Additional Experiments and Figures for Submission 5768: LSDS++: Dual Sampling for Accelerated k-means++

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1 Additional Evaluation

Dear Reviewer sisK: Please see Figure 1 for the suggested additional plots. To show the error bar and variation, we plot the curve for the averaged relative error, along with the $\pm$ one standard deviation error bars. We are happy to add these figures to the paper. Thanks for the suggestion.

Dear Reviewer Gwgt: Please see Figure 2 the suggested plots on the cost vs. iterations. The black curves are the strategy of choosing the closest point to swap in every iteration. We see that this strategy is much worse than our proposed LSDS++. In Figure 3, we plot the same set of results against the wall-clock time. The observations are similar.

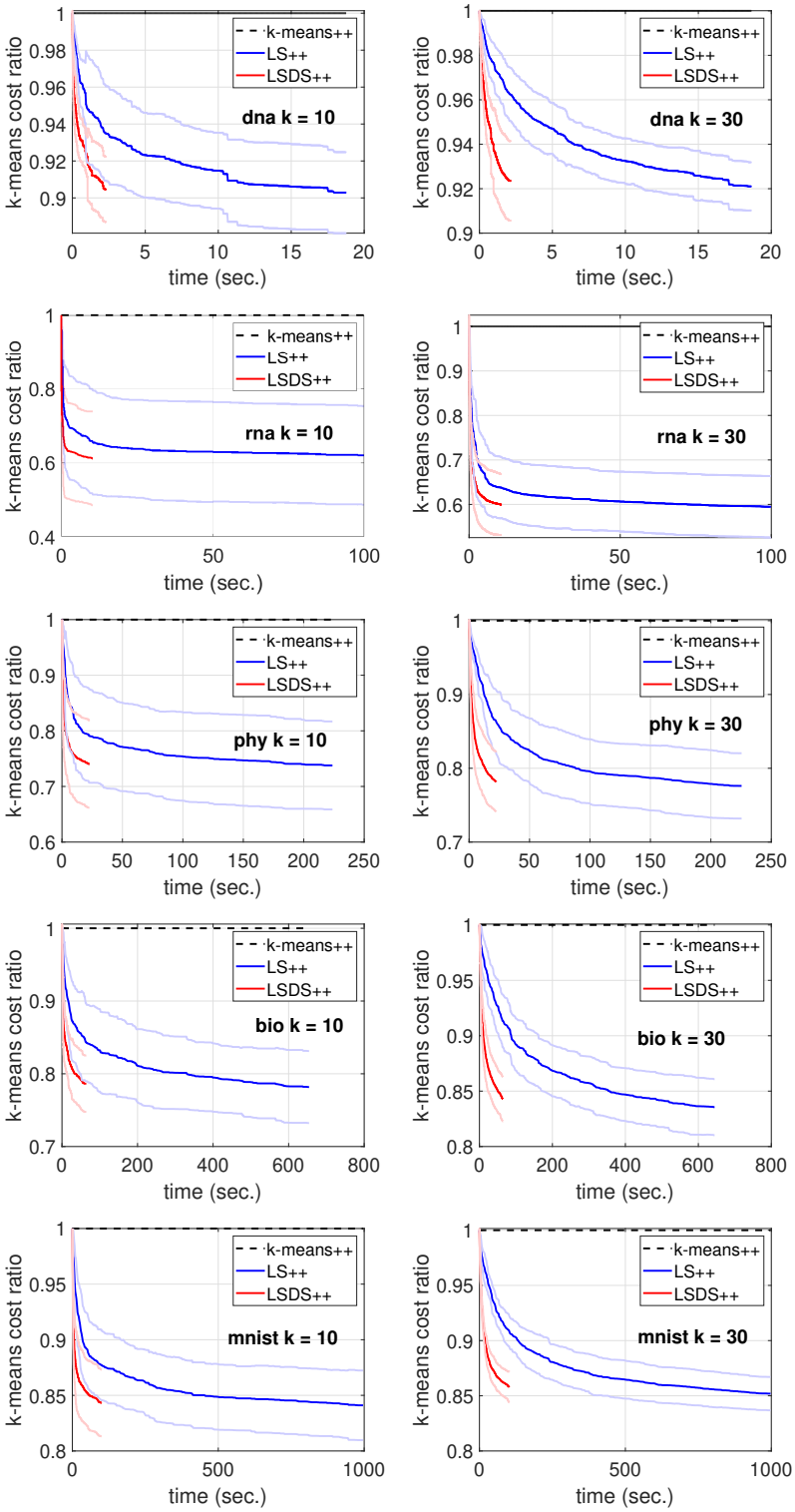

Figure 1: The k-means cost ratio against the wall-clock running time. We first run k-means++ to obtain centers C_0. Then we run LS++ and LSDS++ starting from C_0 for 500 iterations, respectively. The curves are the corresponding $cost(P, C_f)/cost(P, C_0)$ where C_f is the center set after each iteration. The transparent curves are the mean $\pm$ one standard deviation over 10 independent runs.

