딥러닝 모델 구현해 보기

- 첫번째 데이터 셋 : 자전거 공유 업체 시간대별 데이터
- **두번째 데이터 셋 : 타이타닉 데이터 셋**

In [56]:

```
import numpy as np
import matplotlib.pyplot as plt
import matplotlib
import pandas as pd
import tensorflow as tf
```

In [57]:

```
import keras
from keras.models import Sequential
from keras.layers import Dense
```

In [58]:

```
print(keras.__version__)
```

```
2.3.1
```

In [59]:

```
train = pd.read_csv("./titanic/train.csv")
test = pd.read_csv("./titanic/test.csv")
print(train.shape, test.shape)
```

```
(891, 12) (418, 11)
```

In [60]:

```
train.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
PassengerId    891 non-null int64
Survived       891 non-null int64
Pclass         891 non-null int64
Name           891 non-null object
Sex            891 non-null object
Age            714 non-null float64
SibSp          891 non-null int64
Parch          891 non-null int64
Ticket         891 non-null object
Fare           891 non-null float64
Cabin          204 non-null object
Embarked       889 non-null object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.6+ KB
```

In [61]:

```
test.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 418 entries, 0 to 417
Data columns (total 11 columns):
PassengerId    418 non-null int64
Pclass         418 non-null int64
Name           418 non-null object
Sex            418 non-null object
Age            332 non-null float64
SibSp          418 non-null int64
Parch          418 non-null int64
Ticket         418 non-null object
Fare           417 non-null float64
Cabin          91 non-null object
Embarked       418 non-null object
dtypes: float64(2), int64(4), object(5)
memory usage: 36.0+ KB
```

In [62]:

```
input_col = ['Pclass', 'SibSp', 'Parch']
labeled_col = ['Survived']
```

In [63]:

```
X = train[ input_col ]
y = train[ labeled_col ]
X_val = test[ input_col ]
```

In [64]:

```
seed = 0
numpy.random.seed(seed)
tf.set_random_seed(seed)
```

In [65]:

```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X, y,
                                                    random_state=0)
```

In [66]:

```
print(X_train.shape, X_test.shape)
print()
print(y_train.shape, y_test.shape)
```

```
(668, 3) (223, 3)

(668, 1) (223, 1)
```

딥러닝 구조

In [67]:

```
from keras.models import Sequential
from keras.layers import Dense
```

In [71]:

```
model = Sequential()
model.add(Dense(30, input_dim=3, activation='relu'))
model.add(Dense(15, activation='relu') )
model.add(Dense(1, activation='sigmoid'))
```

딥러닝 설정 및 학습

In [72]:

```
model.compile(loss = 'binary_crossentropy', optimizer='adam', metrics=['accuracy'])
model.fit(X_train, y_train, epochs=100, batch_size=10)
```

```
668/668 [==============================] - 0s 137us/step - loss: 0.5883 - accurac
y: 0.6931
Epoch 27/100
668/668 [==============================] - 0s 154us/step - loss: 0.5903 - accurac
y: 0.7021
Epoch 28/100
668/668 [==============================] - 0s 141us/step - loss: 0.5874 - accurac
y: 0.6976
Epoch 29/100
668/668 [==============================] - 0s 133us/step - loss: 0.5872 - accurac
y: 0.6991
Epoch 30/100
668/668 [==============================] - 0s 136us/step - loss: 0.5861 - accurac
y: 0.6976
Epoch 31/100
668/668 [==============================] - 0s 131us/step - loss: 0.5853 - accurac
y: 0.7036
Epoch 32/100
668/668 [==============================] - 0s 137us/step - loss: 0.5859 - accurac
y: 0.6961
```

모델 평가

In [73]:

```
model.evaluate(X_test, y_test)
```

```
223/223 [==============================] - 0s 322us/step
```

Out[73]:

```
[0.5887107410773034, 0.7174887657165527]
```

In [74]:

```
print("₩n Accuracy : %.4f" % (model.evaluate(X_test, y_test)[1]))
```

```
223/223 [==============================] - 0s 40us/step

 Accuracy : 0.7175
```

In [98]:

```
pred = model.predict(X_val)
```

In [99]:

```
sub = pd.read_csv("./titanic/gender_submission.csv")
sub.columns
```

Out[99]:

```
Index(['PassengerId', 'Survived'], dtype='object')
```

In [107]:

```
pred[:, 0] > 0.5
```

Out[107]:

```
array([False, False, False, False, False, False, False,  True, False,
       False, False,  True,  True,  True,  True,  True, False, False,
       False, False,  True,  True,  True,  True,  True, False,  True,
       False,  True, False,  True, False, False, False,  True, False,
       False, False, False, False,  True,  True, False, False,  True,
       False,  True, False,  True,  True,  True, False,  True,  True,
       False, False, False, False, False,  True, False, False, False,
       False,  True, False, False,  True,  True, False, False, False,
       False,  True,  True,  True, False,  True, False, False, False,
        True,  True, False, False, False, False, False, False,  True,
       False, False,  True, False,  True, False,  True, False, False,
       False,  True,  True, False, False, False, False, False, False,
       False, False, False, False,  True, False,  True, False, False,
       False,  True,  True, False, False,  True, False, False,  True,
       False, False, False, False, False,  True, False, False, False,
       False, False, False, False, False, False,  True,  True, False,
        True, False,  True, False,  True,  True,  True, False, False,
        True, False, False,  True, False,  True,  True, False, False,
       False, False, False, False,  True, False,  True, False, False,
       False, False, False, False,  True, False,  True,  True,  True,
       False,  True,  True, False,  True, False,  True, False, False,
       False,  True,  True, False, False,  True, False,  True, False,
       False, False, False,  True,  True,  True, False,  True, False,
       False,  True, False, False, False, False,  True, False,  True,
       False,  True,  True, False,  True, False, False, False,  True,
        True, False, False, False,  True, False, False, False,  True,
       False,  True, False, False, False,  True, False, False,  True,
        True,  True,  True, False, False, False, False, False,  True,
       False,  True, False, False, False, False, False, False,  True,
        True, False,  True,  True,  True, False,  True,  True, False,
       False, False,  True, False,  True, False, False, False, False,
       False,  True, False, False, False, False, False, False,  True,
       False, False,  True, False,  True,  True, False, False, False,
       False,  True, False, False,  True, False, False, False,  True,
       False,  True,  True,  True, False,  True,  True, False, False,
        True, False, False, False, False, False, False,  True, False,
       False, False, False,  True,  True,  True, False, False,  True,
       False,  True, False, False,  True,  True,  True,  True,  True,
       False,  True,  True, False, False, False,  True, False, False,
        True, False, False, False])
```

In [113]:

```
sub['Survived'] = pred[:, 0] > 0.5
```

In [114]:

```
sub.to_csv("titanic_submit0528.csv", index=False)
```

In [ ]:

```

```