Andrews Script plus a Genetic Program Model

Python notebook using data from LANL Earthquake Prediction · 870 views

General information

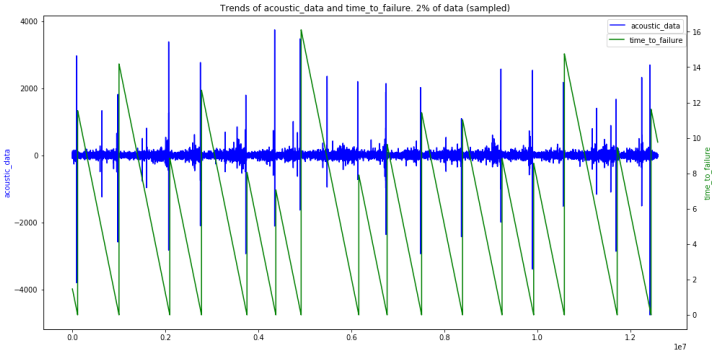
Just Andrew's Data Munging plus a quick Genetic Programming Model

Code

In [2]:
```
%%time
train = pd.read_csv('../input/train.csv', dtype={'acoustic_
data': np.int16, 'time_to_failure': np.float32})
```

```
CPU times: user 2min 24s, sys: 17.9 s, total: 2min 42s
Wall time: 2min 43s
```

Code



Code

In [5]:
```
print(f'{X_tr.shape[0]} samples in new train data and {X_t
r.shape[1]} columns.')
```

```
4194 samples in new train data and 138 columns.
```

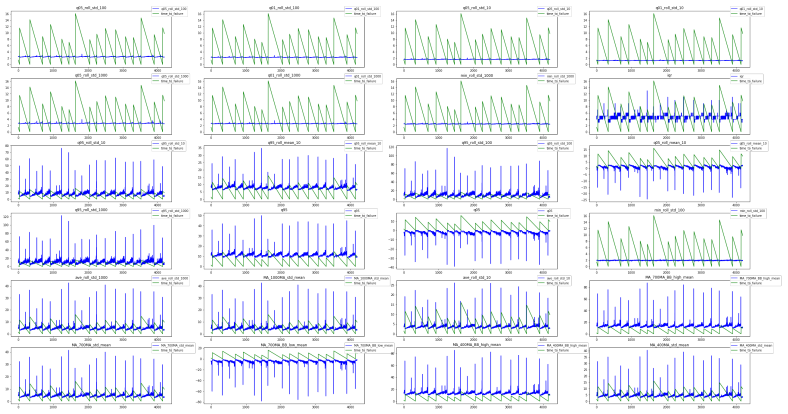
In [6]:
```
np.abs(X_tr.corrwith(y_tr['time_to_failure'])).sort_values(
ascending=False).head(12)
```

Out[6]:
```
q05_roll_std_100     0.648824447085559
q01_roll_std_100     0.644797095592989
q05_roll_std_10      0.643123220257531
q01_roll_std_10      0.635263713488480
q05_roll_std_1000    0.614482273757696
q01_roll_std_1000    0.603691188925208
min_roll_std_1000    0.544294240126950
iqr                  0.506994140262580
q95_roll_std_10      0.439754146578064
q95_roll_mean_10     0.439483461929961
q95_roll_std_100     0.433791697887343
q05_roll_mean_10     0.428967215266466
dtype: float64
```

In [7]:

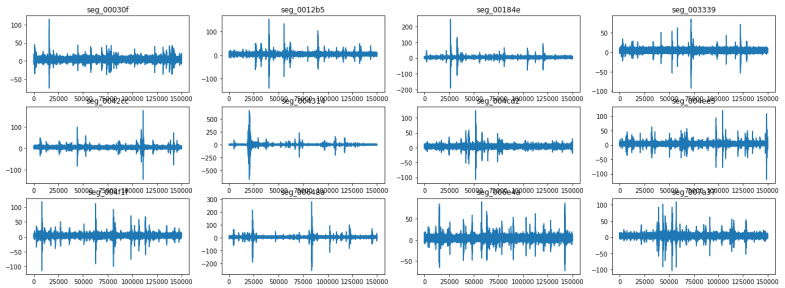
In [7]:
```
plt.figure(figsize=(44, 24))
cols = list(np.abs(X_tr.corrwith(y_tr['time_to_failure'])).
sort_values(ascending=False).head(24).index)
for i, col in enumerate(cols):
    plt.subplot(6, 4, i + 1)
    plt.plot(X_tr[col], color='blue')
    plt.title(col)
    ax1.set_ylabel(col, color='b')

    ax2 = ax1.twinx()
    plt.plot(y_tr, color='g')
    ax2.set_ylabel('time_to_failure', color='g')
    plt.legend([col, 'time_to_failure'], loc=(0.875, 0.9))
    plt.grid(False)
```



In [8]:
```
scaler = StandardScaler()
scaler.fit(X_tr)
X_train_scaled = pd.DataFrame(scaler.transform(X_tr), colum
ns=X_tr.columns)
```

Code



In [10]:
```
X_train_scaled.head()
```

Out[10]:

	mean	std	max	min
0	1.424140499795022	-0.170213582943171	-0.218193508692627	0.1932181852(
1	0.805716032556442	0.004734017014316	0.063936007992510	-0.0180372712
2	1.511155259373638	0.049252196732055	-0.086288799593083	0.1630388342(
3	1.494934375107487	0.043949637951170	0.122560323147863	-0.1877961201

