2.9298	0.004002 **
C_totalError_HW3	1.0612e-02	2.1290e-02	0.4985	0.618999
C_totalError_HW4	-8.8260e-02	5.4451e-02	-1.6209	0.107441
C_totalError_HW5	-3.3935e-04	1.2279e-02	-0.0276	0.977994
C_totalError_HW6	-2.1630e-02	2.5203e-02	-0.8582	0.392326
C_totalError_HW7	-1.8009e-02	4.0593e-02	-0.4436	0.658031
C_totalError_HW8	-4.7268e-02	2.3090e-02	-2.0471	0.042650 *

```
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
```

```
## Multiple R-squared (Robust): 0.2239622
```

```
## Reduction in Dispersion Test: 3.15052 p-value: 0.00057
```

```
# predict midterm2 with compiler errors
```

```
summary(rfit(Midterm2 ~
  C_totalError_HW3+C_totalError_HW4+
  C_totalError_HW5+C_totalError_HW6+
  C_totalError_HW7++C_totalError_HW8,
  data = allError,scores = bentscores3))
```

```
## Call:
```

```
## rfit.default(formula = Midterm2 ~ C_totalError_HW3 + C_totalError_HW4 +
##   C_totalError_HW5 + C_totalError_HW6 + C_totalError_HW7 +
##   +C_totalError_HW8, data = allError, scores = bentscores3)
```

```
##
## Coefficients:
##              Estimate Std. Error t.value p.value
## (Intercept)    91.7130201   3.5674395 25.7084 < 2e-16 ***
## C_totalError_HW3  0.0024174   0.0223515   0.1082 0.91403
## C_totalError_HW4 -0.1441793   0.0577854  -2.4951 0.01378 *
## C_totalError_HW5 -0.0080038   0.0133583  -0.5992 0.55005
## C_totalError_HW6 -0.0240221   0.0276233  -0.8696 0.38602
## C_totalError_HW7 -0.0203218   0.0438426  -0.4635 0.64373
## C_totalError_HW8 -0.0516098   0.0252417  -2.0446 0.04281 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.07921169
## Reduction in Dispersion Test: 1.96426 p-value: 0.07492
```

# Jadud

## use jadud to predict midterm 1 grades

```
# predict midterm1 with both compiler and runtime jadud measures
summary(rfit(Midterm1 ~ jadud_hw_03_c + jadud_hw_04_c + jadud_hw_03_r + jadud_hw_04_r, data = jadud_df,

## Call:
## rfit.default(formula = Midterm1 ~ jadud_hw_03_c + jadud_hw_04_c +
##   jadud_hw_03_r + jadud_hw_04_r, data = jadud_df, scores = bentscores3)
##
## Coefficients:
##           Estimate Std. Error t.value    p.value
## (Intercept)   98.2818     1.5157  64.8439 < 2.2e-16 ***
## jadud_hw_03_c  -37.4073     5.2095  -7.1805 6.598e-12 ***
## jadud_hw_04_c   -4.0868     4.6930  -0.8708  0.38462
## jadud_hw_03_r   -2.8644    49.6745  -0.0577  0.95406
## jadud_hw_04_r  -12.5796     7.1076  -1.7699  0.07786 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.1684053
## Reduction in Dispersion Test: 13.82123 p-value: 0

# predict midterm1 with only compiler jadud measures
summary(rfit(Midterm1 ~ jadud_hw_03_c + jadud_hw_04_c, data = jadud_df, scores = bentscores3))

## Call:
## rfit.default(formula = Midterm1 ~ jadud_hw_03_c + jadud_hw_04_c,
##   data = jadud_df, scores = bentscores3)
##
## Coefficients:
##           Estimate Std. Error t.value    p.value
## (Intercept)   97.7457     1.3872  70.4604 < 2.2e-16 ***
## jadud_hw_03_c  -39.4112     5.2492  -7.5081 8.396e-13 ***
## jadud_hw_04_c   -2.8046     4.7220  -0.5940  0.553
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.1563423
## Reduction in Dispersion Test: 25.4808 p-value: 0
```

