Problem Set 4

4.5 (b) Data Set

Firstly, I choose the hyperparameter (lambda & pi) for different cluster number K.
When K = 1, we set hyperparameter π = 1, λ = 1.

K = 1	π	λ
London	1	0.92882
Anwerp	1	0.89583

When K = 2, we set hyperparameter π = [0.5,0.5], λ =[1,2].

K = 1	π	λ
London	[0.57883,0.42117]	[0.86540,1.01598]
Anwerp	[0.66110,0.33890]	[0.22974,2.19520]

When K = 3, we set hyperparameter π = [0.33,0.33,0.34], λ =[1,2,3].

K = 1	π	λ
London	[0.475,0.326,0.199]	[0.835,1.006,1.028]
Anwerp	[0.401,0.314, 0.285]	[0.089,0.613,2.344]

When K = 4, we set hyperparameter π = [0.25,0.25,0.25,0.25], λ =[1,2,3,4].

K = 1	π	λ
London	[0.441,0.295,0.171,0.093]	[0.827,0.997,1.020,1.027]
Anwerp	[0.412,0.302,0.158,0.128]	[0.096,0.619,2.339,2.339]

When K = 5, we set hyperparameter π = [0.2,0.2,0.2,0.2, 0.2], λ =[1,2,3,4,5].

K = 1	π	λ
London	[0.426,0.282,0.161,0.087,0.045]	[0.824,0.992,1.016,1.023,1.027]
Anwerp	[0.420,0.293,0.122,0.098,0.067]	[0.101,0.623,2.336,2.336,2.336]

Conclusion

Codes