> setwd('C:/Rdirectory/data\_mining/data\_mining\_covid');

> covid\_train = read.csv("covid\_train.csv", header=T);

> str(covid\_train);

'data.frame': 32356 obs. of 16 variables:

$ sex : int 1 1 1 1 1 1 1 1 1 1 ...

$ patient\_type : int 2 2 2 2 2 2 2 2 2 2 ...

$ pneumonia : int 2 2 1 1 1 2 1 1 1 2 ...

$ age : num 25 52 51 67 59 52 54 78 80 40 ...

$ diabetes : int 2 2 2 1 1 1 2 2 1 2 ...

$ copd : int 2 2 2 2 2 2 2 2 2 2 ...

$ asthma : int 2 2 2 2 2 2 2 2 2 2 ...

$ inmsupr : int 2 2 2 2 2 2 2 2 2 2 ...

$ hypertension : int 2 2 2 1 2 1 2 1 1 2 ...

$ other\_disease : int 2 2 2 2 2 2 2 2 2 2 ...

$ cardiovascular : int 2 2 2 2 2 1 2 2 2 2 ...

$ obesity : int 2 1 2 1 2 2 2 1 1 2 ...

$ renal\_chronic : int 2 2 2 2 2 2 2 2 2 2 ...

$ tobacco : int 2 1 2 2 2 2 2 2 2 2 ...

$ contact\_other\_covid: int 1 1 1 1 1 2 2 1 1 2 ...

$ is\_dead : int 2 2 2 2 2 2 2 1 2 2 ...

> head(covid\_train);

sex patient\_type pneumonia age diabetes copd asthma inmsupr hypertension other\_disease cardiovascular obesity renal\_chronic

1 1 2 2 25 2 2 2 2 2 2 2 2 2

2 1 2 2 52 2 2 2 2 2 2 2 1 2

3 1 2 1 51 2 2 2 2 2 2 2 2 2

4 1 2 1 67 1 2 2 2 1 2 2 1 2

5 1 2 1 59 1 2 2 2 2 2 2 2 2

6 1 2 2 52 1 2 2 2 1 2 1 2 2

tobacco contact\_other\_covid is\_dead

1 2 1 2

2 1 1 2

3 2 1 2

4 2 1 2

5 2 1 2

6 2 2 2

> covid\_test = read.csv("covid\_test.csv", header=T);

> str(covid\_test);

'data.frame': 5920 obs. of 16 variables:

$ sex : int 1 1 1 1 1 1 1 1 1 1 ...

$ patient\_type : int 2 2 2 2 2 2 2 2 2 2 ...

$ pneumonia : int 2 2 1 1 1 1 2 2 2 1 ...

$ age : num 52 36 0 85 75 19 46 60 62 39 ...

$ diabetes : int 2 2 2 2 2 2 2 2 1 2 ...

$ copd : int 2 2 2 1 2 2 2 2 2 2 ...

$ asthma : int 2 2 2 2 2 2 2 2 2 2 ...

$ inmsupr : int 2 2 2 2 2 2 2 2 2 2 ...

$ hypertension : int 2 2 2 1 1 2 2 2 2 1 ...

$ other\_disease : int 1 2 2 2 2 2 2 2 2 2 ...

$ cardiovascular : int 2 2 2 1 2 2 2 2 2 2 ...

$ obesity : int 2 2 2 1 2 2 2 2 2 2 ...

$ renal\_chronic : int 2 2 2 2 2 2 2 2 2 2 ...

$ tobacco : int 2 2 2 2 2 2 2 2 2 2 ...

$ contact\_other\_covid: int 2 2 2 2 2 2 1 2 2 2 ...

$ is\_dead : int 2 2 1 2 2 2 2 2 2 2 ...