4	1.520242078970568	0.088495070341074	-0.067968701107035	0.0875904569

In [11]:

```
def GPI(data):
    return (5.612045 +
            0.0399999991*np.tanh((((((((((((data["q05_roll
_mean_10"]) - (((data["q95"]) + ((((data["iqr"]) + (((data[
"q01_roll_std_100"]) + (((((data["q95_roll_std_10"]) + (dat
a["q05_roll_std_1000"]))) + (((0.3183098733) * 2.0)))))))/
2.0))))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((10.64747142791748047))
* ((((10.64747524261474609)) * (((data["q05"]) - ((((data[
"q95"]) + (((data["q05_roll_std_100"]) + (((((((((data["iq
r"]) + (((data["q05_roll_std_100"]) * 2.0)))/2.0)) + ((1.0
)))) + (data["q95_roll_mean_10"]))/2.0)))))/2.0)))))))) +
            0.0399999991*np.tanh((((11.80052089691162109))
* ((((11.80052089691162109)) * (((((data["q99"]) + (data["q
05"])))) - (((data["q05_roll_std_1000"]) + (((((data["iqr"])
 + (((((((data["ave_roll_std_100"]) + (((data["q05_roll_std
_10"]) * 2.0)))) * 2.0)) * 2.0)))) * 2.0)))))))))) +
            0.0399999991*np.tanh((((((((((data["q05"]) -
(((1.0) + (((data["iqr"]) - ((((((((((data["q05"]) - (data
["q05_roll_std_100"]))) - (data["q95"]))) * 2.0)) * 2.0)) +
 (data["q01_roll_mean_100"])))))))) * 2.0)) * 2.0)) * 2.0
)) * 2.0)) +
            0.0399999991*np.tanh((((10.65805721282958984))
* (((((((9.97931766510009766)) * (((((((data["q05_roll_mea
n_10"]) - (((((data["q95"]) + (((data["q05_roll_std_10"]) *
 2.0)))) * 2.0)))) - (data["iqr"]))) - (data["q01_roll_std_
100"])))))) - (data["iqr"]))) - (data["q01_roll_std_100"
])))))) +
            0.0399999991*np.tanh((((11.62679195404052734))
* (((data["q05_roll_mean_10"]) + ((((11.62679195404052734))
 * (((data["iqr"]) + (((((((((data["q05"]) - (((data["q05_r
oll_std_10"]) * 2.0)))) * 2.0)) - (((data["iqr"]) + (data[
"abs_std"])))))) * 2.0)))))))))) +
            0.0399999991*np.tanh(((((data["av_change_abs_ro
ll_std_1000"]) * 2.0)) - ((((11.25893974304199219)) * ((((1
1.25893974304199219)) * ((((11.25893974304199219)) * (((dat
a["q05_roll_std_100"]) + (((data["q05_roll_std_1000"]) +
(((((data["MA_700MA_BB_high_mean"]) + (((((data["q05_roll_s
td_10"]) * 2.0)) * 2.0)))) * 2.0)))))))))))))) +
            0.0399999991*np.tanh(((((((((-1.0) - (((((((dat
a["iqr"]) + (((((data["q05_roll_std_10"]) + (((data["q05_ro
ll_std_1000"]) + (data["std_roll_std_100"])))))) * 2.0)))) +
 (data["q05_roll_std_10"]))) * (((data["av_change_abs_roll_
mean_10"]) + ((14.63721561431884766)))))))) * 2.0)) * 2.0))
 * 2.0)) +
            0.0399999991*np.tanh((((((((((((((((((((data[
"q05"]) - (((data["q05_roll_std_10"]) * 2.0)))) * 2.0)) *
2.0)) * 2.0)) - (((data["iqr"]) + (((data["q05_roll_std_10
0"]) + (data["min_roll_std_100"])))))))) * 2.0)) * 2.0)) *
2.0)) + (data["iqr"]))) * 2.0)) +
            0.0399999991*np.tanh((((-1.0*((((((((((((((da
ta["iqr"]) + (((((((((data["q05_roll_std_10"]) * 2.0)) +
(((data["q01_roll_std_10"]) * 2.0)))) * 2.0)) + (data["q05_
roll_std_10"])))))) * 2.0)) * 2.0)) * 2.0)) + (data["std_fir
st_10000"]))) * 2.0)) * 2.0))))) * 2.0)) +
```

```
            0.0399999991*np.tanh(((((((((data["min_last_500
00"]) - ((((((((((((((((data["q95"]) + (((data["q05_roll_s
td_10"]) * ((7.0)))))) * 2.0)) - (data["min_last_50000"])))
 * 2.0)) - (data["min_first_10000"]))) * 2.0)) * 2.0)) * 2.
0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((data["min_roll_std_100"
]) - ((((13.68760871887207031)) * (((((((data["q05_roll_std
_1000"]) + ((((((data["min_roll_std_100"]) + ((((data["q95_
roll_mean_10"]) + (data["av_change_rate_roll_mean_1000"]))/
2.0)))/2.0)) + (((((((data["q95_roll_mean_10"]) + (0.318309
8733))) * 2.0)) * 2.0)))))) * 2.0)) * 2.0)))))) +
            0.0399999991*np.tanh((((((((((((((((data["q01_
roll_std_100"]) - (((((((((data["q05_roll_std_1000"]) + (da
ta["ave_roll_std_10"]))) + (((data["iqr"]) - (data["q05_roll
_mean_10"])))))) * 2.0)) * ((7.0)))))) * 2.0)) * 2.0)) * 2.
0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((9.0)) * ((((9.179042816
16210938)) * ((((9.17904281616210938)) * ((((9.0)) * (((dat
a["MA_700MA_BB_low_mean"]) - (((data["q05_roll_std_10"]) +
(np.tanh((((((data["q95"]) * 2.0)) + (np.tanh(((9.179039955
13916016)))))))))))))))))) +
            0.0399999991*np.tanh((((8.0)) * ((((((((((-1.0*
((((data["min_roll_std_100"]) + (((data["av_change_abs_roll
_std_10"]) + (((data["q05_roll_std_1000"]) + ((((((6.265866
75643920898)) * (data["q05_roll_std_100"]))) * 2.0
)))))))))) * 2.0)) - (data["max_roll_std_100"]))) * 2.0))
- (data["av_change_abs_roll_std_10"])))))) +
            0.0399999991*np.tanh(((((((data["av_change_rate
_roll_mean_10"]) + ((9.27850341796875000)))) - ((((9.278503
41796875000)) * ((((((((((((((data["q05_roll_std_100"]) -
(((data["q05_roll_mean_10"]) - (data["iqr"])))))) * 2.0)) *
2.0)) * 2.0)) * 2.0)) * 2.0)) + (data["q05_roll_std_100"
])))))))) * 2.0)) +
            0.0399999991*np.tanh(((((((((data["mean_change_
rate_last_50000"]) + ((((((((((-1.0*((1.0)))) -
((((((((((((data["q95_roll_mean_10"]) + (data["avg_first_50
000"]))/2.0)) / 2.0)) + (data["q05_roll_std_100"]))) * 2.0
)) * 2.0)))) * 2.0)) * 2.0)) * 2.0)))) * 2.0)) * 2.0)) * 2.
0)) +
            0.0399999991*np.tanh((((11.44563198089599609))
* ((((11.44563579559326172)) * (((data["min_last_50000"]) -
 ((((((((((data["q05_roll_std_10"]) * 2.0)) - (data["q05_r
oll_mean_10"]))) * 2.0)) * 2.0)) + (((((((data["q05_roll_st
d_10"]) + (data["q05_roll_mean_10"]))/2.0)) + (data["q05_ro
ll_mean_10"]))/2.0)))))))))) +
            0.0399999991*np.tanh((((((((((((data["q05_roll
_std_100"]) + (data["q05"]))) - (((((data["q95"]) + (((data
["Moving_average_6000_mean"]) + (((((((data["q05_roll_std_1
00"]) + (data["iqr"]))) * 2.0)) - (data["q05"])))))))) * 2.0
)))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((9.0)) * ((((9.0)) *
((((9.0)) * ((((((8.0)) * (((data["q05_roll_mean_10"]) +
(((data["exp_Moving_average_300_mean"]) - ((((4.99870872497
558594)) * (((data["q05_roll_std_10"]) * 2.0)))))))))) -
(((data["q05_roll_mean_10"]) * 2.0)))))))))) +
            0.0399999991*np.tanh((((8.78560256958007812)) *
 ((((8.78560256958007812)) * (((np.tanh((np.tanh(((((((((8.
78560256958007812)) * (((((-2.0) * (data["q95_roll_mean_10"
]))) - ((((data["q05_roll_std_1000"]) + (data["iqr"]))/2.0
)))))) * 2.0)) * 2.0)))))) - (data["q05_roll_std_1000"
])))))))) +
            0.0399999991*np.tanh((((((((((((((data["std_ro
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            0.0399999991*np.tanh((((((((((np.tanh((((((((((data["std_l
ll_mean_1000"]) - (data["std_last_10000"]))) - ((((14.58706
188201904297)) * ((((data["q05_roll_std_100"]) + (((data["q
01_roll_mean_100"]) * ((((data["Moving_average_6000_mean"])
 + (data["q05_roll_mean_10"]))/2.0))))))/2.0)))))) - (data[
"abs_max_roll_mean_100"]))) * 2.0)) * 2.0)) * 2.0)) * 2.0))
 +
            0.0399999991*np.tanh(((((((((data["q95_roll_mea
n_10"]) - (((((((((data["iqr"]) + (((data["q01_roll_std_10
0"]) - (np.tanh(((((-1.0*((data["iqr"])))) - (data["Moving_
average_6000_mean"])))))))))) + (((data["q95"]) * 2.0)))) *
2.0)) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((data["max_to_min"]) -
(((data["avg_first_50000"]) + ((((9.91363239288330078)) *
((((((9.91363239288330078)) * (((((data["q05_roll_std_10"])
 + (np.tanh((np.tanh(((((0.44413101673126221)) + ((((data[
"q95"]) + (data["avg_first_50000"]))/2.0)))))))))) * 2.0
)))) * 2.0)))))))) +
            0.0399999991*np.tanh((((((((((((((((((data["Mo
ving_average_1500_mean"]) - (((data["max_roll_mean_100"]) +
 (((data["q05_roll_std_10"]) * (((((10.65131282806396484))
+ ((7.0)))/2.0)))))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.
0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((((((data["q05_roll_std
_10"]) * 2.0)) * 2.0)) * (data["q05_roll_mean_100"]))) -
((((((((((((((data["std_roll_std_10"]) + (data["q05_roll_m
ean_100"]))) + (((((data["q05_roll_std_10"]) * 2.0)) * 2.0
)))) * 2.0)) * 2.0)) * 2.0)) + (data["abs_q05"]))) * 2.0
)))) +
            0.0399999991*np.tanh(((((((((data["q05_roll_std
_100"]) - (((((np.tanh((data["q95_roll_mean_1000"]))) + (((
data["q01_roll_std_1000"]) + (((((((data["q05_roll_std_10"
]) + (((((data["q05_roll_std_100"]) * 2.0)) * 2.0)))) * 2.0
)) + ((4.0)))))))) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((-3.0) * (((data["av_ch
ange_rate_roll_std_100"]) + (((((((((data["sum"]) + (((((da
ta["q05_roll_mean_100"]) + (((((((data["q95"]) + (data["q05
_roll_std_100"]))) + (data["q05_roll_std_100"]))) * 2.0))))
 * 2.0)))) * 2.0)) * 2.0)) * 2.0))))) * 2.0)) +
            0.0399999991*np.tanh((((((((((((((((-1.0*
(((((((((data["q05_roll_std_1000"]) - ((((np.tanh((data["q01
_roll_mean_100"]))) + ((-1.0*((((data["q95"]) * 2.0))))))/
2.0)))) * 2.0)) * 2.0))))) - (3.0))) * 2.0)) * 2.0)) * 2.0
)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((-1.0*((((((((((((((((((da
ta["q05_roll_std_100"]) * 2.0)) + ((((data["Moving_average_
3000_mean"]) + ((((data["abs_max_roll_std_1000"]) + ((((dat
a["q01_roll_mean_1000"]) + (data["abs_q05"]))/2.0)))/2.0)))
/2.0)))) + (data["q95"]))) + (data["std_roll_std_100"]))) *
 2.0)) * 2.0)) * 2.0)) * 2.0))))) +
            0.0399999991*np.tanh((((((((((-2.0) - (data["q
05_roll_std_100"]))) + (((((-2.0) * (((((data["q05_roll_std
_100"]) + (((data["q05_roll_std_10"]) - (((data["q95_roll_m
ean_1000"]) - (((data["q05_roll_std_10"]) * 2.0)))))))) *
2.0)))) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((-1.0*((((data["q0
5_roll_std_100"]) + (((((data["q95_roll_mean_1000"]) * (np.
tanh((np.tanh((((((np.tanh((data["q01_roll_std_10"]))) * 2.
0)) + (data["q05_roll_std_100"]))))))))) + (((data["q01_roll
_std_10"]) * 2.0)))))))))) * 2.0)) * 2.0)) * 2.0)) * 2.0))
+
            0.0399999991*np.tanh((((-1.0*((((((((((((np.tan
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h(((((((data["iqr"]) + ((((data["q05_roll_mean_1000"]) + (
data["q95_roll_mean_10"]))/2.0)))) * 2.0)) * 2.0)))) + (((d
ata["q05_roll_std_1000"]) + (data["q95"])))))) * 2.0)) * 2.0
)) + (data["q95"]))) * 2.0))))) * 2.0)) +
            0.0399999991*np.tanh((((((-1.0*(((((((4.0)) -
(((((data["q05"]) - (((((data["q05_roll_std_100"]) * 2.0))
* 2.0)))) * 2.0)))) * 2.0))))) - (((((data["avg_last_10000"
]) * 2.0)) + (((((data["avg_last_10000"]) * (data["q05_roll
_mean_100"]))) * 2.0)))))) * 2.0)) +
            0.0399999991*np.tanh((((((((((((-1.0*((((data
["q05_roll_std_1000"]) + (((((((data["Moving_average_6000_
mean"]) + (data["q01_roll_std_10"]))/2.0)) + (data["q95_rol
l_mean_10"]))) + (data["q95_roll_mean_10"])))))))) * 2.0))
* 2.0)) - ((((data["abs_q05"]) + (data["q05_roll_std_1000"
]))/2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((-1.0*((((((((((((data
["q01_roll_std_100"]) + (((data["MA_1000MA_std_mean"]) +
(((((data["q05_roll_std_1000"]) + (0.3183098733))) * 2.0
))))))) - (data["Moving_average_3000_mean"]))) * 2.0)) + (da
ta["iqr"]))) * 2.0)) + (data["MA_1000MA_std_mean"])))))) *
2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((((data["abs_q95"
]) - (((data["abs_max_roll_std_10"]) - (((((data["q05_roll_
std_100"]) + (((data["q95"]) + (((data["ave10"]) / 2.0
))))))) * (((data["q05_roll_std_100"]) - ((10.0)))))))))) *
2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((12.41961765289306641
)) * (data["classic_sta_lta1_mean"]))) - ((((12.41961383819
580078)) * ((((12.41961765289306641)) * ((((12.419617652893
06641)) * ((((((np.tanh((data["q95_roll_std_10"]))) + (data
["q01_roll_std_100"]))/2.0)) + (((data["q05_roll_std_1000"
]) - (np.tanh((-2.0))))))))))))))) +
            0.0399999991*np.tanh((((-1.0*(((((((((data["std_
roll_std_1000"]) + (((((3.0) + (data["Moving_average_700_me
an"]))) * (((np.tanh((((data["q05_roll_std_100"]) + (((data
["Moving_average_6000_mean"]) + (np.tanh((((data["q05_roll_
std_1000"]) * 2.0)))))))))) * 2.0)))))) * 2.0)) * 2.0)))))
* 2.0)) +
            0.0399999991*np.tanh(((((((((data["iqr"]) -
(((((((np.tanh((((((data["std"]) * 2.0)) + (((data["q05_rol
l_std_100"]) * 2.0)))))) * (data["sum"]))) + (((((data["MA_
700MA_BB_high_mean"]) + (data["q05_roll_std_100"]))) * 2.0
)))) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((((((data["min_roll_std
_100"]) + (((((((((data["med"]) - (data["min_roll_std_100"
]))) - (((1.0) - (((((data["exp_Moving_average_30000_mean"
]) - (((((data["q05_roll_std_10"]) * 2.0)) * 2.0)))) * 2.0
)))))) * 2.0)) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((((((data["q05_roll_std
_100"]) * 2.0)) + (((data["q05_roll_std_100"]) + ((((-1.0*
((((data["q05_roll_std_100"]) * (data["q05_roll_std_100"
]))))))) * ((((13.66018199920654297)) * (((((data["q05_roll_
std_100"]) + (np.tanh((data["abs_q05"])))))) * 2.0)))))))))
 * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((data["q05_roll_std_100"
]) - (((((((data["q05_roll_std_100"]) + (data["q05_roll_std
_10"]))) + (data["Moving_average_3000_mean"]))) *
((((((((((3.0) + (data["q05_roll_std_10"]))) * (((data["q0
5_roll_std_100"]) + (data["Moving_average_1500_mean"])))))
+ ((8.0)))) * 2.0)) * 2.0)))))) +
            0.0399999991*np.tanh((((((((((((-3.0) - (np.ta
nh((data["q05_roll_std_1000"])))))) + (((((data["Moving_aver
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nn((data["q05_roll_std_1000"])))) + (((((data["Moving_aver
age_6000_mean"]) - (((((data["q05_roll_std_1000"]) + (np.ta
nh((((data["q05_roll_std_1000"]) + (data["iqr"])))))))) * 2.
0)))) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((data["iqr"]) -
((((((((((data["q95"]) * 2.0)) + (np.tanh((((((data["q05_r
oll_std_10"]) + (data["q05_roll_std_1000"]))) + (((data["q0
5_roll_std_10"]) - (((data["exp_Moving_average_3000_mean"])
 * (data["exp_Moving_average_300_mean"])))))))))) * 2.0))
* 2.0)) * 2.0)))) * 2.0)) +
            0.0399999991*np.tanh((((((((((((data["abs_q05"
]) - (((((data["q05_roll_std_100"]) * 2.0)) + (data["mean_c
hange_rate_last_50000"])))))) + (((((((-2.0) - (((((data["q0
5_roll_std_100"]) * 2.0)) + (data["q05_roll_std_100"])))))
* 2.0)) * 2.0)))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((data["Moving_average_300
0_mean"]) - (((((3.1415927410) + (data["ave_roll_mean_10"
])))) * ((((((14.16982841491699219)) * (((((((data["ave_roll
_mean_10"]) + (((data["q95"]) * 2.0)))) - (np.tanh((((data[
"Moving_average_3000_mean"]) - (data["q05_roll_std_100"
])))))))) * 2.0)))) * 2.0))))))) +
            0.0399999991*np.tanh(((((((-3.0) + (((((-3.0) +
 ((((((((((data["exp_Moving_average_30000_mean"]) - (((((dat
a["q05_roll_std_100"]) * 2.0)) + (data["iqr"])))))) * 2.0))
- (data["q01_roll_std_1000"]))) * 2.0)))) * 2.0)))) - (data
["exp_Moving_average_30000_mean"]))) * 2.0)) +
            0.0399999991*np.tanh(((((((10.0)) * (((data["M
A_700MA_BB_low_mean"]) - (((((((data["q05_roll_std_10"]) +
(data["abs_q05"]))) + (((((((data["q05_roll_std_10"]) + (((
data["q05_roll_std_10"]) + (data["Moving_average_1500_mean"
])))))) * 2.0)) * 2.0)))) * 2.0)))))) + (data["abs_q05"])))
* 2.0)) +
            0.0399999991*np.tanh((((13.64070606231689453))
* (((data["q05"]) + ((((((((((((13.64070606231689453)) *
(((np.tanh((data["q99_roll_mean_1000"]))) - (data["q05_roll
_std_100"])))))) + (data["q95_roll_mean_100"]))/2.0)) - (dat
a["iqr"]))) + (data["q95_roll_mean_100"]))/2.0)) - (data["i
qr"])))))))) +
            0.0399999991*np.tanh(((((((((data["classic_sta_
lta1_mean"]) + ((((((((((data["ave_roll_mean_100"]) * (dat
a["exp_Moving_average_3000_mean"]))) + (((data["q95_roll_std
_100"]) - (((((data["q05_roll_std_10"]) + (((data["q95"])
* 2.0)))) * 2.0)))))) * 2.0)) * 2.0)) * 2.0)))) * 2.0)) *
2.0)) * 2.0)) +
            0.0399999991*np.tanh((((11.20326423645019531))
* ((((((11.20326423645019531)) * ((((((11.20326423645019531
)) * (((((((data["q05"]) - (1.0))) - (np.tanh((data["q05_ro
ll_std_100"])))))) * 2.0)))) - (data["av_change_abs_roll_std
_100"])))))) - (((1.0) - (data["av_change_abs_roll_std_100"
])))))))) +
            0.0399999991*np.tanh(((((((((data["q05_roll_mea
n_1000"]) + (data["q05_roll_mean_1000"]))) * (data["exp_Mov
ing_average_30000_mean"]))) - ((((((((((-1.0) + (((((data[
"q05_roll_mean_1000"]) + (data["q05_roll_std_10"]))) + (((d
ata["q05_roll_std_10"]) * 2.0)))))/2.0)) + (data["q05_roll_
std_100"]))) * 2.0)) * 2.0)))) * 2.0)) +
            0.0399999991*np.tanh((((((((((((data["sum"]) -
 (((((((((data["q01_roll_std_1000"]) * 2.0)) + (((((data["q
05_roll_std_10"]) + (((data["q01_roll_std_100"]) - (-2.0
)))))) * 2.0)))) * 2.0)) + (data["q01_roll_std_100"])))))) *
2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((((((data["min_la
```

