Performance Analysis

FINISHED

```
    %spark.r
# Lines of code : 185 lines
# Bottleneck : Neural network technique takes a lot of time to learn the algorithm for one particula
#              model.
# Solution : Parameters like "Threshold" and "Stepmax" were used to reduce this issue.
# Optimization : Instead of normalizing each row in every dataset manually and repeating the same co
#                used loops and conditions for code effeciency.
#                Also used the same level of optimization while predicting weights
```

Took 0 sec. Last updated by anonymous at March 25 2017, 8:38:20 PM. (outdated)

FINISHED

```
1 %spark.r
2
3 small_cap_stock <- read.csv("/home/scarface/Desktop/sem-3/capstone/madhu/stockPerform/iwm.csv",
4 large_cap_stock <- read.csv("/home/scarface/Desktop/sem-3/capstone/madhu/stockPerform/spy.csv",
5
6 View(small_cap_stock)
7 View(large_cap_stock)
8 typeof(large_cap_stock$Date)
```

```
[1] “integer”
```

Took 1 sec. Last updated by anonymous at March 25 2017, 4:42:24 PM. (outdated)

FINISHED

```
1 %spark.r
2 large_cap_stock2000 <- subset(large_cap_stock, large_cap_stock$Date >= "2017-02-07")
3 large_cap_stock2000
```

```
[1] Date      Open      High      Low       Close     Volume    Adj.Close
&lt;0 rows&gt; (or 0-length row.names)
```

Took 0 sec. Last updated by anonymous at March 25 2017, 4:43:26 PM. (outdated)

FINISHED

```
1 %spark.r
2 arqdata <- read.csv(file = "/home/scarface/Desktop/sem-3/capstone/madhu/ARQ_Data.csv", header=
3 save(arqdata, file="arq.rdata")
4 load("arq.rdata")
5 nrow(arqdata)
```

```
[1] 89206
```

Took 20 sec. Last updated by anonymous at March 25 2017, 4:44:42 PM. (outdated)

Zeppelin Notebook

DS-670 Assignm...

anonymous

default

```
%spark.r
View(arqdata)
t(names(arqdata))
arqdata[72]
#Considering the column price with data
arqdata_na <- subset(arqdata, arqdata$price != "NA")
View(arqdata_na)
```

```
[1,] “ticker” “dimension” “calendardate” “datekey” “reportperiod” “accoci”
     [,7]     [,8]        [,9]      [,10]      [,11]           [,12]
[1,] “assets” “assetsavg” “assetsc” “assetsnc” “assetturnover” “bvps”
     [,13]   [,14]     [,15]        [,16] [,17]          [,18] [,19]
[1,] “capex” “cashneq” “cashnequsd” “cor” “currentratio” “de”  “debt”
     [,20]     [,21]     [,22]      [,23] [,24]  [,25]    [,26]<br />
[1,] “debtusd” “depamor” “divyield” “dps” “ebit” “ebitda” “ebitdamargin”
     [,27]       [,28]     [,29] [,30] [,31]    [,32]    [,33]<br />
[1,] “ebitdausd” “ebitusd” “ebt” “eps” “epsdil” “epsusd” “equity”
     [,34]       [,35]       [,36] [,37]    [,38]      [,39] [,40]<br />
[1,] “equityavg” “equityusd” “ev”  “evebit” “evebitda” “fcf” “fcfps”
     [,41]   [,42] [,43]         [,44]         [,45]    [,46]<br />
[1,] “fxusd” “gp”  “grossmargin” “intangibles” “intexp” “invcap”
     [,47]       [,48]       [,49]         [,50]          [,51]<br />
[1,] “invcapavg” “inventory” “liabilities” “liabilitiesc” “liabilitiesnc”
     [,52]       [,53] [,54]       [,55]     [,56]    [,57]  [,58]  [,59]
[1,] “marketcap” “ncf” “ncfcommon” “ncfdebt” “ncfdiv” “ncff” “ncfi” “ncfo”
     [,60]  [,61]    [,62]       [,63]          [,64]       [,65]<br />
[1,] “ncfx” “netinc” “netinccmn” “netinccmnusd” “netincdis” “netmargin”
     [,66]      [,67]         [,68] [,69] [,70] [,71]       [,72]   [,73]
[1,] “payables” “payoutratio” “pb”  “pe”  “pe1” “prefdivis” “price” “ps”
     [,74] [,75]         [,76]     [,77]     [,78]        [,79] [,80]
[1,] “ps1” “receivables” “retearn” “revenue” “revenueusd” “rnd” “roa”
     [,81] [,82]  [,83] [,84]  [,85]         [,86]       [,87]<br />
[1,] “roe” “roic” “ros” “sgna” “sharefactor” “sharesbas” “shareswa”
     [,88]         [,89] [,90]       [,91]    [,92]   [,93]<br />
[1,] “shareswadil” “sps” “tangibles” “taxexp” “tbvps” “workingcapital”
```

