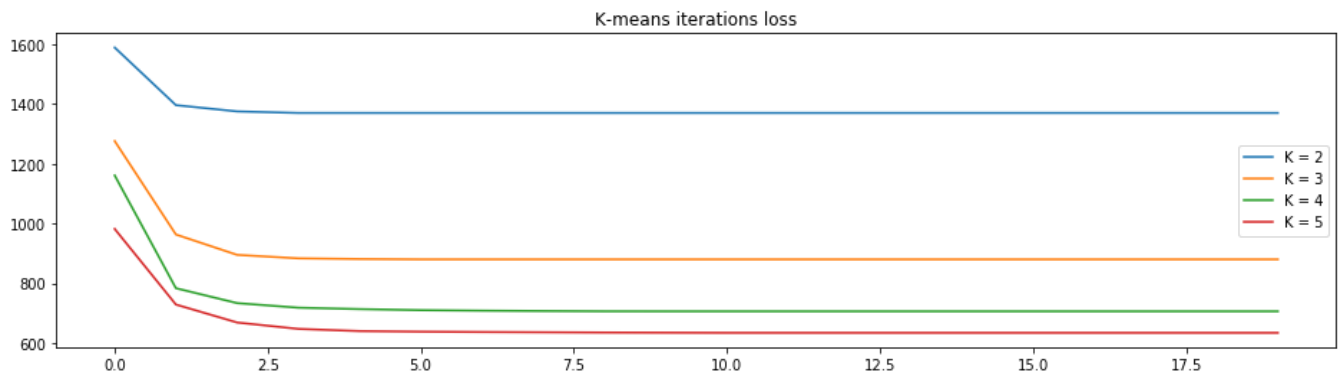# ELEN E4903 Homework 4

Kliment Mamykin UNI 2770

```
In [1]:  %load_ext autoreload
         %autoreload 2
         %matplotlib inline
         from hw4.hw4 import *
```
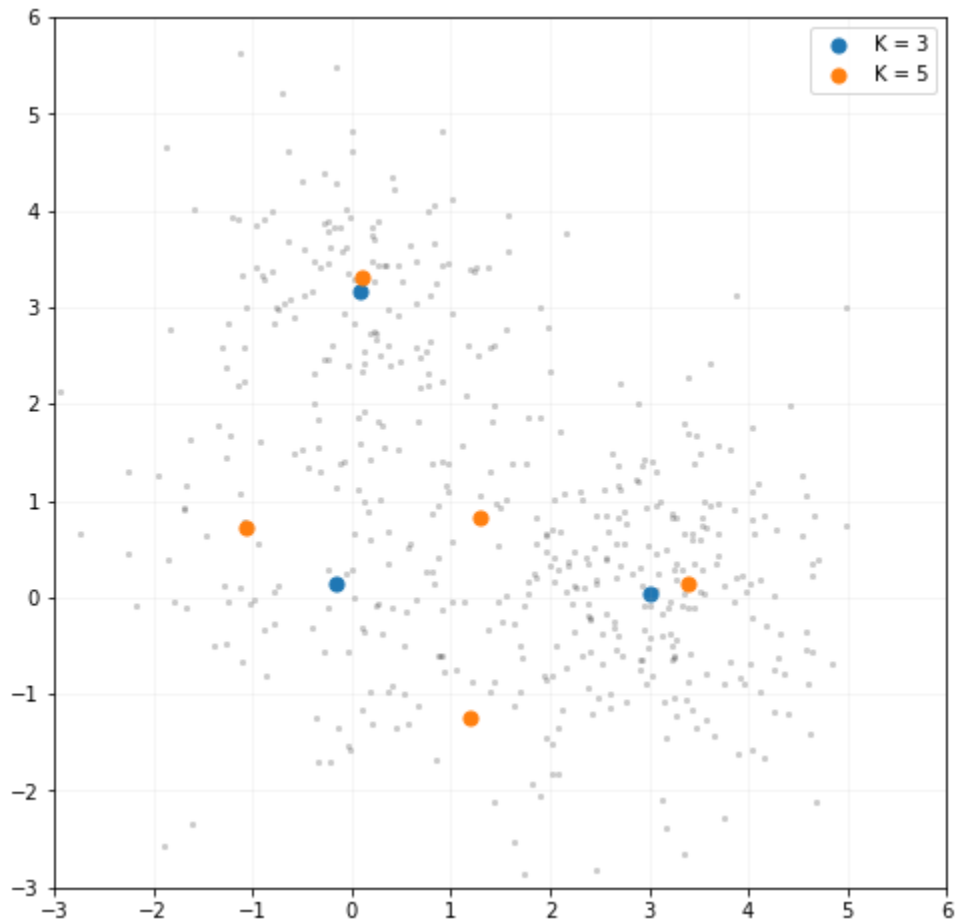
Problem 1 (a):

```
In [9]:  k_means = k_means_experiment(n=500)
```

```
In [10]:  plot_problem1_a(k_means)
```