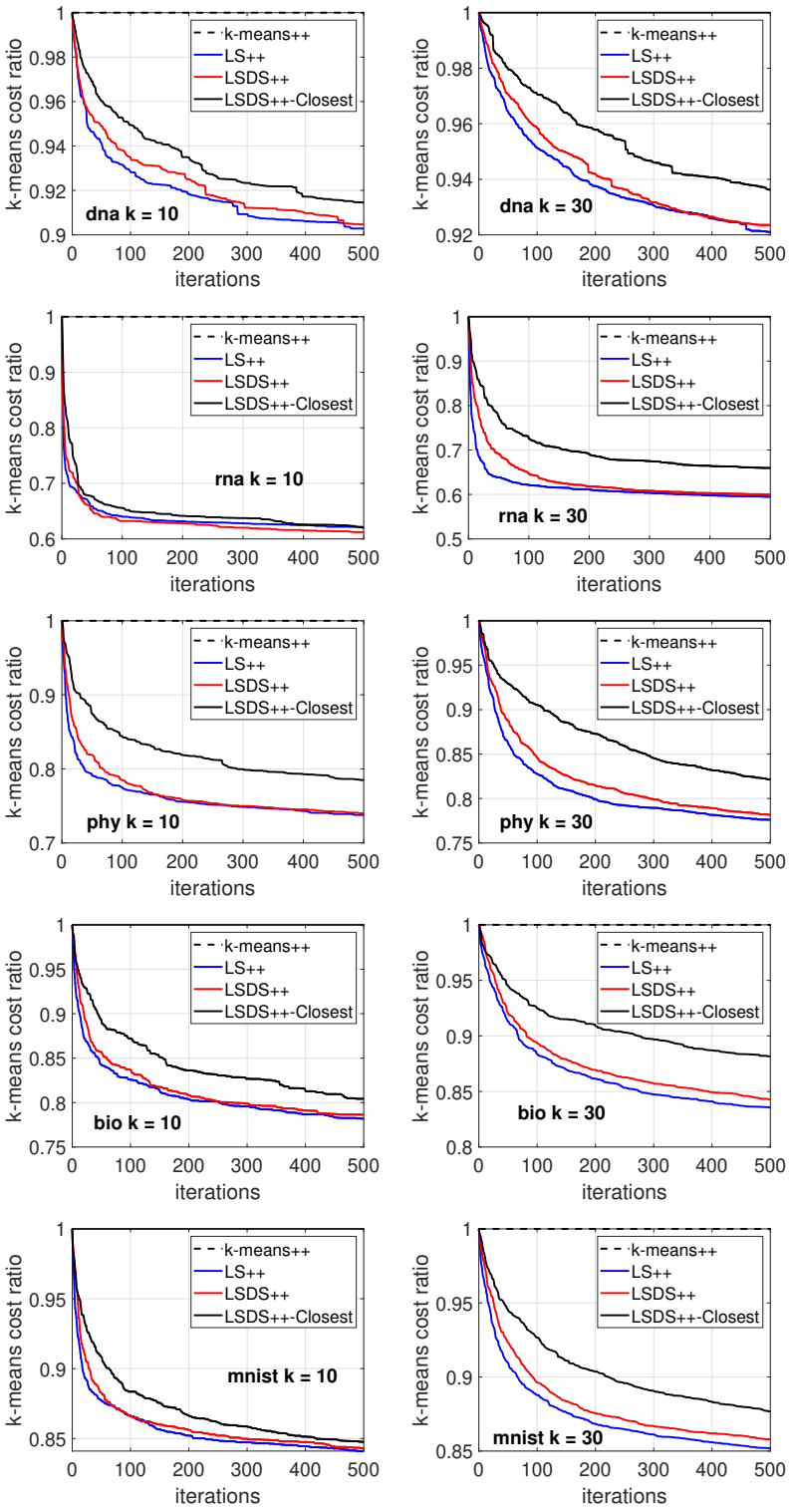

Figure 2: The k-means cost ratio against the number of iterations. We first run k-means++ to obtain centers C_0. Then we run LS++ and LSDS++ starting from C_0 for 500 iterations, respectively. The curves are the corresponding $cost(P, C_f)/cost(P, C_0)$ where C_f is the center set after each iteration. "LSDS++-Closest" is the strategy to choose the closest point to the current center for swapping in every iteration.