Took 1 min 16 sec. Last updated by anonymous at March 25 2017, 4:47:16 PM. (outdated)

FINISHED

```
%spark.r
###################################Data_File - with ARQ listings##############################
return <- vector();
for (i in 2:length(arqdata_na[,1]))
{
  if (identical(arqdata_na[i,1],arqdata_na[i-1,1]))
  {
    #    return[i] = ((arqdata[i,72] / arqdata[i-1,72]) - 1);
    return[i] = (arqdata_na[i,72] / arqdata_na[i-1,72]);
  }
  else
  {
    return[i] = 0;
  }
}
```

Zeppelin Notebook

DS-670_Assignm...

Took 18 sec. Last updated by anonymous at March 25 2017, 4:53:46 PM. (outdated)

anonymou

FINISHED default

```
1 %spark.r
2 #adding return to arqdata dataset
3 arqdata_returns <- cbind(arqdata_na,return)
4 View(arqdata_returns)
5 t(names(arqdata_returns))
6 View(arqdata_returns)
```

```
[1,] “ticker” “dimension” “calendardate” “datekey” “reportperiod” “accoci”
     [,7]     [,8]        [,9]      [,10]      [,11]           [,12]
[1,] “assets” “assetsavg” “assetsc” “assetsnc” “assetturnover” “bvps”
     [,13]   [,14]     [,15]        [,16] [,17]          [,18] [,19]
[1,] “capex” “cashneq” “cashnequsd” “cor” “currentratio” “de”  “debt”
     [,20]     [,21]     [,22]      [,23] [,24]  [,25]    [,26]<br />
[1,] “debtusd” “depamor” “divyield” “dps” “ebit” “ebitda” “ebitdamargin”
     [,27]       [,28]     [,29] [,30] [,31]    [,32]    [,33]<br />
[1,] “ebitdausd” “ebitusd” “ebt” “eps” “epsdil” “epsusd” “equity”
     [,34]       [,35]       [,36] [,37]    [,38]      [,39] [,40]<br />
[1,] “equityavg” “equityusd” “ev”  “evebit” “evebitda” “fcf” “fcfps”
     [,41]   [,42] [,43]         [,44]         [,45]    [,46]<br />
[1,] “fxusd” “gp”  “grossmargin” “intangibles” “intexp” “invcap”
     [,47]       [,48]       [,49]         [,50]          [,51]<br />
[1,] “invcapavg” “inventory” “liabilities” “liabilitiesc” “liabilitiesnc”
     [,52]       [,53] [,54]       [,55]     [,56]    [,57]  [,58]  [,59]
[1,] “marketcap” “ncf” “ncfcommon” “ncfdebt” “ncfdiv” “ncff” “ncfi” “ncfo”
```

Took 1 min 15 sec. Last updated by anonymous at March 25 2017, 4:55:27 PM. (outdated)