> head(covid\_test);

sex patient\_type pneumonia age diabetes copd asthma inmsupr hypertension other\_disease cardiovascular obesity renal\_chronic

1 1 2 2 52 2 2 2 2 2 1 2 2 2

2 1 2 2 36 2 2 2 2 2 2 2 2 2

3 1 2 1 0 2 2 2 2 2 2 2 2 2

4 1 2 1 85 2 1 2 2 1 2 1 1 2

5 1 2 1 75 2 2 2 2 1 2 2 2 2

6 1 2 1 19 2 2 2 2 2 2 2 2 2

tobacco contact\_other\_covid is\_dead

1 2 2 2

2 2 2 2

3 2 2 1

4 2 2 2

5 2 2 2

6 2 2 2

> covid\_dead\_train = read.csv("covid\_dead\_train.csv", header=T);

> str(covid\_dead\_train);

'data.frame': 3600 obs. of 16 variables:

$ sex : int 1 1 1 1 1 1 1 1 1 1 ...

$ patient\_type : int 2 2 2 2 2 2 2 2 2 2 ...

$ pneumonia : int 1 1 2 1 1 1 1 1 1 2 ...

$ age : int 78 65 58 78 92 70 71 65 56 72 ...

$ diabetes : int 2 2 2 2 2 2 1 1 2 2 ...

$ copd : int 2 2 2 2 2 2 1 2 2 2 ...

$ asthma : int 2 2 2 2 2 2 2 2 2 2 ...

$ inmsupr : int 2 2 2 2 2 2 2 2 2 2 ...

$ hypertension : int 1 2 2 2 1 2 1 1 2 1 ...

$ other\_disease : int 2 2 1 2 2 2 2 2 2 2 ...

$ cardiovascular : int 2 2 2 2 2 2 2 2 2 2 ...

$ obesity : int 1 1 2 1 2 1 1 1 2 2 ...

$ renal\_chronic : int 2 2 2 2 2 2 2 2 2 1 ...

$ tobacco : int 2 2 2 2 2 2 1 2 2 2 ...

$ contact\_other\_covid: int 1 2 1 1 2 2 1 2 2 2 ...

$ day\_cnt : int 10 7 1 6 3 16 21 14 30 20 ...

> head(covid\_dead\_train);

sex patient\_type pneumonia age diabetes copd asthma inmsupr hypertension other\_disease cardiovascular obesity renal\_chronic

1 1 2 1 78 2 2 2 2 1 2 2 1 2

2 1 2 1 65 2 2 2 2 2 2 2 1 2

3 1 2 2 58 2 2 2 2 2 1 2 2 2

4 1 2 1 78 2 2 2 2 2 2 2 1 2

5 1 2 1 92 2 2 2 2 1 2 2 2 2

6 1 2 1 70 2 2 2 2 2 2 2 1 2

tobacco contact\_other\_covid day\_cnt

1 2 1 10

2 2 2 7

3 2 1 1

4 2 1 6

5 2 2 3

6 2 2 16

> covid\_dead\_test = read.csv("covid\_dead\_test.csv", header=T);

> str(covid\_dead\_test);

'data.frame': 420 obs. of 16 variables:

$ sex : int 1 1 1 1 1 1 1 1 1 1 ...

$ patient\_type : int 2 2 2 2 2 2 2 2 2 2 ...

$ pneumonia : int 1 1 1 1 1 1 1 1 1 1 ...

$ age : int 66 68 49 61 47 56 68 72 78 64 ...

$ diabetes : int 1 2 2 1 1 2 1 1 1 1 ...

$ copd : int 2 2 2 2 2 2 2 1 2 2 ...

$ asthma : int 2 2 2 2 1 2 2 2 2 2 ...

$ inmsupr : int 2 2 2 2 2 2 2 2 2 2 ...

$ hypertension : int 1 2 2 1 2 2 1 1 2 2 ...

$ other\_disease : int 2 2 2 2 2 2 2 2 2 2 ...

$ cardiovascular : int 2 2 2 2 2 2 2 2 2 2 ...

$ obesity : int 1 2 1 2 2 2 1 1 1 2 ...

$ renal\_chronic : int 2 2 2 2 2 2 2 2 2 2 ...