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st_50000"]) - (((((data["q95"]) - (((((((data["Moving_avera
ge_3000_mean"]) * (data["Moving_average_3000_mean"]))) -
(((data["q05_roll_std_10"]) * 2.0)))) * 2.0)))) + (data["q9
5_roll_mean_10"])))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0
)) * 2.0)) +
            0.0399999991*np.tanh(((((((data["q01_roll_std_1
000"]) + (((((((data["abs_q05"]) - (((((((np.tanh((((((3.0)
 + (((((data["q05_roll_std_1000"]) * 2.0)) * 2.0)))) * 2.0
))))) * 2.0)) - (data["q05"]))) * 2.0)))) * 2.0)) * 2.0))))
* 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((((((-3.0) * (((d
ata["q05_roll_std_100"]) + (((data["q05_roll_mean_100"]) +
(data["q05_roll_std_100"])))))))) - (((data["abs_max"]) * 2.
0)))) - (((data["abs_q05"]) * (data["q95_roll_std_1000"
])))))) * 2.0)) - (-3.0))) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((np.tanh((((((dat
a["ave_roll_mean_1000"]) - (((((data["q01_roll_std_10"]) -
(((((data["abs_q05"]) * (((data["q95_roll_mean_10"]) - (dat
a["iqr"])))))) * 2.0)))) * 2.0)))) * 2.0)))) * 2.0)) - (data
["q01_roll_std_10"]))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((6.0)) * (((((((np.tan
h((((((data["max_to_min"]) + (data["mean_change_rate_first_
10000"])))) + (data["q01_roll_std_1000"])))))) + ((-1.0*
(((((((((data["q05_roll_std_100"]) - (np.tanh((data["iqr"
])))))) * 2.0)) * 2.0)))))))) * 2.0)) * 2.0)))) * 2.0)) +
            0.0399999991*np.tanh(((((((((-3.0) * (((data["a
bs_q05"]) + (((((data["q05_roll_std_10"]) * 2.0)) - (np.tan
h(((((((((data["q05_roll_std_100"]) + (((data["abs_q05"]) +
(((data["q05_roll_std_10"]) * 2.0)))))) * 2.0)) * 2.0
)))))))))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((((data["ave_roll
_mean_100"]) - (((data["q05_roll_std_10"]) + (((((data["q01
_roll_std_10"]) + (((((((data["q05_roll_std_1000"]) - (np.t
anh((((data["q05_roll_std_1000"]) * 2.0)))))) * 2.0)) * 2.0
)))) * 2.0)))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((((data["exp_Moving_ave
rage_30000_mean"]) - (((((np.tanh((((np.tanh((((data["max_r
oll_std_1000"]) + (np.tanh((((((((((data["q95_roll_mean_10
0"]) + (data["q05_roll_std_100"]))) * 2.0)) * 2.0)) - (data
["classic_sta_lta3_mean"])))))))) * 2.0)))) * 2.0)) * 2.0
)))) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((8.0)) * (((((((7.0))
 * ((((((8.0)) * (((data["q05"]) - (((((3.0) / 2.0)) + (dat
a["q05_roll_std_100"])))))))) + (data["max_roll_std_10"
])))))) + (data["q05"]))) + (data["mean_change_abs"])))))) *
2.0)) +
            0.0399999991*np.tanh((((((((((data["min_last_5
0000"]) - (data["q05_roll_std_1000"])))) - ((((((((((data["q
05_roll_std_1000"]) + (data["abs_q05"]))/2.0)) - (((((data[
"exp_Moving_average_3000_mean"]) * (data["exp_Moving_averag
e_3000_mean"])))) - (((data["iqr"]) * 2.0)))))) * 2.0)) * 2.
0)))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((11.31315994262695312))
* (((((((np.tanh((((np.tanh(((((11.31315994262695312)) *
(((data["q95_roll_mean_1000"]) + ((((11.31315994262695312))
 * (data["q05_roll_std_10"])))))))))) - (data["q05_roll_std_
100"])))))) * 2.0)) * 2.0)) - (((data["q05_roll_std_10"]) +
((0.67717570066452026)))))))) +
            0.0399999991*np.tanh((((((((((((((((data["q05"
]) + (((data["MA_400MA_std_mean"]) * (((((data["exp_Moving_
average_3000_mean"]) - (((data["q01_roll_std_10"]) * 2.0
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)))) * (((data["q01_roll_std_10"]) + (data["exp_Moving_aver
age_3000_mean"])))))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) *
2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((-1.0*((((((((((((data[
"q05_roll_std_1000"]) + (np.tanh((((data["Moving_average_70
0_mean"]) - (((data["q01_roll_std_10"]) * ((-1.0*(((((4.222
44548797607422)) * (((data["ave10"]) + (data["q05_roll_std_
10"]))))))))))))))) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0
)))))) +
            0.0399999991*np.tanh(((data["min_roll_std_10"])
 - ((((((((((((((data["q01_roll_std_10"]) + (((data["iq
r"]) - (data["q95_roll_mean_1000"])))))) * 2.0)) + (data["iq
r"]))) * 2.0)) * 2.0)) + (data["q01_roll_std_10"]))) + (np.
tanh((data["avg_last_50000"])))))) * 2.0)))) +
            0.0399999991*np.tanh(((data["min_roll_mean_100
0"]) - ((((12.11624908447265625)) * (((((((data["q05_roll_s
td_100"]) * (data["abs_q05"]))) + ((((12.11624908447265625
)) * (((data["ave_roll_mean_100"]) + (((((data["q05_roll_st
d_100"]) - (data["min_roll_mean_1000"]))) - (data["min_roll
_mean_1000"]))))))))) * 2.0)))))) +
            0.0399999991*np.tanh(((((((data["skew"]) -
(((((((((data["q01_roll_std_100"]) - (-1.0))) * 2.0)) * 2.0
)) + ((((((((((((data["q05_roll_std_1000"]) - (-1.0))) *
2.0)) * 2.0)) * 2.0)) * 2.0)) - (data["abs_q05"])))))))) *
2.0)) * 2.0)) +
            0.0399999991*np.tanh(((((((((data["min"]) - (np
.tanh((np.tanh((((((((((data["q05_roll_std_100"]) - (0.3183
098733))) * 2.0)) - (((data["Moving_average_6000_mean"]) *
(((data["ave_roll_mean_1000"]) + (((data["av_change_abs_rol
l_mean_10"]) / 2.0)))))))) * 2.0)))))))) * 2.0)) * 2.0)) *
2.0)) +
            0.0399999991*np.tanh(((((((data["q01_roll_std_1
0"]) * (data["q05_roll_std_100"]))) * (((((data["q95_roll_s
td_100"]) + ((((6.67154550552368164)) * (((((-1.0) - (data[
"q05_roll_std_100"]))) * 2.0)))))) * 2.0)))) - (((((data["a
v_change_abs_roll_mean_10"]) - (data["q95_roll_std_100"])))
 - (data["avg_last_10000"])))))) +
            0.0399999991*np.tanh((-1.0*(((((((((data["q01_ro
ll_std_10"]) - (data["mean_change_rate_first_10000"]))) +
(((data["av_change_abs_roll_mean_10"]) + (((data["q95_roll_
mean_10"]) - (((data["abs_q05"]) * ((-1.0*((((data["q01_rol
l_std_1000"]) + (data["q95_roll_mean_10"]))))))))))))) *
(((data["q01_roll_std_100"]) * (data["q01_roll_std_100"
]))))))))) +
            0.0399999991*np.tanh((((((((((((data["mean"])
+ (data["q05_roll_std_100"]))) * 2.0)) * 2.0)) * 2.0)) * 2.
0)) * (((data["q01_roll_std_10"]) * ((((-1.0*((data["q95_ro
ll_mean_100"])))) - ((((data["q01_roll_std_10"]) + (((((dat
a["q01_roll_std_10"]) * 2.0)) + (3.0))))/2.0)))))))) +
            0.0399999991*np.tanh(((((((((data["avg_last_100
00"]) - (((data["q05_roll_std_10"]) - (((((data["abs_q05"])
 - ((((((((((data["q05_roll_std_10"]) - (np.tanh((((data[
"q05_roll_std_10"]) * 2.0)))))) * 2.0)) * 2.0)) * 2.0)) *
2.0)))) * 2.0)))))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((((((((-1.0*((((((((((da
ta["abs_q05"]) + (data["q95"]))) - (np.tanh((np.tanh((data[
"skew"])))))))) * 2.0)) * 2.0))))) - (((data["av_change_abs_
roll_mean_10"]) + (((data["abs_q05"]) + (data["abs_q05"
])))))))) * 2.0)) * 2.0)) * 2.0)) +
            0.0399999991*np.tanh((((14.75798225402832031))
* (((((data["q05_roll_mean_10"]) - ((2.0)))) - ((((14.75798
606872558594)) * (((data["q05_roll_std_10"]) - (np.tanh
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(((((((((data["q05_roll_std_10"]) * 2.0)) * 2.0)) - (((((data
a["q05_roll_std_10"]) * 2.0)) - (data["abs_q05"
]))))))))))))))) +
            0.0399999991*np.tanh((((-1.0*((((data["mean_cha
nge_rate"]) + (((data["q05_roll_std_1000"]) + (((data["q05_
roll_std_100"]) * ((((((data["q05_roll_std_100"]) * (((data
["exp_Moving_average_30000_mean"]) + (data["q05_roll_std_1
0"])))))) + (((data["q05_roll_std_1000"]) - (((data["exp_Mov
ing_average_300_mean"]) * (data["exp_Moving_average_300_mea
n"])))))/2.0)))))))))) * 2.0)) +
            0.0399999991*np.tanh(((((((data["mean_change_r
ate_first_10000"]) + (data["q01_roll_std_10"]))/2.0)) - (da
ta["av_change_abs_roll_mean_10"])))) - (((data["av_change_ra
te_roll_mean_1000"]) + (((((((((data["q01_roll_std_10"]) -
(np.tanh((((data["q99_roll_mean_10"]) * ((((9.7770328521728
5156)) + (data["q01_roll_std_10"]))))))))) * 2.0)) * 2.0))
* 2.0))))))) +
            0.0399999991*np.tanh(((((((data["q05_roll_mean_
1000"]) * ((((data["exp_Moving_average_30000_mean"]) + (((d
ata["Moving_average_1500_mean"]) * (data["Moving_average_30
00_mean"])))))/2.0)))) - (((((np.tanh(((((((data["q95"]) *
2.0)) - (((data["exp_Moving_average_30000_mean"]) * (data[
"Moving_average_3000_mean"])))))) * 2.0)))) * 2.0)) * 2.0
))))) * 2.0)) +
            0.0399999991*np.tanh(((data["skew"]) - (((data[
"q95"]) + (((((((((data["q95"]) + (data["av_change_abs_roll
_mean_10"])))) + ((((((data["iqr"]) + (data["av_change_abs_r
oll_mean_100"])))) + (data["av_change_rate_roll_mean_100"]))
/2.0)))) - (((data["avg_first_10000"]) * (data["avg_first_1
0000"])))))) + (2.0)))))))) +
            0.0399999991*np.tanh(((data["mean_change_rate_f
irst_10000"]) + (((data["q01_roll_std_1000"]) + (((data["q0
1_roll_std_10"]) * (((((data["q05_roll_std_1000"]) + (((dat
a["q05_roll_std_1000"]) + (((data["abs_q05"]) * (((((((data
["std"]) * 2.0)) * 2.0)) * 2.0)))))))) * ((-1.0*((data["q05
_roll_std_100"])))))))))))) +
            0.0399999991*np.tanh(((((data["classic_sta_lta3
_mean"]) - (((((((data["av_change_abs_roll_mean_10"]) + (da
ta["q95_roll_mean_10"]))) + (data["av_change_abs_roll_std_1
00"])))) + (((np.tanh((data["max_to_min"])))) - (((((data["q0
5"]) - (((data["av_change_rate_roll_std_1000"]) * ((-1.0*((
data["max_to_min"])))))))) * 2.0)))))))) * 2.0)) +
            0.0399999991*np.tanh((((((data["q01_roll_std_1
0"]) * (((data["Moving_average_700_mean"]) + (data["Hilbert
_mean"])))))) + (np.tanh((((((data["q95_roll_std_10"]) * 2.0
)) * 2.0)))))) * ((-1.0*((((((((((data["q05_roll_std_100"])
 * 2.0)) - (data["avg_last_10000"]))) * 2.0)) - (data["q95_
roll_mean_1000"])))))))) +
            0.0399999991*np.tanh(((((data["skew"]) - ((((-
1.0*((data["av_change_rate_roll_std_10"])))) * (((data["ske
w"]) + (data["max_to_min"])))))))) - (((data["q05_roll_std_1
000"]) + (((((data["max_to_min"]) + (((((data["kurt"]) + (-
1.0))) * 2.0)))) * (data["abs_max_roll_std_100"])))))))) +
            0.0399999991*np.tanh((((((data["q05_roll_std_1
000"]) + (data["exp_Moving_average_3000_mean"]))) * ((-1.0*
((((((data["q01_roll_std_1000"]) * (data["q05_roll_std_10"
])))) + (((data["max"]) + (data["q01_roll_std_1000"
]))))))))))) * (((((((data["q05_roll_std_100"]) * 2.0)) * (d
ata["q01_roll_std_100"]))) - (data["q01_roll_std_1000"
])))))) +
            0.0399999991*np.tanh(((data["q95_roll_std_1000"
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]) + (((data["q01_roll_std_100"]) - (((((((data["q05_roll_s
td_1000"]) + (data["abs_q05"]))) * (data["q05_roll_std_100"
]))) * (((((data["q05_roll_std_10"]) + (data["q01_roll_std_
10"]))) * (((((data["q05_roll_std_100"]) * (data["q05_roll_
std_100"]))) + (data["avg_last_10000"])))))))))) +
            0.0399999991*np.tanh(((((((data["q05_roll_std_1
000"]) * (data["q95_roll_mean_10"]))) + (((((((data["q95"])
 * (data["q95"]))) * (data["q01_roll_std_10"]))) - (((data[
"exp_Moving_average_30000_mean"]) * (data["exp_Moving_avera
ge_30000_mean"])))))))) * ((((-1.0*((((data["q05_roll_std_10
00"]) * (data["q01_roll_std_10"])))))) * 2.0)))) +
            0.0399999991*np.tanh(((((((data["q05_roll_std_1
0"]) * 2.0)) * 2.0)) * ((-1.0*((((np.tanh((((data["skew"])
+ (((data["skew"]) + ((((data["max_to_min"]) + (data["av_ch
ange_rate_roll_mean_10"]))/2.0)))))))) + ((((data["q01_roll
_std_10"]) + (((data["q95"]) * (data["q95"])))))/2.0
)))))))) +
            0.0399999991*np.tanh(((data["min_last_10000"])
- ((((-1.0*((((data["kurt"]) - (data["std_first_10000"
])))))) - (((((((data["min"]) * (data["kurt"]))) * 2.0)) +
(((data["av_change_abs_roll_std_1000"]) * (((((data["av_cha