FINISHED

```
1 %spark.r
2 #Indicators listed.
3 #Calculating ratios by choice 1.SGNA/REVENUE (sgnamargin) and 2.ebitmargin
4 sgnamargin = arqdata_returns$sgna / arqdata_returns$revenue
5 ebitmargin = arqdata_returns$ebit / arqdata_returns$revenue
6
7 #adding ratios by choice to dataset - arqdata_returns
8 arqdata_returns_ratios <- cbind(arqdata_returns, sgnamargin,ebitmargin)
9 View(arqdata_returns_ratios)
10 t(names(arqdata_returns_ratios))
11
```

```
[1,] “ticker” “dimension” “calendardate” “datekey” “reportperiod” “accoci”
     [,7]     [,8]        [,9]      [,10]      [,11]           [,12]
[1,] “assets” “assetsavg” “assetsc” “assetsnc” “assetturnover” “bvps”
     [,13]   [,14]     [,15]        [,16] [,17]          [,18] [,19]
[1,] “capex” “cashneq” “cashnequsd” “cor” “currentratio” “de”  “debt”
     [,20]     [,21]     [,22]      [,23] [,24]  [,25]    [,26]<br />
```

Zeppelin Notebook

DS-670_Assignm...

anonymou

default

```
[1,] “debtusd” “depamor” “divyield” “dps” “ebit” “ebitda” “ebitdamargin”
     [,29]      [,30]      [,31]     [,32]    [,33]<br />
[1,] “ebitdausd” “ebitusd” “ebt” “eps” “epsdil” “epsusd” “equity”
     [,34]       [,35]      [,36] [,37]     [,38]      [,39] [,40]<br />
[1,] “equityavg” “equityusd” “ev” “evebit” “evebitda” “fcf” “fcfps”
     [,41]   [,42] [,43]        [,44]          [,45]    [,46]<br />
[1,] “fxusd” “gp”  “grossmargin” “intangibles” “intexp” “invcap”
     [,47]       [,48]       [,49]         [,50]          [,51]<br />
[1,] “invcapavg” “inventory” “liabilities” “liabilitiesc” “liabilitiesnc”
     [,52]       [,53] [,54]       [,55]     [,56]    [,57]  [,58]  [,59]
[1,] “marketcap” “ncf” “ncfcommon” “ncfdebt” “ncfdiv” “ncff” “ncfi” “ncfo”
     [,60]  [,61]    [,62]       [,63]          [,64]       [,65]<br />
[1,] “ncfx” “netinc” “netinccmn” “netinccmnusd” “netincdis” “netmargin”
     [,66]      [,67]         [,68] [,69] [,70] [,71]       [,72]   [,73]
[1,] “payables” “payoutratio” “pb”  “pe”  “pe1” “prefdivis” “price” “ps”
     [,74] [,75]         [,76]     [,77]     [,78]        [,79] [,80]
[1,] “ps1” “receivables” “retearn” “revenue” “revenueusd” “rnd” “roa”
```

Took 42 sec. Last updated by anonymous at March 25 2017, 4:56:57 PM. (outdated)

