Yaklasiksal SVD ve Tavsiye Sistemleri

```python
import pandas as pd
import ssvd; reload(ssvd)
d =  np.array(
[[  5.,    5.,    3.,   nan,    5.,    5.],
 [  5.,   nan,    4.,   nan,    4.,    4.],
 [ nan,    3.,   nan,    5.,    4.,    5.],
 [  5.,    4.,    3.,    3.,    5.,    5.],
 [  5.,    5.,   nan,   nan,   nan,    5.]
])
data = pd.DataFrame (d,
    columns=['0','1','2','3','4','5'],
    index=['Ben','Tom','John','Fred','Bob'])
mu,b_u,b_i,q_i,p_u = ssvd.ssvd(data)
print mu
print 'b_u',b_u
print 'b_i',b_i
print 'q_i',q_i
print 'p_u',p_u
```

```
5 6
4.31388888889
b_u [ 0.10133903  0.09409426  0.09418718  0.08886431  0.10676199]
b_i [ 0.10901103  0.09410751  0.0818748   0.0946108   0.0992177   0.10642075]
q_i [[ 0.10086511  0.09937517  0.09815699  0.0994476   0.09988284  0.10059356]
 [ 0.10086511  0.09937517  0.09815699  0.0994476   0.09988284  0.10059356]
 [ 0.10086511  0.09937517  0.09815699  0.0994476   0.09988284  0.10059356]]
p_u [[ 0.100097    0.100097    0.100097  ]
 [ 0.09937763  0.09937763  0.09937763]
 [ 0.09938889  0.09938889  0.09938889]
 [ 0.09885517  0.09885517  0.09885517]
 [ 0.10065103  0.10065103  0.10065103]]
```

```python
u = 4; i = 2
r_ui_hat = mu + b_i[i] + b_u[u] + np.dot(q_i[:,i].T,p_u[u,:])
print r_ui_hat
```

```
4.53216448203
```

```python
import pandas as pd, os
df = pd.read_csv("%s/Downloads/movielens.csv" % os.environ['HOME'] ,sep=';')
print df.shape
df = df.ix[0:1000,1:3700] # id kolonunu atla,
df.columns = range(3699)
print df.shape
```

```
(6040, 3731)
(1001, 3699)
```

```python
print df.ix[110,10]
print df.ix[59,20]
df.ix[110,10] = nan
df.ix[59,20] = nan
print df.ix[110,10]
print df.ix[59,20]
```

```
4.0
3.0
nan
nan
```

```python
mu,b_u,b_i,q_i,p_u = ssvd.ssvd(df)
reload(ssvd)
import ssvd
print mu
```

```
1001 3699
3.2900967656
```

```python
u=110;i=10
r_ui_hat = mu + b_i[i] + b_u[u] + np.dot(q_i[:,i].T,p_u[u,:])
print r_ui_hat
u=59;i=20
r_ui_hat = mu + b_i[i] + b_u[u] + np.dot(q_i[:,i].T,p_u[u,:])
print r_ui_hat
```

```
3.77778381527
3.54456229482
```