nge_abs_roll_mean_100"]) + (data["med"]))) + (data["med"
]))))))))))) +
            0.0399999991*np.tanh(((((((data["min"]) + (((da
ta["min"]) - (((((data["av_change_abs_roll_mean_10"]) - (((
data["av_change_abs_roll_std_1000"]) + (data["av_change_abs
_roll_std_10"])))))) + (((((data["avg_last_10000"]) + (data[
"av_change_abs_roll_std_10"]))) * (data["max_last_50000"
]))))))))) * 2.0)) - (np.tanh((data["min_roll_std_100"
])))))) +
            0.0399999991*np.tanh(((data["min_roll_std_1000"
]) - (((data["q01_roll_std_1000"]) * (((((data["q01_roll_st
d_10"]) * (((data["q95_roll_mean_100"]) + (np.tanh((data["q
05_roll_std_1000"])))))))) * (((((data["q05_roll_std_100"])
* (data["q05_roll_std_100"]))) + ((((data["q95_roll_mean_10
0"]) + (data["q01_roll_std_100"]))/2.0)))))))))) +
            0.0399921872*np.tanh(((((((data["q01_roll_mean_
100"]) * (((((((((data["ave_roll_std_10"]) * 2.0)) * 2.0))
* 2.0)) * 2.0)))) * 2.0)) - (((((data["q01_roll_std_10"]) *
 (data["q05_roll_std_1000"]))) * (((data["q05_roll_std_100
0"]) * (((data["q05_roll_std_1000"]) * (data["q05_roll_std_
1000"])))))))))) +
            0.0399999991*np.tanh(((((((data["q95_roll_std_1
00"]) + (((((data["q95_roll_std_10"]) * (data["avg_first_50
000"]))) - (((data["q05_roll_std_100"]) * (((data["q05_roll
_std_100"]) * (((data["q05_roll_std_100"]) * (((((data["q9
5"]) * (data["q95"]))) + (data["avg_first_50000"
]))))))))))))) * 2.0)) * 2.0)) +
            0.0399921872*np.tanh(((data["std_roll_mean_100
0"]) * (((((((((-1.0*((((data["med"]) + (((data["med"]) + (d
ata["std_roll_mean_1000"])))))))) - (((data["skew"]) - (((d
ata["q05_roll_std_1000"]) * (((((((data["min_last_10000"])
* 2.0)) * 2.0)) * 2.0)))))))) * 2.0)) * 2.0)))) +
            0.0399999991*np.tanh(((((((((data["min"]) * (da
ta["kurt"]))) * (data["kurt"]))) * (data["kurt"]))) + (((da
ta["kurt"]) - (np.tanh(((((((-1.0*((((((data["av_change_rat
e_roll_std_100"]) * (data["q95_roll_mean_1000"]))) - (data[
"Moving_average_6000_mean"])))))) * 2.0)) * 2.0)))))))) +
            0.0399999991*np.tanh((((((data["q95_roll_std_10
0"]) + ((((((data["classic_sta_lta4_mean"]) - (data["q05_ro
ll_std_1000"]))) + (data["abs_q05"]))/2.0)))/2.0)) + (((((
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1.0) - (((((data["q05_roll_std_100"]) - (data["mean_change_
rate_last_50000"]))) * (data["q05_roll_std_1000"])))) +
(((data["min_roll_mean_1000"]) - (data["mean_change_rate_la
st_50000"])))))) +
            0.0399999991*np.tanh(((data["q95_roll_std_1000"
]) - (((data["q05_roll_std_100"]) * (((data["q05_roll_std_1
00"]) * (((data["q05_roll_std_100"]) * (((((data["med"]) *
(data["q95_roll_std_1000"]))) + (((data["q05_roll_std_100"
]) * (((((data["q99_roll_mean_1000"]) * (data["q05_roll_std
_100"]))) + (data["q05_roll_std_100"]))))))))))))))) +
            0.0399843715*np.tanh(((((((data["skew"]) + (((d
ata["q01_roll_std_1000"]) * (((data["abs_q05"]) - (((data[
"max_to_min"]) + (data["q95_roll_mean_10"])))))))))) + (((da
ta["mean_change_rate"]) + (data["min_last_10000"])))))) +
(((data["min_first_10000"]) * (((data["av_change_rate_roll_
std_100"]) + (data["q95_roll_mean_10"])))))))) +
            0.0399999991*np.tanh(((data["q01_roll_std_1000"
]) * ((-1.0*((((data["q99_roll_mean_1000"]) + (np.tanh
((((((((((((((data["q01_roll_std_1000"]) + (data["abs_tren
d"]))/2.0)) - (((data["skew"]) - (((data["Hann_window_mean"
]) * 2.0)))))) * (data["q01_roll_std_10"]))) * 2.0)) * 2.0
)) * 2.0)))))))))) +
            0.0399999991*np.tanh(((((data["min_roll_mean_10
00"]) * 2.0)) + (np.tanh((np.tanh((((((((((data["min_roll_m
ean_1000"]) + (((((data["av_change_abs_roll_mean_1000"]) +
(((((data["min_roll_mean_1000"]) + (data["kurt"]))) * 2.0
)))) - (data["mean_change_rate_first_50000"])))))) * 2.0)) *
 2.0)) * 2.0)))))))) +
            0.0399921872*np.tanh(((((data["av_change_rate_r
oll_std_1000"]) * (data["min_roll_std_10"]))) + (((((data[
"q05_roll_mean_1000"]) + (np.tanh((((data["av_change_rate_r
oll_mean_10"]) - (((data["avg_first_50000"]) + (data["max_r
oll_mean_1000"])))))))) * (((((data["skew"]) * 2.0)) + (((
data["skew"]) + (data["q99_roll_mean_1000"])))))))) +
            0.0399999991*np.tanh(((((data["kurt"]) * (data[
"max_to_min"]))) + (((np.tanh((((((((((((((((data["q95_ro
ll_std_100"]) + (data["q05"]))) * 2.0)) * 2.0)) * 2.0)) *
2.0)) * 2.0)) * 2.0)) * 2.0)))) + (np.tanh((data["mean_chan
ge_rate_last_10000"])))))) +
            0.0399999991*np.tanh(((((((((data["q95_roll_mea
n_10"]) + (((data["q95_roll_mean_10"]) * 2.0)))) - (data["m
ax_to_min"]))) * (((data["q05_roll_mean_100"]) + (((data["M
A_400MA_BB_low_mean"]) * ((((((data["q05_roll_mean_100"]) +
 (((((data["q95_roll_mean_1000"]) * 2.0)) * 2.0)))/2.0)) -
(data["max_to_min"])))))))) * 2.0)) +
            0.0399999991*np.tanh(((data["iqr"]) - (((data[
"q01_roll_std_100"]) * ((((data["q01_roll_std_100"]) +
(((((((data["iqr"]) * (((data["q999"]) + (((data["iqr"]) +
(((data["q01_roll_std_10"]) * (data["max_to_min"])))))))))
* (data["q01_roll_std_10"]))) * (data["iqr"])))))/2.0))))))
+
            0.0399999991*np.tanh(((((((data["min_roll_mean_
1000"]) + (((data["min_roll_mean_1000"]) + (((((((data["q0
5"]) - (data["std_last_50000"]))) * (data["min_roll_std_10
0"]))) + (((data["max_last_10000"]) - (data["kurt"
]))))))))) * (((data["std_last_50000"]) * (((data["q95_roll
_mean_1000"]) * 2.0)))))) * 2.0)) +
            0.0399921872*np.tanh(((((((((data["q999"]) *
(((((data["q01_roll_mean_1000"]) - (data["abs_max_roll_std_
100"]))) - (data["std_last_10000"])))))) * 2.0)) + (np.tanh
(((((-1.0*((((data["av_change_rate_roll_std_10"]) - (data[
"std_last_10000"])))))) * (((data["min_roll_std_1000"]) - (
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data["std_last_10000"])))))))) * 2.0)) +
            0.0399921872*np.tanh(((((data["av_change_abs_ro
ll_std_1000"]) + (data["q05"]))) * (((((((data["avg_last_10
000"]) - (data["classic_sta_lta4_mean"]))) - (data["min_rol
l_std_10"]))) + (((((((((data["min_roll_std_10"]) - (data[
"classic_sta_lta4_mean"]))) - (data["q01_roll_mean_1000"
]))) + (data["med"]))) * (data["min_roll_std_10"])))))))) +
            0.0399921872*np.tanh(((data["q95_roll_std_1000"
]) - (((data["abs_q95"]) - ((((data["mean_change_rate"]) +
((-1.0*(((((((data["av_change_rate_roll_std_100"]) +
(((((((data["av_change_rate_roll_mean_1000"]) * 2.0)) - (da
ta["av_change_abs_roll_std_10"]))) * ((((data["mean_change_
rate"]) + (data["mean_change_abs"]))/2.0))))/2.0)) * 2.0
))))))/2.0))))))) +
            0.0399765596*np.tanh((((-1.0*((((data["q95_roll
_std_1000"]) * (((data["q95_roll_mean_1000"]) * (((data["st
d_first_50000"]) + (((data["q99_roll_std_10"]) + (data["std
_first_50000"]))))))))))) - (((((((data["av_change_abs_rol
l_mean_100"]) - (((data["max"]) + (data["mean_change_abs"
])))))) - (data["q99_roll_mean_10"]))) / 2.0)))) +
            0.0399687439*np.tanh(((np.tanh((((np.tanh
((((((((((((np.tanh((((data["mean_change_rate"]) * 2.0))))
- (data["min_roll_std_100"]))) * 2.0)) * 2.0)) * 2.0)) * 2.
0)))) - (data["av_change_abs_roll_std_10"])))))) + ((((((dat
a["av_change_abs_roll_std_10"]) + (data["q95_roll_std_1000"
]))/2.0)) + (data["min_roll_mean_1000"])))))) +
            0.0399843715*np.tanh(((data["av_change_abs_roll
_mean_10"]) * (((((data["classic_sta_lta2_mean"]) + ((((((d
ata["exp_Moving_average_30000_mean"]) * (data["classic_sta_
lta2_mean"]))) + (((np.tanh(((((((((data["av_change_abs_roll
_std_100"]) - (((data["q99_roll_mean_1000"]) + (((data["q01
_roll_std_10"]) * 2.0)))))) * 2.0)) * 2.0)))) * 2.0)))/2.0
)))) * 2.0)))) +
            0.0399921872*np.tanh(((data["std_roll_mean_100
0"]) * (((data["trend"]) - (((((data["min_roll_std_100"]) +
 (((((data["abs_q95"]) * (((data["std_roll_mean_1000"]) - (
data["av_change_rate_roll_mean_10"])))))) + (data["q01_roll_
std_1000"])))))) + (((data["q05_roll_std_10"]) * (((data["mi
n_roll_std_100"]) - (data["av_change_abs_roll_std_10"
]))))))))))) +
            0.0399921872*np.tanh(((((data["q99_roll_std_10
0"]) * (3.1415927410))) * (((data["q01_roll_mean_1000"]) +
(((((((data["q99_roll_std_100"]) * (3.1415927410))) + (data
["min_first_50000"]))) * (((((((data["min_first_50000"]) *
(((data["abs_mean"]) - (data["min_first_50000"])))))) * 2.0
)) * 2.0)))))))) +
            0.0399765596*np.tanh((-1.0*((((data["max_roll_s
td_100"]) + (np.tanh((((data["max_roll_std_100"]) * (((((da
ta["classic_sta_lta3_mean"]) + (data["min_last_10000"]))) -
 (((data["q95_roll_std_100"]) - (((((data["classic_sta_lta3
_mean"]) + (((data["Moving_average_6000_mean"]) + (data["ex
p_Moving_average_300_mean"])))))) + (data["classic_sta_lta3_
mean"]))))))))))))))) +
            0.0399140455*np.tanh(((data["max_roll_mean_100"
]) * ((((((((((((((data["av_change_abs_roll_std_10"]) * 2.
0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)) * (((data["av_c
hange_rate_roll_mean_1000"]) * (((((-3.0) * (((data["max_fi
rst_50000"]) + (data["max_roll_std_1000"])))))) + (data["av_
change_abs_roll_std_10"]))))))))) +
            0.0399687439*np.tanh(((data["av_change_abs_roll
_mean_1000"]) * ((((((data["min_roll_std_1000"]) + (data["s
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td_last_10000"]))/2.0)) + ((-1.0*((np.tanh((((data["min_rol
l_std_100"]) + (((data["mean_change_rate_last_50000"]) -
((((data["classic_sta_lta2_mean"]) + ((((((data["classic_st
a_lta2_mean"]) + (data["av_change_abs_roll_mean_1000"]))/2.
0)) + (data["classic_sta_lta3_mean"]))))/2.0))))))))))))))
 +
            0.0399843715*np.tanh(((data["av_change_rate_rol
l_mean_10"]) - (((data["av_change_rate_roll_mean_100"]) +
(((((data["mean_change_rate_first_50000"]) * (data["av_chan
ge_rate_roll_mean_10"]))) * ((((((data["mean_change_rate_fi
rst_50000"]) * (data["av_change_rate_roll_mean_10"]))) +
(((np.tanh((data["kurt"]))) + (((np.tanh((data["q05_roll_me
an_1000"]))) + (data["max_to_min"]))))))/2.0)))))))) +
            0.0399921872*np.tanh(((data["av_change_abs_roll
_std_100"]) * ((((((data["av_change_abs_roll_std_100"]) +
(((((data["abs_mean"]) + (data["q01_roll_std_1000"]))) * 2.
0)))/2.0)) * ((((((((((data["av_change_abs_roll_mean_100"])
- (data["med"]))) - (((data["classic_sta_lta3_mean"]) * 2.0
)))) - (data["trend"]))) - (data["av_change_abs_roll_std_10
0"])))))))) +
            0.0399921872*np.tanh(((data["mean_change_rate_l
ast_50000"]) * (((data["av_change_abs_roll_std_10"]) + (((d
ata["av_change_abs_roll_std_10"]) + (((data["max_roll_std_1
00"]) * (((((data["mean_change_rate_last_50000"]) - (((((da
ta["Moving_average_6000_mean"]) * (data["av_change_abs_roll
_std_10"]))) * (data["av_change_abs_roll_std_10"])))))) -
(((data["q95_roll_mean_1000"]) * (data["mean_change_rate_la
st_50000"]))))))))))))) +
            0.0399999991*np.tanh(((data["mean_change_rate_l
ast_10000"]) * (((data["ave_roll_std_1000"]) * (((((((data
["min_last_10000"]) + (data["max_to_min_diff"]))/2.0)) - (d
ata["trend"]))) + (((data["min_roll_std_1000"]) + (((((((da
ta["max_to_min_diff"]) + (data["min_last_10000"]))) * 2.0))
 + (data["av_change_abs_roll_std_100"])))))))))) +
            0.0399999991*np.tanh(((((((data["q95"]) * 2.0))
 * (((data["av_change_rate_roll_mean_1000"]) * (np.tanh
((((((((((((data["min_first_10000"]) * 2.0)) * 2.0)) * 2.
0)) * 2.0)) * 2.0)) * 2.0)))))))) + (((data["min_roll_mean_
10"]) - (((data["classic_sta_lta3_mean"]) * (data["q95"
]))))))) +
            0.0399765596*np.tanh(((((-1.0*((((data["mean_ch
ange_rate_first_50000"]) * (((data["av_change_abs_roll_std_