FINISHED

```
1  %spark.r
2  #Consider the 20 indicators chosen
3  #factors required in the dataset
4  arq_data_factors <- arqdata_returns_ratios[c(1,3,77,16,42,84,24,43,95,96,45,91,61,29,30,65,7,9,
5  head(arq_data_factors)
6
7  #17 lines
```

```
ticker calendardate   revenue      cor       gp     sgna     ebit
1      A   31-03-2011 1.519e+09 7.03e+08 8.16e+08 4.46e+08 2.21e+08
2      A   30-06-2011 1.677e+09 7.77e+08 9.00e+08 4.69e+08 2.80e+08
3      A   30-09-2011 1.691e+09 7.99e+08 8.92e+08 4.49e+08 3.01e+08
4      A   31-12-2011 1.728e+09 8.07e+08 9.21e+08 4.45e+08 3.16e+08
5      A   31-03-2012 1.635e+09 7.61e+08 8.74e+08 4.41e+08 2.82e+08
6      A   30-06-2012 1.733e+09 8.15e+08 9.18e+08 4.52e+08 3.18e+08
  grossmargin sgnamargin ebitmargin  intexp   taxexp   netinc      ebt
1       0.537  0.2936142  0.1454905 2.3e+07  5.0e+06 1.93e+08 1.98e+08
2       0.537  0.2796661  0.1669648 2.0e+07  6.0e+07 2.00e+08 2.60e+08
3       0.527  0.2655234  0.1780012 2.0e+07 -4.9e+07 3.30e+08 2.81e+08
4       0.533  0.2575231  0.1828704 2.3e+07  4.0e+06 2.89e+08 2.93e+08
5       0.535  0.2697248  0.1724771 2.6e+07  2.6e+07 2.30e+08 2.56e+08
6       0.530  0.2608194  0.1834968 2.5e+07  3.8e+07 2.55e+08 2.93e+08
   eps netmargin    assets   assetsc liabilitiesc currentratio
1 0.56     0.127 8.044e+09 4.598e+09    1.406e+09        3.270
2 0.58     0.119 8.649e+09 5.096e+09    1.592e+09        3.201
3 0.95     0.195 8.753e+09 5.223e+09    1.505e+09        3.470
4 0.84     0.167 9.057e+09 5.569e+09    1.837e+09        3.032
5 0.66     0.141 9.099e+09 5.715e+09    1.705e+09        3.352
6 0.73     0.147 9.413e+09 6.010e+09    1.835e+09        3.275
  workingcapital    capex    return
1      3.192e+09 -3.8e+07 0.0000000
```

```
2       3.504e+09 -5.1e+07 1.0358227
3       3.618e+09 -5.1e+07 1.7482142
4       3.732e+09 -4.9e+07 0.9375220
5       4.010e+09 -4.6e+07 1.2785577
6       4.175e+09 -5.2e+07 0.8839136
```

Zeppelin Notebook

DS-670_Assignm...

anonymous

Took 0 sec. Last updated by anonymous at March 25 2017, 8:47:08 PM.

default

FINISHED

```
1  %spark.r
2  caldate = unique(arq_data_factors$calendardate)
3  length(caldate)
4  prj2_arq_date = vector();
5  prj2_arq_nn = vector();
6  prj2_date_replace = vector();
7  factors1 <- NULL
8  factors2 <- NULL
9  factors3 <- NULL
10 #35 lines
```

```
[1] 20
```

Took 0 sec. Last updated by anonymous at March 25 2017, 5:00:03 PM. (outdated)

FINISHED

```
1  %spark.r
2  # Loop for dates - each date we get a dataset prj2_arq_'date'
3  for (i in 1:length(caldate)){
4    #if (i < 16)
5    #{
6      #print(paste0("calendar date: ", caldate[i]))
7      factors1 <- subset(arq_data_factors, calendardate == caldate[i])
8
9      ### Calculating log(returns) ###
10     factors1 <- subset(factors1, factors1$return != 0)
11     return_log <- log(factors1$return)
12     factors1 <- cbind(factors1, return_log)
13
14     ### Remove all NAs in our dataset before normalizing
15     factors1 <- na.omit(factors1)
16
17     ### Normalizing all Indicators
18     revenue_nor <- (factors1[,3] - mean(factors1[,3])) / sd(factors1[,3])
19     cor_nor <- (factors1[,4] - mean(factors1[,4])) / sd(factors1[,4])
20     gp_nor <- (factors1[,5] - mean(factors1[,5])) / sd(factors1[,5])
21     sgna_nor <- (factors1[,6] - mean(factors1[,6])) / sd(factors1[,6])
22     ebit_nor <- (factors1[,7] - mean(factors1[,7])) / sd(factors1[,7])
23     gm_nor <- (factors1[,8] - mean(factors1[,8])) / sd(factors1[,8])
24     sgna_mg_nor <- (factors1[,9] - mean(factors1[,9])) / sd(factors1[,9])
25     ebit_mg_nor <- (factors1[,10] - mean(factors1[,10])) / sd(factors1[,10])
26     intexp_nor <- (factors1[,11] - mean(factors1[,11])) / sd(factors1[,11])
27     taxexp_nor <- (factors1[,12] - mean(factors1[,12])) / sd(factors1[,12])
28     netinc_nor <- (factors1[,13] - mean(factors1[,13])) / sd(factors1[,13])
29     ebt_nor <- (factors1[,14] - mean(factors1[,14])) / sd(factors1[,14])
30     eps_nor <- (factors1[,15] - mean(factors1[,15])) / sd(factors1[,15])
31     netmargin_nor <- (factors1[,16] - mean(factors1[,16])) / sd(factors1[,16])
32     assets_nor <- (factors1[,17] - mean(factors1[,17])) / sd(factors1[,17])
33     assetsc_nor <- (factors1[,18] - mean(factors1[,18])) / sd(factors1[,18])
34     liabc_nor <- (factors1[,19] - mean(factors1[,19])) / sd(factors1[,19])
```

