Hw3-2: SVD

15826 – Multimedia Databases and Data Mining

Fall 2013, C. Faloutsos

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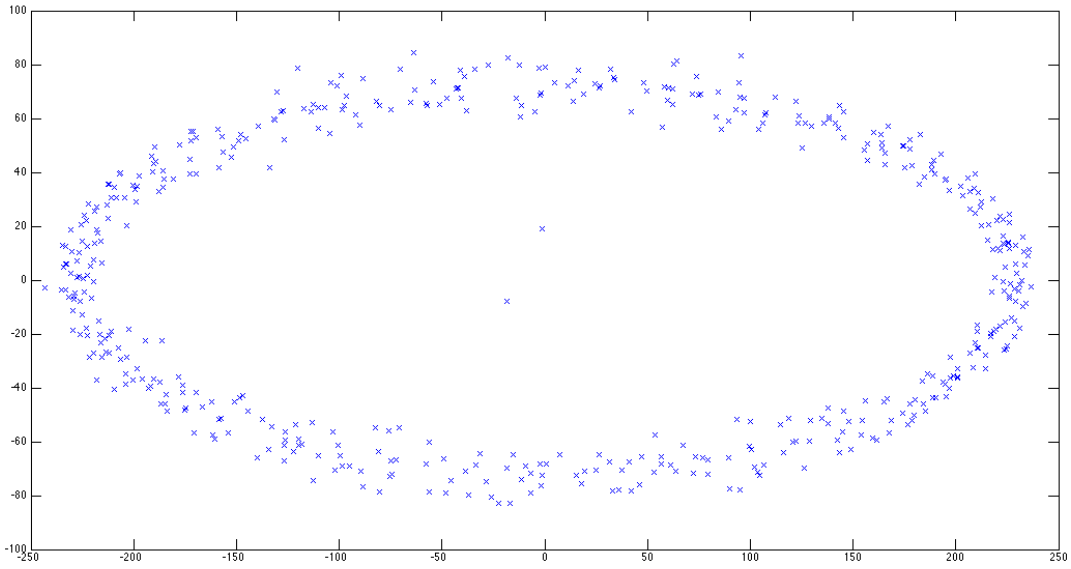
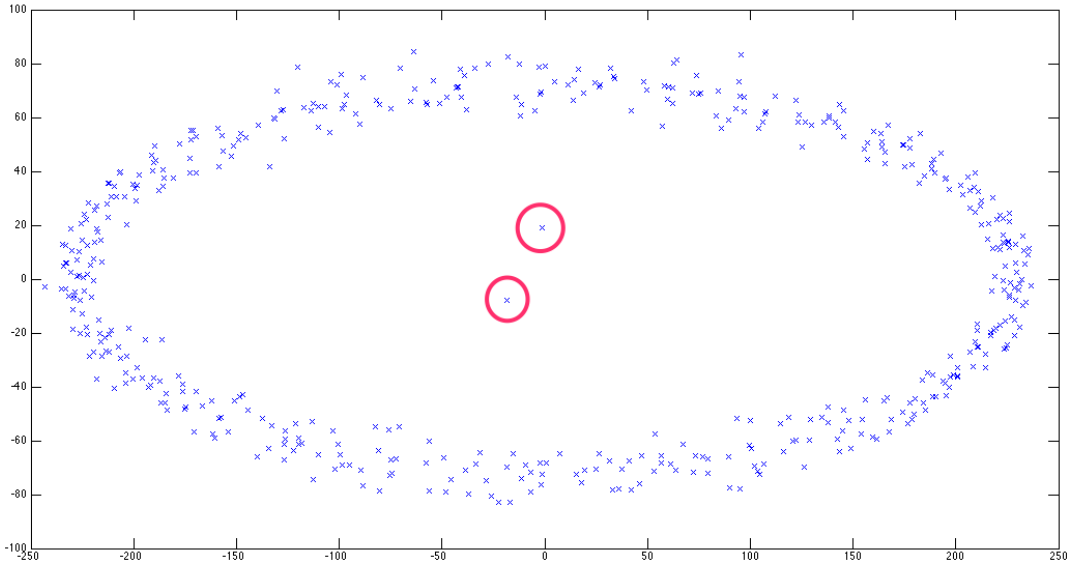
Plot



S1: 2D visualization in concept space



S2: Two outliers

Result

S2 - 2D coordinates of the outliers

- -1.39920453087693 18.9059018395856
- -18.3283729991747 -7.70025149353194

S3 - Formular

- [U, S, V] = svd(X)
- X_2D = U(:,1:2) * S(1:2,1:2)
- X_Reverse = X_2D * transpose(V(:,1:2))

S3 - 5D reversed coordinates

- 2.8986 -2.4652 -5.0052 -11.9563 13.3006
- 5.4401 4.6151 5.8837 16.0256 7.2726

Code

q2.m

```
[U,S,V] = svd(X, 0);

U2D = U(:,1:2);
S2D = S(1:2,1:2);
V2D = V(:,1:2);

X2D = U2D * S2D;
plot(X2D(:,1),X2D(:,2), 'x');

X5D = X2D * transpose(V2D);
```