1000"]) - (data["q01_roll_std_1000"])))))))) + (((data["min
_roll_mean_100"]) * (((((((((data["mean_change_rate"]) -
(((data["min_roll_std_1000"]) * (((data["av_change_abs_roll
_std_1000"]) - (data["mean_change_rate"])))))))) * 2.0)) *
2.0)) * 2.0)))))/2.0)) +
            0.0399843715*np.tanh(((data["q95"]) * (((data[
"q95"]) * (((data["min_roll_std_10"]) - (((((((data["min_ro
ll_std_10"]) * 2.0)) + ((((data["av_change_abs_roll_std_10"
]) + ((((((data["q95"]) * 2.0)) + (data["q95"]))/2.0)))/2.0
)))) * (((data["av_change_abs_roll_std_10"]) * (data["class
ic_sta_lta2_mean"]))))))))))) +
            0.0399687439*np.tanh(((((((data["min_first_5000
0"]) * 2.0)) * 2.0)) * (((data["av_change_abs_roll_std_10"
]) * (((((((data["mean_change_abs"]) + (data["max_last_5000
0"]))) + ((((((data["mean_change_rate_last_10000"]) + (data
["mean_change_abs"]))/2.0)) + (((data["med"]) + (data["med"
]))))))) - (-3.0)))))))) +
            0.0399999991*np.tanh(((((((data["min_roll_mean_
1000"]) * (((((data["max_first_50000"]) * 2.0)) + ((((((np.
tanh((data["min_roll_mean_1000"]))) + (data["q95_roll_mean
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tanh((data["min_roll_mean_1000"])) + (data["q99_roll_mean_
1000"]))/2.0)) + (((((data["exp_Moving_average_3000_mean"])
 * ((((data["max_first_50000"]) + (data["exp_Moving_average
_3000_mean"]))/2.0)))) + (data["Moving_average_6000_mean"
]))))))))) * 2.0)) * 2.0)) +
            0.0399921872*np.tanh((-1.0*((((((data["abs_tren
d"]) * ((((10.0)) * (((data["av_change_rate_roll_mean_1000"
]) - (((data["min_roll_mean_1000"]) + (np.tanh((((data["mea
n_change_rate"]) - (data["min_roll_mean_1000"]))))))))))))
 * (((data["MA_400MA_BB_high_mean"]) - (data["min_roll_mean
_1000"]))))))))) +
            0.0399843715*np.tanh(((data["abs_max_roll_mean_
100"]) + (((np.tanh((data["max_roll_mean_1000"]))) * (((((d
ata["mean_change_rate_last_10000"]) - ((((((data["min_last_
10000"]) + (data["kurt"]))/2.0)) * (data["skew"])))))) - (((
data["avg_last_10000"]) + ((((-1.0*((data["q01_roll_mean_10
00"])))) * 2.0)))))))))) +
            0.0399999991*np.tanh(((data["q01_roll_std_1000"
]) * (((data["q99_roll_mean_100"]) * (((((data["min_roll_std
_1000"]) * (((data["min_roll_mean_1000"]) * (data["avg_firs
t_10000"])))))) + (((((data["trend"]) + (((data["q05_roll_s
td_10"]) * (((data["avg_first_10000"]) * (data["min_roll_me
an_1000"])))))))) + (data["av_change_rate_roll_mean_10"
]))))))))) +
            0.0399999991*np.tanh((-1.0*((((data["max_first_
10000"]) * (((((data["skew"]) * (((((((data["min_roll_std_1
00"]) * (data["min_last_10000"]))) + (data["q05_roll_std_10
000"]))) * (((((data["q05_roll_std_100"]) + (data["q05_roll_
std_100"]))) * (data["min_last_10000"])))))))) - (data["tren
d"])))))))) +
            0.0379058383*np.tanh(np.tanh((((np.tanh((np.tan
h((((((data["av_change_abs_roll_mean_10"]) * (((((((data[
"min_roll_std_1000"]) + (data["mean_change_rate"]))/2.0)) +
 ((-1.0*((np.tanh((data["av_change_rate_roll_std_10"
]))))))) + (((data["classic_sta_lta2_mean"]) + (data["std_
last_10000"])))))))) * 2.0)))))) * 2.0)))) +
            0.0399921872*np.tanh(((((((((data["classic_sta_
lta1_mean"]) * 2.0)) * 2.0)) * 2.0)) * (((data["MA_700MA_BB
_high_mean"]) * (((data["max_roll_std_10"]) * (((((((data[
"classic_sta_lta4_mean"]) - (data["av_change_abs_roll_std_1
000"]))) - (data["max_roll_std_10"]))) - (((data["max_to_mi
n_diff"]) + (data["av_change_abs_roll_std_1000"])))))))))))
 +
            0.0399921872*np.tanh(((((((((data["max_last_500
00"]) * 2.0)) + (((data["av_change_abs_roll_mean_100"]) - (
np.tanh((-1.0)))))))) - (((((((data["min_last_50000"]) + (da
ta["av_change_abs_roll_mean_100"]))) - (data["mean_change_r
ate_last_10000"]))) * (data["mean_change_rate_first_10000"
])))))) * ((((data["mean_change_rate_last_10000"]) + (data[
"min_last_50000"]))/2.0)))) +
            0.0399921872*np.tanh(((data["mean_change_abs"])
 * ((((-1.0*((data["classic_sta_lta3_mean"])))) + (((((((((
data["avg_first_10000"]) + ((((data["classic_sta_lta3_mean"
]) + (data["avg_last_10000"]))/2.0)))/2.0)) - (((data["max_
to_min"]) - (np.tanh((data["min_first_50000"])))))))) + (((d
ata["min_roll_std_10"]) - (data["max_first_10000"])))))/2.0
))))))) +
            0.0399687439*np.tanh(((data["std_roll_mean_100
0"]) * (((((((data["av_change_abs_roll_std_10"]) * (data["a
bs_q05"]))) - ((((((data["std_roll_mean_1000"]) * (data["std_roll_mean_1000"]))) + (data["abs_q05"]))/2.0)))) +
(((((((data["abs_max_roll_std_1000"]) + (((data["min_last_1
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0000"]) * (data["q95_roll_std_1000"])))) * 2.0)) * 2.0
))))) +
            0.0396483690*np.tanh(((((data["q05"]) * (((data
["avg_first_50000"]) - ((((data["q05_roll_mean_1000"]) +
(((data["trend"]) * (data["av_change_rate_roll_std_1000"
])))))/2.0)))))) + ((((data["min_last_10000"]) + ((((((data[
"max_to_min_diff"]) + (((data["max_to_min_diff"]) + (data[
"av_change_abs_roll_mean_1000"])))))) + (data["classic_sta_l
ta4_mean"]))/2.0)))/2.0)))) +
            0.0399765596*np.tanh(((((data["q99_roll_std_10"
]) * 2.0)) * (((((data["med"]) * (np.tanh((data["q01_roll_m
ean_10"])))))) - (np.tanh(((((((((data["av_change_abs_roll_st
d_1000"]) * 2.0)) * (((data["med"]) * 2.0)))) - (((((data[
"Moving_average_6000_mean"]) - (data["classic_sta_lta1_mea
n"]))) * 2.0)))))))))) +
            0.0399999991*np.tanh(((data["abs_max_roll_mean_
100"]) + (((data["min_roll_mean_1000"]) - ((((((data["q95_r
oll_mean_1000"]) + ((-1.0*((data["abs_q05"])))))/2.0)) *
(((data["kurt"]) * (((data["kurt"]) * (((data["q95_roll_std
_100"]) + (((((data["kurt"]) / 2.0)) * (data["kurt"
]))))))))))))))) +
            0.0399609283*np.tanh((-1.0*((((((data["av_chang
e_rate_roll_mean_100"]) * (data["mean_change_rate_first_100
00"]))) * ((((((data["MA_400MA_BB_low_mean"]) * (((((data[
"max_last_10000"]) + (np.tanh((np.tanh((data["classic_sta_l
ta4_mean"])))))))) + (np.tanh((data["q05"])))))))) + (((data[
"classic_sta_lta4_mean"]) + (data["trend"])))))/2.0)))))) +
            0.0399843715*np.tanh((((((((((data["q05_roll_s
td_1000"]) - (data["min_roll_std_10"]))) + (((((data["mean"
]) * (data["skew"]))) - (((data["min_roll_std_10"]) + (data
["max_to_min_diff"])))))))) + (((data["Hann_window_mean"]) *
 (data["classic_sta_lta1_mean"])))))) * (data["max_first_100
00"]))) * (data["av_change_abs_roll_mean_1000"]))) +
            0.0329283066*np.tanh(((((data["std_roll_mean_10
00"]) + (((data["std_roll_mean_1000"]) + (((data["abs_tren
d"]) + (((data["std_roll_mean_1000"]) + (data["Moving_avera
ge_3000_mean"])))))))))) * ((((((data["min_roll_std_10"]) +
(((data["min_roll_std_10"]) * (data["Moving_average_3000_me
an"])))))/2.0)) - (((data["std_roll_mean_1000"]) - (data["mi
n_roll_std_10"])))))))) +
            0.0387106836*np.tanh(np.tanh((((((data["q95_rol
l_std_1000"]) + (((data["av_change_rate_roll_mean_10"]) * (
data["mean_change_rate_last_10000"])))))) + (((((data["q05_r
oll_mean_10"]) * 2.0)) * (((data["min_roll_std_10"]) * (np.
tanh((((((data["mean"]) * 2.0)) + (data["min_roll_std_10"
]))))))))))))) +
            0.0399765596*np.tanh((-1.0*((((data["av_change_
abs_roll_mean_10"]) * (((data["avg_last_10000"]) * (((((dat
a["mean_change_rate_first_50000"]) - (np.tanh((data["kurt"
])))))) - (((((((data["av_change_abs_roll_std_1000"]) + (dat
a["classic_sta_lta1_mean"]))/2.0)) + ((((data["max_to_min"
]) + ((((data["q05_roll_std_1000"]) + (data["min_first_5000
0"]))/2.0)))/2.0)))/2.0)))))))))) +
            0.0399609283*np.tanh((-1.0*((((data["q01_roll_m
ean_10"]) + (((data["q95"]) - (((data["min_last_10000"]) *
(((data["mean_change_abs"]) * ((((((((((data["q95"]) * (dat
a["MA_700MA_BB_high_mean"]))) + (data["min_last_10000"]))/
2.0)) + (data["min_first_10000"]))) + (data["min_first_1000
0"])))))))))))))) +
            0.0399531126*np.tanh((-1.0*(((((data["av_change
_rate_roll_mean_1000"]) + ((-1.0*((((data["av_change_rate_r
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oll_std_10"]) + ((((-1.0*(((((((data["avg_last_10000"]) *
(((data["q05_roll_std_100"]) - (((data["av_change_rate_roll
_std_10"]) * (data["min_last_10000"])))))))) + (((data["av_c
hange_rate_roll_std_10"]) * (data["av_change_abs_roll_std_1
0"])))))/2.0))))) / 2.0))))))))/2.0))))) +
            0.0398984179*np.tanh(((((data["q95_roll_mean_1
0"]) * (np.tanh((((data["mean_change_rate_first_50000"]) *
(((data["mean_change_rate_first_10000"]) - (((((((data["av_
change_abs_roll_std_1000"]) + (data["std"]))) + ((-1.0*
(((((data["max_last_10000"]) + (((data["classic_sta_lta2_me
an"]) * (data["av_change_abs_roll_std_10"])))))/2.0)))))))) *
 2.0))))))))) * 2.0)) +
            0.0399843715*np.tanh(((((((data["av_change_abs_
roll_mean_100"]) * ((-1.0*((data["mean_change_rate_first_10
000"])))))) - (((data["min_roll_std_1000"]) * (data["q01_ro
ll_mean_10"])))))) - (((data["q01_roll_std_10"]) * (((((data
["av_change_abs_roll_mean_100"]) * (data["MA_700MA_std_mea
n"]))) * (((data["av_change_abs_roll_mean_100"]) - (np.tanh
((data["mean_change_rate_first_50000"])))))))))) +
            0.0398984179*np.tanh(((((data["max_first_10000"
]) * (((np.tanh((((data["classic_sta_lta1_mean"]) * 2.0))))
 * ((-1.0*((np.tanh((((((((((data["avg_last_50000"]) *
(((((data["min_first_10000"]) - (data["min_roll_std_10"])))
 - (data["avg_last_50000"])))))) * 2.0)) * 2.0)) * 2.0
))))))))))) * 2.0)) +
            0.0399687439*np.tanh(((data["min_first_10000"])
 * ((((((((((((data["q99_roll_mean_10"]) + (data["abs_max_
roll_std_10"]))/2.0)) * (data["av_change_abs_roll_std_1000"
]))) + (data["abs_max"]))/2.0)) + (((data["std_roll_mean_10
00"]) + (((((data["q01_roll_mean_1000"]) + (data["q99_roll_
mean_10"]))) * (((data["min_first_50000"]) * 2.0)))))))) *
2.0)))) +
            0.0399296731*np.tanh(((((((data["max_to_min_dif
f"]) * (((data["min_first_50000"]) + ((((((data["kurt"]) +
(((data["av_change_abs_roll_std_10"]) + (data["std_first_10
000"])))))) + ((((((data["kurt"]) - (data["av_change_rate_ro
ll_mean_1000"]))) + (data["min_roll_std_10"]))/2.0)))/2.0
))))))) * 2.0)) * 2.0)) +
            0.0398906022*np.tanh(((data["q95_roll_mean_100"
]) * ((-1.0*(((((((data["mean_change_rate_last_10000"]) * (
data["Moving_average_6000_mean"]))) + ((((((data["count_bi
g"]) + (data["mean_change_rate_last_10000"]))) + (((data["m
ean_change_rate_last_10000"]) + (((data["mean_change_rate_l
ast_10000"]) + ((((np.tanh((data["mean_change_rate_last_100
00"]))) + (data["min_first_50000"]))/2.0)))))))/2.0)))/2.0
)))))) +
            0.0399843715*np.tanh(((((data["classic_sta_lta1
_mean"]) * (((data["av_change_rate_roll_std_100"]) + (((np.
tanh((((np.tanh((((data["av_change_rate_roll_std_10"]) * (d
ata["av_change_abs_roll_std_1000"])))))) + (0.3183098733
))))) - (((data["av_change_rate_roll_std_10"]) * (data["Han
n_window_mean"])))))))) * (((data["mean_change_rate_last_1
0000"]) * (data["av_change_abs_roll_std_1000"])))))) +
            0.0399999991*np.tanh(((((data["av_change_rate_r
oll_mean_100"]) * (((data["av_change_rate_roll_mean_100"])
* ((((((data["classic_sta_lta3_mean"]) + (data["ave_roll_me
an_1000"]))) + (data["av_change_rate_roll_mean_100"]))/2.0
))))))) * (((data["ave_roll_mean_1000"]) * (((data["classic_
sta_lta3_mean"]) * (((((((data["ave_roll_mean_1000"]) + (da
ta["classic_sta_lta4_mean"]))/2.0)) + (data["classic_sta_lt
a4_mean"]))/2.0)))))))) +
            0.0399453007*np.tanh(((((((data["count_big"])
```