Zeppelin Notebook

DS-670_Assignm... anonymou

default

Took 1 sec. Last updated by anonymous at March 25 2017, 5:04:36 PM. (outdated)

FINISHED

```
1 %spark.r
2 # Datasets names
3 head(prj2_arq_date)
4 head(prj2_arq_nn)
5
6 #head(get(prj2_arq_nn[1])
7 #get(prj2_arq_nn[1])
8
```

```
[1] “prj2_arq_31_03_2011” “prj2_arq_30_06_2011” “prj2_arq_30_09_2011”
[4] “prj2_arq_31_12_2011” “prj2_arq_31_03_2012” “prj2_arq_30_06_2012”
[1] “prj2_arqnn_31_03_2011” “prj2_arqnn_30_06_2011” “prj2_arqnn_30_09_2011”
[4] “prj2_arqnn_31_12_2011” “prj2_arqnn_31_03_2012” “prj2_arqnn_30_06_2012”
```

Took 0 sec. Last updated by anonymous at March 25 2017, 9:04:54 PM.

FINISHED

```
1 %spark.r
2 install.packages("neuralnet", repos = "http://cran.us.r-project.org")
3 install.packages("MASS", repos = "http://cran.us.r-project.org")
4
```

```
The downloaded source packages are in
    '/tmp/RtmpdfiJRz/downloaded_packages'
```

Took 19 sec. Last updated by anonymous at March 25 2017, 5:06:39 PM. (outdated)

Zeppelin Notebook

DS-670_Assignm...

anonymou

```
%spark.r
library("MASS")
library("neuralnet")
```

Took 0 sec. Last updated by anonymous at March 25 2017, 5:07:01 PM. (outdated)

default

FINISHED

```
%spark.r
###################### neural network - package does not take Strings!!
names_date <- names(get(prj2_arq_nn[1]))
names_date
```

```
[1] “revenue_nor”   “cor_nor”       “gp_nor”        “sgna_nor”<br />
 [5] “ebit_nor”      “gm_nor”        “sgna_mg_nor”   “ebit_mg_nor”<br />
 [9] “intexp_nor”    “taxexp_nor”    “netinc_nor”    “ebt_nor”<br />
[13] “eps_nor”       “netmargin_nor” “assets_nor”    “assetsc_nor”<br />
[17] “liabc_nor”     “cur_ratio_nor” “wc_nor”        “capex_nor”<br />
[21] “return_log”
```

Took 0 sec. Last updated by anonymous at March 25 2017, 5:07:07 PM. (outdated)

FINISHED

```
%spark.r
### log(returns) as y .... we need to get the formula to use in nueral networks as it does not
names_date %in% "return_log"
!names_date %in% "return_log"
paste(names_date[!names_date %in% "return_log"])
paste(names_date[!names_date %in% "return_log"], collapse = "+")
paste("return_log ~ ", paste(names_date[!names_date %in% "return_log"], collapse = "+"))
formula1 <- as.formula(paste("return_log ~ ", paste(names_date[!names_date %in% "return_log"],
formula1

