

Ex3 - Lior Ziv

June 18, 2017

1. Added to tar

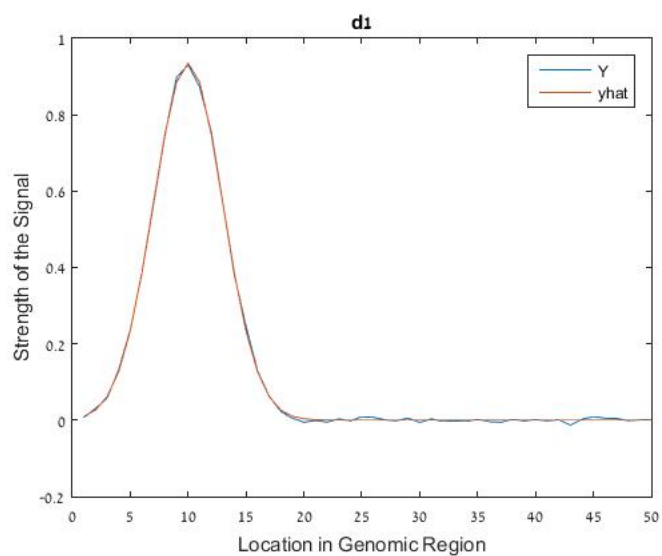
2. Added to tar

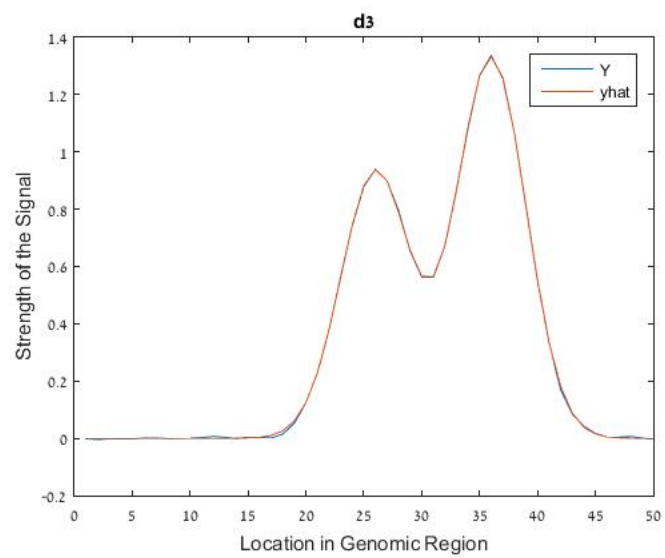
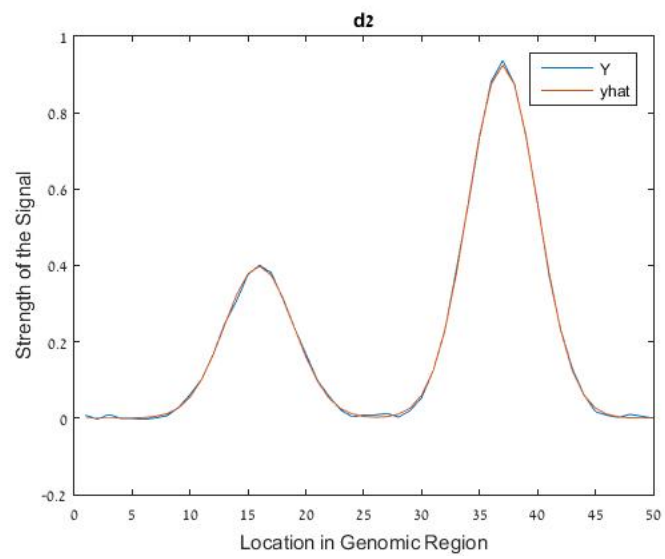
3. Code is added to tar.