```
- (data["min_first_50000"])) * (((((((data["abs_max_roll_
mean_10"]) + (data["classic_sta_lta4_mean"]))/2.0)) + (data
["q01_roll_mean_1000"])) + (data["q01_roll_mean_1000"
])))))) + ((((((data["abs_max_roll_mean_10"]) - (data["min_f
irst_50000"])) + (((data["min_roll_std_10"]) - (data["min_
first_50000"])))/2.0)))/2.0)) +
            0.0355147459*np.tanh(((((((data["min_last_1000
0"]) * (data["classic_sta_lta3_mean"]))) * ((-1.0*((data["m
in_first_50000"]))))))) - (((((((data["q01_roll_std_1000"])
 * (data["mean_change_abs"]))) * (data["classic_sta_lta2_me
an"]))) + (np.tanh((((data["classic_sta_lta2_mean"]) * (dat
a["trend"]))))))/2.0)))) +
            0.0355928876*np.tanh((((-1.0*((data["min"])))
* (((((((data["mean_change_rate_last_10000"]) - (data["av_c
hange_abs_roll_std_1000"]))) * (data["Moving_average_1500_m
ean"]))) - (((((((((data["av_change_abs_roll_std_1000"]) *
(data["mean_change_rate_first_50000"]))) - (((data["mean_ch
ange_rate_last_10000"]) * 2.0)))) - (data["q95_roll_std_10"
]))) - (data["mean_change_rate_last_10000"])))))))) +
            0.0399999991*np.tanh(((((-1.0*(((((((data["std_
last_10000"]) * (data["mean_change_rate_last_10000"]))) +
(((data["max_roll_mean_10"]) * (((((data["min_roll_mean_100
0"]) + (data["av_change_rate_roll_std_100"]))) * (data["q00
1"])))))))/2.0))))) + (((data["min_roll_mean_1000"]) + (((da
ta["min_roll_mean_1000"]) + (data["abs_trend"])))))))/2.0))
+
            0.0399921872*np.tanh(((data["av_change_abs_roll
_std_100"]) * (((data["std_roll_mean_1000"]) + ((((data["tr
end"]) + ((((((((((data["trend"]) * (data["mean_change_abs"
]))) + (data["mean_change_abs"]))) + (((data["av_change_abs
_roll_std_100"]) / 2.0)))/2.0)) + ((-1.0*((((data["med"]) *
 (data["mean_change_abs"]))))))))))/2.0)))))) +
            0.0399999991*np.tanh((((((data["q95_roll_std_10
0"]) - (data["q95"]))) + ((((data["min_last_10000"]) + (((n
p.tanh((((((data["std_roll_mean_1000"]) * 2.0)) * 2.0)))) +
 (np.tanh((((((((((data["mean_change_rate_last_10000"]) + (
data["q95_roll_std_100"]))) * 2.0)) + (data["classic_sta_lt
a3_mean"]))) * 2.0)))))))/2.0)))/2.0)) +
            0.0331861675*np.tanh(((((data["std_first_10000"
]) * (((data["std_first_10000"]) * (data["av_change_abs_rol
l_std_1000"])))))) + (((data["mean_change_rate_last_50000"])
 * (((np.tanh((((data["max"]) * 2.0)))) * (((((((data["mea
n"]) - (data["max_first_10000"]))) - (data["max_first_1000
0"]))) - (data["max_to_min"])))))))) +
            0.0399999991*np.tanh(((((((data["min_first_1000
0"]) + (((data["max_to_min"]) * (data["mean_change_rate"
])))))) * (((((data["max_roll_mean_10"]) * 2.0)) * (((data[
"av_change_rate_roll_mean_1000"]) - (((((((data["av_change_
abs_roll_mean_1000"]) + (data["mean_change_rate"]))/2.0)) +
 ((-1.0*((data["ave10"])))))/2.0)))))))) * 2.0)) +
            0.0339441299*np.tanh(((((data["max_to_min"]) *
(data["min_roll_mean_100"]))) + (((((((data["avg_first_5000
0"]) * (data["mean_change_rate_last_50000"]))) + (((data["m
ean_change_rate_last_50000"]) + (((data["abs_max_roll_mean_
10"]) * (data["abs_max_roll_mean_10"])))))))) * (((data["min
_roll_std_10"]) + (((data["abs_max_roll_mean_10"]) * (data[
"avg_first_50000"])))))))))) +
            0.0395545997*np.tanh(((((((((data["min_roll_std
_100"]) * (((data["avg_last_10000"]) * (data["kurt"])))))) +
 ((((((data["std_first_10000"]) + (data["kurt"]))/2.0)) - (
data["min_roll_std_100"])))))/2.0)) + (((data["avg_last_1000
```

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0"]) * (((data["std_first_10000"]) - ((((data["kurt"]) + (d
ata["min_roll_std_100"]))/2.0)))))))/2.0)) +
            0.0399843715*np.tanh(((((((-1.0*((((data["clas
sic_sta_lta3_mean"]) * (data["q99_roll_std_1000"])))))) -
((((((data["max_to_min_diff"]) + (((data["kurt"]) * (data[
"std_roll_mean_1000"])))))/2.0)) + (((data["min_roll_std_10"
]) - (data["MA_1000MA_std_mean"])))))) * 2.0)) * (((data[
"kurt"]) * (data["std_roll_mean_1000"])))))) +
            0.0399999991*np.tanh((((((data["classic_sta_lta
3_mean"]) * ((((((np.tanh((np.tanh((data["max_last_10000"
])))))) + (data["skew"]))) + (((data["min_roll_mean_100"]) *
 2.0)))/2.0)))) + (((data["skew"]) * ((-1.0*((((((np.tanh((
data["max_last_10000"]))) + (data["skew"]))) / 2.0)))))))/
2.0)) +
            0.0399296731*np.tanh(((data["min_roll_mean_100"
]) + ((((data["max_roll_mean_10"]) + (((((((data["min_last_
50000"]) * 2.0)) * 2.0)) * (((data["min_roll_mean_100"]) +
(((data["max_roll_mean_10"]) * (((data["max_roll_mean_10"])
 * ((((((data["max_roll_mean_10"]) + (data["min_roll_mean_1
00"]))/2.0)) - (data["min_roll_std_10"]))))))))))))/2.0))))
 +
            0.0399999991*np.tanh(((((np.tanh((data["av_chan
ge_rate_roll_std_1000"]))) + (((data["mean_change_rate"]) -
 (np.tanh((data["exp_Moving_average_30000_mean"])))))))) *
(((data["trend"]) * ((-1.0*(((((np.tanh((data["exp_Moving_a
verage_300_mean"]))) + (((data["av_change_rate_roll_std_100
0"]) - (((data["min_roll_std_1000"]) * (data["av_change_rat
e_roll_std_1000"]))))))/2.0)))))))) +
            0.0399921872*np.tanh(((((((data["max"]) * (((da
ta["max_first_50000"]) * (((((((data["q95_roll_mean_10"]) *
 (((((data["max"]) * (((data["mean_change_rate_last_50000"
]) - (data["av_change_abs_roll_std_1000"])))))) - (data["av_
change_abs_roll_mean_10"])))))) * 2.0)) - (data["av_change_a
bs_roll_mean_10"])))))))) * 2.0)) * 2.0)) +
            0.0399609283*np.tanh(np.tanh(((((((data["med"])
 * ((((data["av_change_rate_roll_std_100"]) + (((data["av_c
hange_abs_roll_mean_100"]) * (data["av_change_rate_roll_std
_100"])))))/2.0)))) + (((data["mean_change_rate_first_50000"
]) * (((((-1.0*((((data["max_to_min_diff"]) + (data["min_ro
ll_std_10"])))))) + (((data["av_change_abs_roll_mean_100"])
 * (data["min_last_10000"])))))/2.0))))))/2.0)))) +
            0.0399921872*np.tanh(((data["av_change_abs_roll
_std_100"]) * ((-1.0*((((((((((((data["av_change_abs_roll_s
td_100"]) - (data["q95_roll_mean_100"]))) * (((np.tanh
((((((data["mean"]) * (data["av_change_rate_roll_mean_100"
])))) * 2.0)))) * 2.0)))) + (data["mean"]))/2.0)) + (((data[
"classic_sta_lta3_mean"]) - (data["skew"])))))/2.0)))))))) +
            0.0375073254*np.tanh(((data["av_change_abs_roll
_std_1000"]) * ((((((data["classic_sta_lta2_mean"]) + ((-1.
0*((((data["min_roll_std_1000"]) + (data["min_roll_std_100
0"])))))))) + (((data["min_roll_std_10"]) * (((((data["av_c
hange_abs_roll_mean_10"]) * 2.0)) + (((((data["min_roll_std
_100"]) + (data["min_roll_std_100"]))) + (data["classic_sta
_lta2_mean"]))))))))/2.0)))) +
            0.0399921872*np.tanh(((data["max_to_min"]) *
(((((data["av_change_rate_roll_std_100"]) - (((np.tanh((dat
a["av_change_abs_roll_mean_100"]))) + (((np.tanh((data["mea
n_change_rate_first_50000"]))) + ((((data["av_change_abs_ro
ll_std_1000"]) + (((data["min_roll_std_10"]) + (data["min_r
oll_std_10"])))))/2.0)))))))) * (((data["av_change_abs_roll_
mean_1000"]) * (data["min_last_10000"])))))))) +
            0.035288143*np.tanh(((((data["std_first_50000"
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            0.0392881439*np.tanh((((data["std_first_50000
]) * (np.tanh((((data["q05_roll_mean_1000"]) * (((((data["c
lassic_sta_lta4_mean"]) - (((((data["av_change_abs_roll_mea
n_10"]) * 2.0)) - ((((((-1.0*((data["av_change_rate_roll_st
d_10"])))) - (data["av_change_abs_roll_mean_10"]))) - (data
["q05_roll_mean_1000"])))))) - (data["av_change_rate_roll_
std_10"]))))))))) * 2.0)) +
            0.0390310585*np.tanh((np.tanh((((((((((data["m
in_roll_mean_1000"]) + (((data["MA_400MA_BB_high_mean"]) -
(((data["q95_roll_mean_10"]) * (((((data["av_change_rate_ro
ll_mean_10"]) * (data["iqr"]))) + (((data["av_change_rate_r
oll_std_10"]) + (data["min_last_10000"])))))))))) * 2.0))
* 2.0)) * 2.0)))) / 2.0)) +
            0.0393045507*np.tanh((np.tanh(((((((data["q95
_roll_mean_1000"]) + (((data["classic_sta_lta3_mean"]) + (d
ata["q95_roll_mean_1000"])))))) + (((data["classic_sta_lta3_
mean"]) + (((data["abs_q05"]) + (((data["classic_sta_lta3_m
ean"]) + (data["classic_sta_lta1_mean"])))))))) * (((data[
"avg_first_10000"]) - (data["mean_change_abs"])))))) / 2.0
)) +
            0.0396796241*np.tanh((np.tanh(((((((data["min_
last_50000"]) + (data["classic_sta_lta4_mean"]))/2.0)) + (n
p.tanh((((((((((data["av_change_abs_roll_std_10"]) + (((np.
tanh((np.tanh((((((data["q95_roll_mean_1000"]) + (data["kur
t"]))) * 2.0)))))) * 2.0)))) * 2.0)) * 2.0)) * 2.0)))))))
/ 2.0)) +
            0.0399609283*np.tanh(((data["min_first_10000"])
 * (np.tanh((((((((((data["mean_change_rate_last_10000"]) -