```

```
[1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[12] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  TRUE
 [1]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
[12]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE
 [1] “revenue_nor”   “cor_nor”       “gp_nor”        “sgna_nor”<br />
 [5] “ebit_nor”      “gm_nor”        “sgna_mg_nor”   “ebit_mg_nor”<br />
 [9] “intexp_nor”    “taxexp_nor”    “netinc_nor”    “ebt_nor”<br />
[13] “eps_nor”       “netmargin_nor” “assets_nor”    “assetsc_nor”<br />
[17] “liabc_nor”     “cur_ratio_nor” “wc_nor”        “capex_nor”<br />
[1] “revenue_nor+cor_nor+gp_nor+sgna_nor+ebit_nor+gm_nor+sgna_mg_nor+ebit_mg_nor+intexp_nor+taxexp_no
r+netinc_nor+ebt_nor+eps_nor+netmargin_nor+assets_nor+assetsc_nor+liabc_nor+cur_ratio_nor+wc_nor+cape
x_nor”
[1] “return_log ~  revenue_nor+cor_nor+gp_nor+sgna_nor+ebit_nor+gm_nor+sgna_mg_nor+ebit_mg_nor+intexp
_nor+taxexp_nor+netinc_nor+ebt_nor+eps_nor+netmargin_nor+assets_nor+assetsc_nor+liabc_nor+cur_ratio_n
or+wc_nor+capex_nor”
return_log ~ revenue_nor + cor_nor + gp_nor + sgna_nor + ebit_nor +
    gm_nor + sgna_mg_nor + ebit_mg_nor + intexp_nor + taxexp_nor +
```

Took 0 sec. Last updated by anonymous at March 25 2017, 5:07:11 PM. (outdated)

Zeppelin Notebook

DS-670_Assignm...

anonymou

default

```
1  %spark.r
2  ############## Assigning datasets - from date 15 to date 20
3  uvw1 <- get(prj2_arq_nn[15])
4  uvw2 <- get(prj2_arq_nn[16])
5  uvw3 <- get(prj2_arq_nn[17])
6  uvw4 <- get(prj2_arq_nn[18])
7  uvw5 <- get(prj2_arq_nn[19])
8  uvw6 <- get(prj2_arq_nn[20])
9  head(get(prj2_arq_date[17]))
10 #94 lines
```

```
17       A   31-03-2015  0.01439033 -0.04207989  0.1390798  0.20840226
38      AA   31-03-2015  1.20665857  1.26814971  0.7906741  0.09887883
44     AAC   31-03-2015 -0.23017689 -0.21310986 -0.2159198 -0.19253635
83     AAL   31-03-2015  2.20365650  1.19547031  3.9814477  3.57694991
146   AAOI   31-03-2015 -0.23330843 -0.20638101 -0.2406638 -0.21766917
167   AAON   31-03-2015 -0.22173300 -0.19478331 -0.2317944 -0.21520489
        ebit_nor      gm_nor sgna_mg_nor ebit_mg_nor   intexp_nor
17   0.005610863  0.05788391 -0.04398179  0.04982287 -0.005237661
38   0.743086384 -0.07349110 -0.04627883  0.04981099  1.976632243
44  -0.150845233  0.30670023 -0.04162526  0.04988165 -0.290533443
83   1.756284735  0.09271820 -0.04421367  0.04990082  3.621958201
146 -0.159739786 -0.02571837 -0.04472714  0.04939392 -0.302050725
167 -0.136494358 -0.04960474 -0.04567916  0.05011704 -0.304387835
     taxexp_nor netinc_nor      ebt_nor    eps_nor netmargin_nor
17  -0.07104492  0.0357906  0.006291527 0.01802950    0.05025438
38   1.22135355  0.3202280  0.587601802 0.01791388    0.05011986
44  -0.12908262 -0.1244217 -0.129466780 0.01781754    0.05017217
```

Took 1 sec. Last updated by anonymous at March 25 2017, 9:05:34 PM.