Problem 1 (b):

```
In [11]: plot_problem1_b(k_means)
```
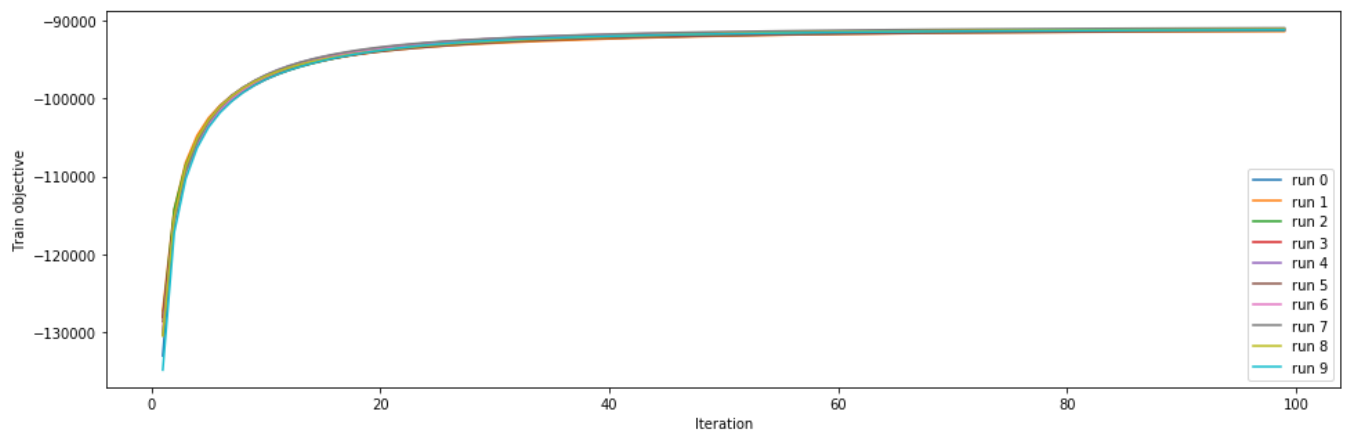

Problem 2 (a):

```
In [16]: %time results = factorize_ratings(runs=10, iterations=100)
```

```
CPU times: user 23min 39s, sys: 5.02 s, total: 23min 44s
Wall time: 23min 44s
```

```
In [17]: problem2_a1(*results)
```

In [18]: `problem2_a2(*results)`

	train objective	test RMSE
7	-90933.737758	1.134456
2	-91038.074089	1.079320
6	-91076.724039	1.117558
8	-91090.671951	1.126457
0	-91093.947601	1.134102
4	-91177.114631	1.137159
3	-91182.463337	1.115483
9	-91192.972991	1.110303
5	-91282.781770	1.150284
1	-91365.548743	1.160497

Problem 2 (b):

In [19]: `problem2_b(*results)`

	Star Wars (1977)	My Fair Lady (1964)	GoodFellas (1990)
0	Empire Strikes Back, The (1980)	Mary Poppins (1964)	Full Metal Jacket (1987)
1	Raiders of the Lost Ark (1981)	Sound of Music, The (1965)	Casino (1995)
2	Return of the Jedi (1983)	Snow White and the Seven Dwarfs (1937)	Pulp Fiction (1994)
3	Princess Bride, The (1987)	Sabrina (1954)	Bonnie and Clyde (1967)
4	Indiana Jones and the Last Crusade (1989)	Cinderella (1950)	Apocalypse Now (1979)
5	Terminator, The (1984)	Singin' in the Rain (1952)	Godfather: Part II, The (1974)
6	Blues Brothers, The (1980)	Winnie the Pooh and the Blustery Day (1968)	Good, The Bad and The Ugly, The (1966)
7	Usual Suspects, The (1995)	Grease (1978)	Godfather, The (1972)
8	Great Escape, The (1963)	Wizard of Oz, The (1939)	People vs. Larry Flynt, The (1996)
9	Prefontaine (1997)	Alice in Wonderland (1951)	Carlito's Way (1993)