 (((data["skew"]) * (data["min_first_10000"])))))) + (((((da
ta["mean_change_rate_last_10000"]) + (data["q05_roll_mean_1
0"]))) + (((((data["mean_change_rate_last_10000"]) + (data[
"min_first_10000"]))) * 2.0)))))) * 2.0)) * 2.0)))))) +
            0.0398280881*np.tanh(((((((np.tanh(((((((((data[
"min_roll_mean_100"]) * 2.0)) * 2.0)) - (data["std_first_10
000"])))))) + (((np.tanh((data["min_last_50000"]))) * (data[
"av_change_abs_roll_std_10"])))))/2.0)) + (((data["std_first
_10000"]) * ((((((data["min_last_50000"]) * (data["av_chang
e_abs_roll_std_10"]))) + (data["av_change_abs_roll_std_10"
]))/2.0)))))/2.0)) +
            0.0399531126*np.tanh(((((((data["av_change_abs_
roll_mean_1000"]) * (data["std_last_10000"]))) - (((((data[
"min_roll_std_10"]) + (np.tanh((((data["avg_last_50000"]) *
 (data["min_roll_std_10"])))))))) + (np.tanh((((data["av_cha
nge_abs_roll_mean_1000"]) + (((data["abs_q05"]) + (data["av
_change_rate_roll_mean_1000"])))))))))) * (data["av_change
_abs_roll_std_1000"]))) +
            0.0399296731*np.tanh(np.tanh((np.tanh
((((((((((((data["q95_roll_std_100"]) + ((-1.0*((data["q01_
roll_std_10"])))))) * 2.0)) * 2.0)) + (data["q95_roll_std_1
00"]))) * ((((data["q99_roll_mean_1000"]) + ((((((np.tanh((
data["q05_roll_std_10"]))) + (data["mean_change_abs"]))/2.0
)) + (data["classic_sta_lta1_mean"])))))/2.0)))))))) +
            0.0383121707*np.tanh((((np.tanh(((((((-1.0*
((((((data["avg_last_10000"]) + (data["mean_change_abs"])))
 + (((data["max_last_10000"]) * (data["max_last_10000"
]))))))))) + (data["abs_q05"]))) * (data["min_roll_std_100"
])))))) + (((((data["avg_last_10000"]) + (data["q01_roll_std
_100"]))) * (data["av_change_abs_roll_std_1000"])))))/2.0))
+
            0.0399687439*np.tanh(((((data["mean_change_abs"
]) * (((data["min_roll_std_100"]) - (((((((((data["q01_roll
_std_1000"]) + (data["mean_change_abs"]))/2.0)) + (((((((((
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```
data["abs_trend"]) + (data["av_change_abs_roll_std_1000"]))
/2.0)) + (data["av_change_abs_roll_std_1000"]))/2.0)) * (da
ta["min_roll_std_100"])))/2.0)) * (data["min_roll_std_100"
])))))) * (data["av_change_abs_roll_std_1000"])))  +
            0.0399531126*np.tanh((np.tanh((np.tanh
((((((((((((data["abs_max_roll_mean_10"]) * (((data["std_
first_50000"]) - (((((data["q05_roll_mean_10"]) + (data["mi
n_roll_std_100"]))) + (data["q05_roll_mean_10"])))))) * 2.
0)) * 2.0)) * 2.0)) * 2.0)) * 2.0)))))) / 2.0)) +
            0.0399765596*np.tanh(((((data["mean_change_rate
_last_50000"]) * ((((data["avg_first_10000"]) + ((-1.0*((((
data["ave10"]) - (np.tanh((np.tanh(((((-1.0*((data["mean_ch
ange_rate_last_50000"])))) - (1.0))))))))))))/2.0)))) *
((((2.0) + ((-1.0*((data["mean_change_rate_last_50000"
])))))/2.0)))) +
            0.0399453007*np.tanh(((((-1.0*((((data["av_chan
ge_abs_roll_std_10"]) * (((((data["ave_roll_mean_100"]) *
(((data["av_change_abs_roll_std_10"]) + (data["mean_change_
rate_first_50000"])))))) + (data["mean_change_rate_first_500
00"])))))))) + (np.tanh(((((((data["classic_sta_lta3_mean"
]) + (data["mean_change_rate_first_50000"]))/2.0)) * (data[
"av_change_abs_roll_mean_100"])))))/2.0)) +
            0.0399843715*np.tanh(((data["std_first_10000"])
 * (((data["classic_sta_lta3_mean"]) * (((np.tanh((((np.tan
h((((data["mean_change_rate_first_50000"]) - (((data["q01_r
oll_std_1000"]) * (data["mean_change_rate_first_50000"
])))))) * 2.0)))) + (np.tanh((((((data["q05_roll_std_1000"
]) + (((data["kurt"]) * 2.0)))) * 2.0)))))))))) +
            0.0398984179*np.tanh(((((data["av_change_rate_r
oll_std_10"]) * (data["av_change_abs_roll_std_1000"]))) *
(((data["q99_roll_mean_10"]) + (((data["min"]) + ((((data[
"sum"]) + ((((data["q95_roll_std_100"]) + ((((((data["av_ch
ange_abs_roll_std_1000"]) + (data["min_roll_std_1000"]))/2.
0)) + (((3.0) - (data["av_change_rate_roll_std_10"])))))))/
2.0)))/2.0)))))))) +
            0.0399374850*np.tanh(((((data["av_change_abs_ro
ll_std_100"]) + (((((data["avg_first_10000"]) + (((data["av
_change_abs_roll_std_100"]) * (((data["avg_last_10000"]) +
(np.tanh((((data["max_last_10000"]) + (data["av_change_abs_
roll_std_100"])))))))))) + (data["std_last_10000"])))))) *
(((data["q01_roll_mean_100"]) * (np.tanh((data["max_last_10
000"])))))))  +
            0.0399999991*np.tanh(((data["min_last_10000"])
* (((data["mean_change_rate_first_10000"]) * (np.tanh
((((((((((((data["av_change_abs_roll_mean_1000"]) + (((((da
ta["av_change_rate_roll_mean_1000"]) + (((data["Moving_aver
age_1500_mean"]) * (((data["av_change_abs_roll_mean_1000"])
 + (data["max_last_50000"])))))))) * 2.0)))) * 2.0)) * 2.0))
 * 2.0)) * 2.0)))))))) +
            0.0398906022*np.tanh(np.tanh((np.tanh(((((((dat
a["abs_max_roll_mean_10"]) + (((data["min_roll_std_10"]) *
(((data["std_roll_mean_1000"]) + (((data["max_roll_mean_10"
]) + (data["min_last_10000"])))))))))/2.0)) + (((data["abs_t
rend"]) * (((((data["skew"]) + (data["abs_max_roll_mean_10"
])))) + (data["mean_change_abs"])))))))))) +
            0.0383356102*np.tanh(((((((data["trend"]) * (((
data["min_first_10000"]) * (((np.tanh((((((data["mean_chang
e_rate_last_10000"]) - (data["av_change_abs_roll_mean_100"
])))) - (data["av_change_abs_roll_mean_100"])))))) + ((((((da
ta["av_change_abs_roll_std_100"]) - (((1.0) / 2.0)))) + (da
ta["av_change_abs_roll_mean_100"]))/2.0)))))))) * 2.0)) *
```

```
2.0)) +
            0.0399296731*np.tanh(((np.tanh((((((np.tanh((da
ta["max_first_10000"]))) - (data["av_change_abs_roll_std_10
00"]))) + (data["max_first_10000"])))))) * (((((data["ave_ro
ll_std_10"]) * (data["min_roll_std_100"]))) * (((((data["av
g_first_50000"]) - ((-1.0*((np.tanh((data["max_first_10000"
]))))))))) - (data["av_change_abs_roll_mean_100"])))))))) +
            0.0309279151*np.tanh(np.tanh(((((data["q95_roll
_std_1000"]) + (((data["min_first_10000"]) + (((((data["av_
change_abs_roll_mean_1000"]) * (((((data["av_change_abs_rol
l_mean_100"]) - (data["av_change_abs_roll_std_1000"]))) - (
data["mean_change_abs"])))))) - ((((data["av_change_abs_roll
_std_1000"]) + ((((data["MA_700MA_std_mean"]) + (data["av_c
hange_abs_roll_mean_100"]))/2.0)))/2.0))))))))/2.0)))) +
            0.0398671627*np.tanh(((np.tanh((((data["avg_las
t_50000"]) * (((((data["std_roll_mean_1000"]) - (data["avg_
last_50000"])))) - (((((((((np.tanh((data["classic_sta_lta1_
mean"])))) * 2.0)) - (data["std_roll_mean_1000"])))) - (((dat
a["classic_sta_lta1_mean"]) * (data["std_roll_mean_1000"
])))))) * 2.0)))))))) * (data["std_roll_mean_1000"])))) +
            0.0399687439*np.tanh((((((np.tanh(((((((((data[
"mean_change_rate_first_10000"]) - (data["avg_last_10000"
])))) * (data["max_last_10000"])))) + (data["mean_change_rate
_last_10000"])))))) + (np.tanh((((((((((data["mean_change_ra
te_first_10000"]) - (((data["mean_change_rate_first_10000"
]) * (data["mean_change_rate_first_10000"])))))) * 2.0)) *
2.0)) * 2.0)))))/2.0)) / 2.0)) +
            0.0398984179*np.tanh(((data["min_roll_std_10"])
 * (((((((((data["max_last_50000"]) * (((((data["max_last_5
0000"]) * (((data["min_roll_std_10"]) * (((data["av_change_
abs_roll_mean_10"]) * 2.0)))))) - (data["av_change_abs_roll
_mean_10"])))))) - (((data["min_roll_std_10"]) * (data["av_c
hange_abs_roll_mean_10"])))))) - (data["av_change_abs_roll_m
ean_10"]))) / 2.0)))) +
            0.0399843715*np.tanh((((((data["std_first_1000
0"]) * (data["av_change_abs_roll_mean_10"]))) + ((((((((((
data["MA_400MA_BB_high_mean"]) * (data["avg_first_50000"
]))) + (data["max_first_50000"]))) + ((((((data["std_first_
10000"]) + (data["max_first_50000"]))) + (data["av_change_a
bs_roll_mean_10"]))/2.0)))/2.0)) + ((-1.0*((data["av_change
_abs_roll_std_100"])))))/2.0)))/2.0)) +
            0.0333658904*np.tanh((((np.tanh((((((((((((da
ta["abs_q05"]) * (((data["mean_change_rate_first_10000"]) *
 (((data["q01_roll_std_1000"]) * 2.0)))))) * 2.0)) * 2.0))
* 2.0)) + (data["av_change_abs_roll_mean_10"]))) * 2.0))))
+ (((((data["mean_change_rate_first_10000"]) * (data["iqr"
]))) * (data["min_roll_std_1000"])))))/2.0)) +
            0.0399921872*np.tanh(((data["max_roll_mean_100"
]) * (((((data["kurt"]) * ((((data["classic_sta_lta4_mean"
]) + (data["min_first_10000"]))/2.0)))) - ((((((((((data["c
lassic_sta_lta4_mean"]) - (data["max_roll_mean_100"]))) +
((((data["mean_change_rate_first_10000"]) + ((3.0)))/2.0)))
/2.0)) * (data["classic_sta_lta4_mean"]))) * (data["mean_ch
ange_rate_first_10000"])))))))) +
            0.0336081274*np.tanh(((np.tanh((np.tanh((((((da
ta["q95_roll_std_100"]) * (((data["min_roll_std_100"]) -
```