## 3.2 use jadud to predict midterm 2 grades

```
# predict midterm2 with both compiler and runtime jadud measures
summary(rfit(Midterm2 ~ jadud_hw_03_c + jadud_hw_04_c + jadud_hw_05_c + jadud_hw_06_c + jadud_hw_07_c +

## Call:
## rfit.default(formula = Midterm2 ~ jadud_hw_03_c + jadud_hw_04_c +
##   jadud_hw_05_c + jadud_hw_06_c + jadud_hw_07_c + jadud_hw_08_c +
##   jadud_hw_03_r + jadud_hw_04_r + jadud_hw_05_r + jadud_hw_06_r +
##   jadud_hw_07_r + jadud_hw_08_r, data = jadud_df, scores = bentscores3)
##
## Coefficients:
##           Estimate Std. Error t.value    p.value
```

```
## (Intercept)    100.43168      1.82307 55.0892 < 2.2e-16 ***
## jadud_hw_03_c -20.08757      5.57887 -3.6007 0.0003801 ***
## jadud_hw_04_c   0.23414      4.70847  0.0497 0.9603784
## jadud_hw_05_c  -4.77676      8.27621 -0.5772 0.5643260
## jadud_hw_06_c -30.33021     12.85574 -2.3593 0.0190506 *
## jadud_hw_07_c  -5.12848      6.43365 -0.7971 0.4261001
## jadud_hw_08_c  -4.53404      8.11877 -0.5585 0.5770083
## jadud_hw_03_r   12.32617     47.04379  0.2620 0.7935175
## jadud_hw_04_r  -8.93693      6.83651 -1.3072 0.1922872
## jadud_hw_05_r -16.03634     12.26104 -1.3079 0.1920591
## jadud_hw_06_r -33.71706     15.93072 -2.1165 0.0352542 *
## jadud_hw_07_r  -4.65656      7.09114 -0.6567 0.5119720
## jadud_hw_08_r -23.32749      6.09196 -3.8292 0.0001612 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.2021562
## Reduction in Dispersion Test: 5.48986 p-value: 0
# predict midterm2 with only compiler jadud measures
summary(rfit(Midterm2 ~ jadud_hw_03_c + jadud_hw_04_c + jadud_hw_05_c + jadud_hw_06_c + jadud_hw_07_c +
## Call:
## rfit.default(formula = Midterm2 ~ jadud_hw_03_c + jadud_hw_04_c +
##      jadud_hw_05_c + jadud_hw_06_c + jadud_hw_07_c + jadud_hw_08_c,
##      data = jadud_df, scores = bentscores3)
##
## Coefficients:
##              Estimate Std. Error t.value    p.value
## (Intercept)   95.3153     1.2322 77.3507 < 2.2e-16 ***
## jadud_hw_03_c -23.8215     5.7930 -4.1121 5.229e-05 ***
## jadud_hw_04_c   2.5879     4.8122  0.5378  0.59117
## jadud_hw_05_c  -9.0741     8.5902 -1.0563  0.29177
## jadud_hw_06_c -30.4867    13.3090 -2.2907  0.02276 *
## jadud_hw_07_c  -3.4511     6.7417 -0.5119  0.60915
## jadud_hw_08_c  -3.7420     8.5242 -0.4390  0.66103
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.1220283
## Reduction in Dispersion Test: 6.16184 p-value: 0
```

## HW grades

use HW grades to predict midterm 1

```
summary(rfit(Midterm1 ~ HW3 + HW4, data = grade, scores = bentscores3))

## Call:
## rfit.default(formula = Midterm1 ~ HW3 + HW4, data = grade, scores = bentscores3)
##
## Coefficients:
##              Estimate Std. Error t.value    p.value
## (Intercept)  48.723818   6.345296  7.6787 2.933e-13 ***
```

```
## HW3          0.436165    0.043363 10.0584 < 2.2e-16 ***
## HW4          0.026712    0.079818  0.3347    0.7381
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.178964
## Reduction in Dispersion Test: 29.53539 p-value: 0
```

## use HW grades to predict midterm 2

```
## Call:
## rfit.default(formula = Midterm2 ~ HW3 + HW4 + HW5 + HW6 + HW7 +
##             HW8, data = grade, scores = bentscores3)
##
## Coefficients:
##              Estimate Std. Error t.value    p.value
## (Intercept) 75.982253   6.742895 11.2685 < 2.2e-16 ***
## HW3          0.334412   0.055084  6.0710 4.348e-09 ***
## HW4         -0.024196   0.094596 -0.2558 0.7983117
## HW5         -0.497066   0.097770 -5.0840 6.961e-07 ***
## HW6          0.165118   0.048183  3.4269 0.0007069 ***
## HW7          0.137427   0.051657  2.6604 0.0082773 **
## HW8          0.074503   0.045673  1.6312 0.1040201
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Multiple R-squared (Robust): 0.2494467
## Reduction in Dispersion Test: 14.78959 p-value: 0
```