FINISHED

```
1  %spark.r
2
3  ############## Assigning datasets - from date 1 to date 15
4  mar2011 <- get(prj2_arq_nn[1])
5  jun2011 <- get(prj2_arq_nn[2])
6  sep2011 <- get(prj2_arq_nn[3])
7  dec2011 <- get(prj2_arq_nn[4])
8  mar2012 <- get(prj2_arq_nn[5])
9  jun2012 <- get(prj2_arq_nn[6])
10 sep2012 <- get(prj2_arq_nn[7])
11 dec2012 <- get(prj2_arq_nn[8])
12 mar2013 <- get(prj2_arq_nn[9])
13 jun2013 <- get(prj2_arq_nn[10])
14 sep2013 <- get(prj2_arq_nn[11])
15 dec2013 <- get(prj2_arq_nn[12])
16 mar2014 <- get(prj2_arq_nn[13])
17 jun2014 <- get(prj2_arq_nn[14])
18 sep2014 <- get(prj2_arq_nn[15])
19 dec2014 <- get(prj2_arq_nn[16])
20 mar2015 <- get(prj2_arq_nn[17])
21 jun2015 <- get(prj2_arq_nn[18])
22 sep2015 <- get(prj2_arq_nn[19])
23 dec2015 <- get(prj2_arq_nn[20])
24
```

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Took 1 sec. Last updated by anonymous at March 25 2017, 9:06:00 PM.

anonymou

FINISHED default

```
%spark.r
###################### neural network - package does not
names_date <- names(get(prj2_arq_nn[1]))
names_date
### log(returns) as y .... we need to get the formula to use in nueral networks as it does not
names_date %in% "return_log"
!names_date %in% "return_log"
paste(names_date[!names_date %in% "return_log"])
paste(names_date[!names_date %in% "return_log"], collapse = "+")
paste("return_log ~ ", paste(names_date[!names_date %in% "return_log"], collapse = "+"))
formula1 <- as.formula(paste("return_log ~ ", paste(names_date[!names_date %in% "return_log"],
formula1
#124 lines
```

```
[1] “revenue_nor”   “cor_nor”       “gp_nor”        “sgna_nor”<br />
 [5] “ebit_nor”      “gm_nor”        “sgna_mg_nor”   “ebit_mg_nor”<br />
 [9] “intexp_nor”    “taxexp_nor”    “netinc_nor”    “ebt_nor”<br />
[13] “eps_nor”       “netmargin_nor” “assets_nor”    “assetsc_nor”<br />
[17] “liabc_nor”     “cur_ratio_nor” “wc_nor”        “capex_nor”<br />
[21] “return_log”<br />
 [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[12] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  TRUE
 [1]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
[12]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE
 [1] “revenue_nor”   “cor_nor”       “gp_nor”        “sgna_nor”<br />
 [5] “ebit_nor”      “gm_nor”        “sgna_mg_nor”   “ebit_mg_nor”<br />
 [9] “intexp_nor”    “taxexp_nor”    “netinc_nor”    “ebt_nor”<br />
[13] “eps_nor”       “netmargin_nor” “assets_nor”    “assetsc_nor”<br />
[17] “liabc_nor”     “cur_ratio_nor” “wc_nor”        “capex_nor”<br />
[1] “revenue_nor+cor_nor+gp_nor+sgna_nor+ebit_nor+gm_nor+sgna_mg_nor+ebit_mg_nor+intexp_nor+taxexp_no
r+netinc_nor+ebt_nor+eps_nor+netmargin_nor+assets_nor+assetsc_nor+liabc_nor+cur_ratio_nor+wc_nor+cape
r+capex_nor”
```

Took 3 sec. Last updated by anonymous at March 25 2017, 5:24:52 PM. (outdated)

FINISHED

```
%spark.r

## 2011 ##
nn1_2011_03_31 <- neuralnet(formula1, data=mar2011, hidden = c(8,7), linear.output = T)
nn1_2011_06_30 <- neuralnet(formula1, data=jun2011, hidden = c(8,7), linear.output = T, thresh
nn1_2011_09_30 <- neuralnet(formula1, data=sep2011, hidden = c(8,7), linear.output = T, thresh
nn1_2011_12_31 <- neuralnet(formula1, data=dec2011, hidden = c(8,7), linear.output = T, thresh
## weights 2011 ##
wgt_2011_03_31 <- nn1_2011_03_31$result.matrix
wgt_2011_06_30 <- nn1_2011_06_30$result.matrix
wgt_2011_09_30 <- nn1_2011_09_30$result.matrix
wgt_2011_12_31 <- nn1_2011_12_31$result.matrix