$ tobacco : int 2 2 2 2 2 2 2 2 2 2 ...

$ contact\_other\_covid: int 1 2 2 2 2 2 2 2 2 2 ...

$ day\_cnt : int 3 5 16 4 18 10 9 6 6 8 ...

> head(covid\_dead\_test);

sex patient\_type pneumonia age diabetes copd asthma inmsupr hypertension other\_disease cardiovascular obesity renal\_chronic

1 1 2 1 66 1 2 2 2 1 2 2 1 2

2 1 2 1 68 2 2 2 2 2 2 2 2 2

3 1 2 1 49 2 2 2 2 2 2 2 1 2

4 1 2 1 61 1 2 2 2 1 2 2 2 2

5 1 2 1 47 1 2 1 2 2 2 2 2 2

6 1 2 1 56 2 2 2 2 2 2 2 2 2

tobacco contact\_other\_covid day\_cnt

1 2 1 3

2 2 2 5

3 2 2 16

4 2 2 4

5 2 2 18

6 2 2 10

> # install.packages("neuralnet");

> library(neuralnet);

> install.packages("neuralnet");

Error in install.packages : Updating loaded packages

> nn1 = neuralnet(is\_dead~., data=covid\_train, algorithm = "rprop+", act.fct = 'logistic',linear.output = TRUE, hidden =3);

> plot(nn1);

텍스트, 스크린샷, 직사각형, 도표이(가) 표시된 사진

자동 생성된 설명

> summary(nn1);

Length Class Mode

call 7 -none- call

response 32356 -none- numeric

covariate 485340 -none- numeric

model.list 2 -none- list

err.fct 1 -none- function

act.fct 1 -none- function

linear.output 1 -none- logical

data 16 data.frame list

exclude 0 -none- NULL

net.result 1 -none- list

weights 1 -none- list

generalized.weights 1 -none- list

startweights 1 -none- list

result.matrix 55 -none- numeric

> prediction = predict(nn1, covid\_test[], type="response");

> computation = compute(nn1, covid\_test[1:15]);

> plot(covid\_test$is\_dead~computation$net.result)

> prediction = round(prediction)

> computation = round(computation$net.result)

> comparison\_prediction=cbind(covid\_test,prediction);

> comparison\_prediction=as.data.frame(comparison\_prediction);

> comparison\_computation=cbind(covid\_test,computation);

> comparison\_computation=as.data.frame(comparison\_computation);

> # prediction 함수 통한 예측

> print(paste("test 건수 : ",nrow(covid\_test)));

[1] "test 건수 : 5920"

> predictCorrect\_prediction = comparison\_prediction[comparison\_prediction$is\_dead == comparison\_prediction$prediction,];

> print(paste("사망여부 예측성공 건수 : ", nrow(predictCorrect\_prediction)));

[1] "사망여부 예측성공 건수 : 3614"

> print(paste("사망여부 예측 정확도 : " ,nrow(predictCorrect\_prediction)/nrow(covid\_test))); # 61.2%

[1] "사망여부 예측 정확도 : 0.610472972972973"

> # computation 함수 통한 예측

> print(paste("test 건수 : ",nrow(covid\_test)));

[1] "test 건수 : 5920"

> predictCorrect\_computation = comparison\_computation[comparison\_computation$is\_dead == comparison\_computation$computation,];

> print(paste("사망여부 예측성공 건수 : ", nrow(predictCorrect\_computation)));

[1] "사망여부 예측성공 건수 : 3614"

> print(paste("사망여부 예측 정확도 : " ,nrow(predictCorrect\_computation)/nrow(covid\_test))); # 61.3%

[1] "사망여부 예측 정확도 : 0.610472972972973"

> # 학습수렴 안함

> nn1\_dead = neuralnet(day\_cnt~., data=covid\_dead\_train, algorithm = "rprop+", act.fct = 'logistic',linear.output = TRUE, hidden =3, stepmax = 100000);