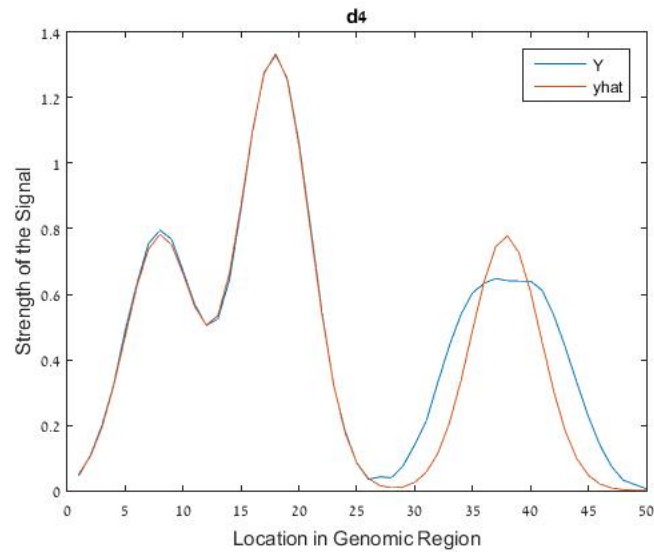
I initialized H , X randomly from a range of $[0, \max(Y)]$, $[1:50]$.

4. Added to tar.

5. Best results :







6. Using d4 which has 3 centers

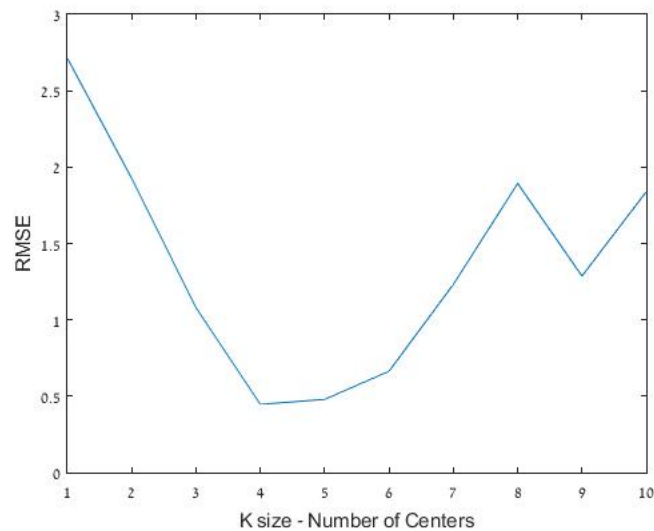
Comparing the RMSE to K,

we can see that from $k = 1:4$ we get a decrease in the RMSE.

I would expect the lowest RMSE for $K = 3$ since I clearly see only 3 centers, but the global minimal value is around $k = 4$.

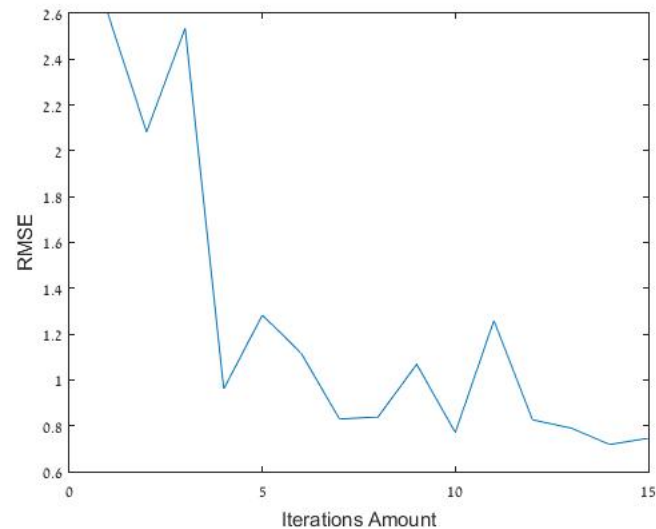
Might be due to an incorrect choice of centers for $k = 3$.

From $k = 4$ and on we can see that the graph changes but always stays above the $k = 4$.



Comparing the RMSE to the iterations amount, we see (although the graph is not stable) that as the amount of iterations grows \rightarrow RMSE decrease.

The global minimal values are around 14.



7. regular optimize - RMSE - 0.688 , time - 20.2329

x optimization - RMSE - 0.703 , time - 14.913

The results make sense to me since we see that where we gave the algorithm to optimize both of the variables H,X

the RMSE we got is smaller than if we gave it only X to optimize.

Also we see that the regular optimize has a longer running time since it has two variables to optimize compare to the optimizeX.