```


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default
[1] 15
[1] 239
Took 0 sec. Last updated by anonymous at March 25 2017, 7:58:56 PM. (outdated)
FINISHED
1 %spark.r
2 ####### Smoothing the weights from NN model
3 ####### Time series Analysis - MA model timeseries_nn.R
4 #######
5 ################## Use p=0, d=2, q=1 as model ########################

Zeppelin Notebook

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default

```
[1] “Date: 1”
[1] “Row count: 16”
[1] “Date: 2”
[1] “Row count: 17”
[1] “Date: 3”
[1] “Row count: 18”
[1] “Date: 4”
[1] “Row count: 19”
[1] “Date: 5”
[1] “Row count: 20”
```

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FINISHED

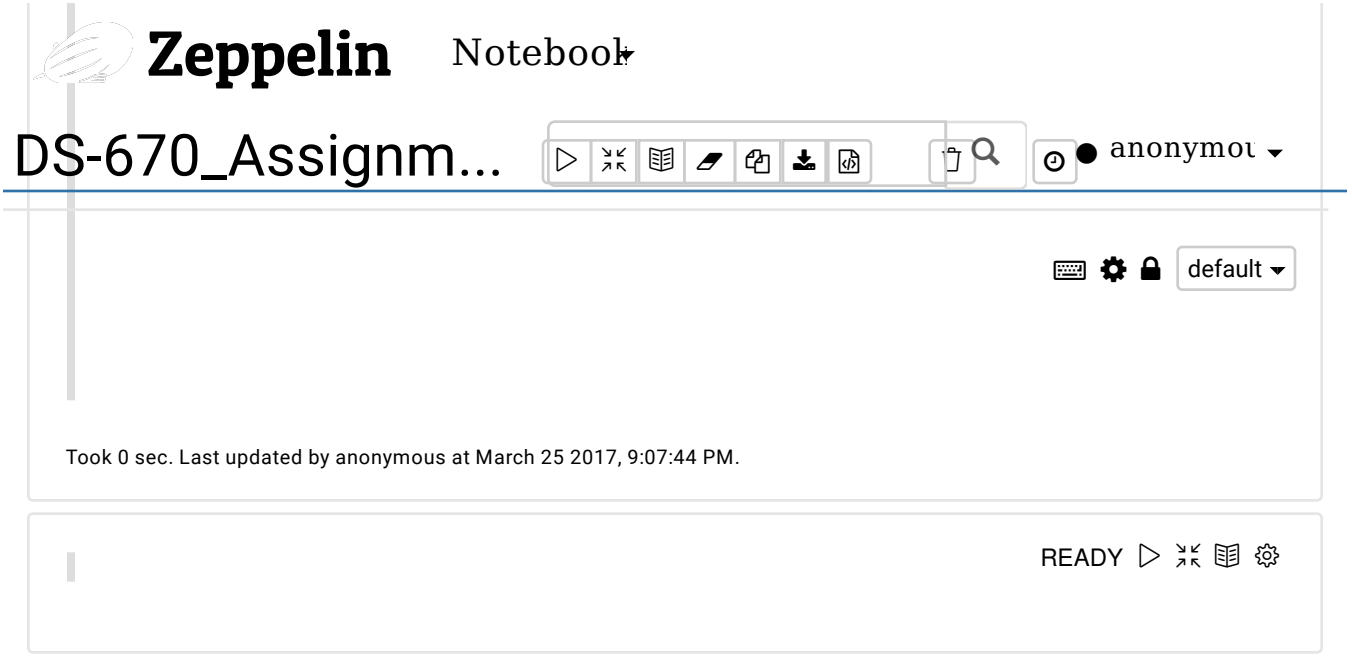
```
1 %spark.r
2 nrow(matrix_weight)
3 ncol(matrix_weight)
4 #head(matrix_weight)
```

```
[1] 20
[1] 239
```

Took 0 sec. Last updated by anonymous at March 25 2017, 9:07:08 PM.

FINISHED

```
1 %spark.r
2 ###################### Neural Network Equation ######################
3 #View(dec2014)
```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READY