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Data

Data Sources

- LANL Earthquake Pre...
  - sampl... 2624 x 2
  - train.csv
  - test.zip
    - seg_004cd2.csv
    - seg_00c35b.csv
    - seg_00cc91.csv
    - seg_00e5f7.csv
    - seg_0165c6.csv
    - seg_01c775.csv
    - seg_01ecb0.csv
    - seg_03d386.csv
    - seg_0445d7.csv
    - seg_04cceb.csv
    - 1000+ more

LANL Earthquake Prediction

Can you predict upcoming laboratory earthquakes?

Last Updated: 23 days ago

About this Competition

The goal of this competition is to use seismic signals to predict the timing of laboratory earthquakes. The data comes from a well-known experimental set-up used to study earthquake physics. The `acoustic_data` input signal is used to predict the time remaining before the next laboratory earthquake (`time_to_failure`).

The training data is a single, continuous segment of experimental data. The test data consists of a folder containing many small segments. The data *within* each test file is continuous, but the test files do not represent a continuous segment of the experiment; thus, the predictions cannot be assumed to follow the same regular pattern seen in the training file.

For each `seg_id` in the test folder, you should predict a *single* `time_to_failure` corresponding to the time between the *last row of the segment* and the next laboratory earthquake.

File descriptions

- **train.csv** - A single, continuous training segment of experimental data.
- **test** - A folder containing many small segments of test data.
- **sample_sumbission.csv** - A sample submission file in the correct format.

Data fields

- **acoustic_data** - the seismic signal [int16]
- **time_to_failure** - the time (in seconds) until the next laboratory

Output Files

New Dataset | New Kernel | Download All

Output Files

- gpsubmission.csv

About this file

This file was created from a Kernel, it does not have a description.

gpsubmission.csv

	seg_id	time_to_failure
1		

2	seg_00030f	2.78864121 8863939
3	seg_0012b5	5.41114060 9596339
4	seg_00184e	4.60739406 2357283
5	seg_003339	8.26531134 2309387
6	seg_0042cc	6.70963049 5876032
7	seg_004314	1.69475747 10690378
8	seg_004cd2	7.32405258 1890101
9	seg_004ee5	3.95827396 6879396
10	seg_004f1f	5.22198083 1044425
11	seg_00648a	1.90865236 73132527
12	seg_006e4a	2.46781113 8570202
13	seg_007a37	4.85979769 1403808
14	seg_00a37e	4.06301456 7905633
15	seg_00be11	3.01220775 0077373
16	seg_00c35b	8.28645632 1443971
17	seg_00cc91	4.35451387 8055543
18	seg_00e5f7	6.02474660 7984627
19	seg_00f3b9	3.85089907 76593643

Run Info

Succeeded	True	Run Time	2616.6 seconds
Exit Code	0	Queue Time	0 seconds
Docker Image Name	kaggle/python(Dockerfile)	Output Size	0
Timeout Exceeded	False	Used All Space	False
Failure Message			

Log

Download Log

```
Time  Line #  Log Message
2.7s       1  [NbConvertApp] Converting notebook script.ipynb to html
2.7s       2  [NbConvertApp] Executing notebook with kernel: python3
2615.8s    3  [NbConvertApp] Support files will be in __results___files/
              [NbConvertApp] Making directory __results___files
              [NbConvertApp] Making directory __results___files
2615.8s    4  [NbConvertApp] Making directory __results___files
              [NbConvertApp] Writing 913265 bytes to __results__.html
2615.8s    5
2615.8s    7  Complete. Exited with code 0.
```

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interneuron • Posted on Version 1 • 3 days ago • Options • Reply 1

Showing us the way once again, thanks!!!

Ashish Patel(... • Posted on Version 1 • 4 days ago • Options • Reply 1

Again Great Work!!! Thanks for this I have one question.

How did u choose different value in GA function?

Scirpus Kernel Author • Posted on Version 1 • 4 days ago • Options • Reply 2

Not sure what you mean - I just imported the data into my Genetic Programming Tool and pressed play - looking at the SD width from the tool this probably has an error of +/- .015. It is just a toy example I didn't do any data augmentation.

Ashish Pat... • Posted on Version 1 • 4 days ago • Options • Reply 0

Thanks but I want to know how can you have chosen the value ? for example below

```
5.612045 + 0.0500000007*np.tanh((((((8.0)) * ((((9.0)) *
(((((data["q05"]) - (data["iqr"]))) -
(((((((((data["abs_std"]) + (((((data["q05_roll_std_10"]) *
2.0)) * 2.0)))) * 2.0)) + (data["q95"]))) +
(data["q05_roll_std_100"])))))))))) * 2.0))
```

Scirpus Kernel Author • Posted on Version 1 • 4 days ago • Options • Reply 2

It did it itself I haven't a clue why it did it ;) 5.612045 is pretty close to the average value it can generate random floats if it so chooses

Scirpus Kernel Author • Posted on Version 1 • 7 days ago • Options • Reply 3

A bit of Genetic Programming fun now Andrew has his gold medal. Judging by the code the lack of < or > operators means a simple NN will probably perform a little better than a tree-based approach.

Andrew Lu... • Posted on Version 1 • 4 days ago • Options • Reply 1

This is a great approach! :)

Salman Javed • Posted on Version 2 • 3 days ago • Options • Reply 0

Great approach, Thank you !

Akash Ravich... • Posted on Version 2 • 2 days ago • Options • Reply 0

@Scirpus Can you explain what is happening in GPI function?
Is the return generated manually or automatically through code?

Thanks!

Scirpus Kernel Author • Posted on Version 2 • 2 days ago • Options • Reply 1

It is automatically generated through code.
I admire your chutzpah - you don't up-vote it but still ask questions - LOL ;P

Scirpus Kernel Author • Posted on Latest Version • 11 hours ago • Options • Reply 0

Done the last one which means there are three independent models - that is it for me.

I cannot emphasize this enough 400 targets on the LB is tiny. I expect a huge shakeup for this competition - you are better using lots of models (NN, XGB, SVC etc.)to reduce variance

12 hours ago

This Comment was deleted.