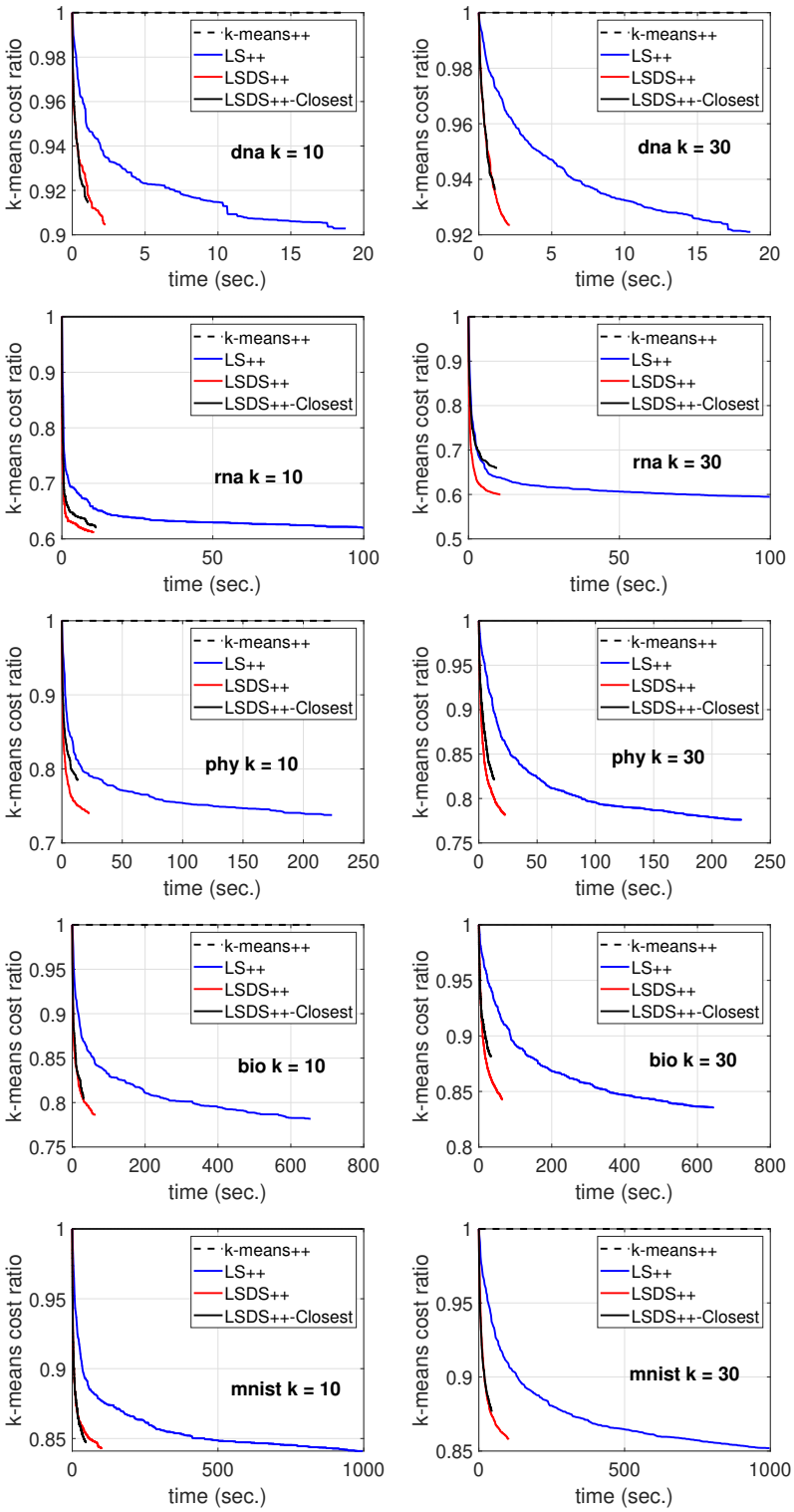

Figure 3: The k-means cost ratio against the wall-clock running time. We first run k-means++ to obtain centers C_0. Then we run LS++ and LSDS++ starting from C_0 for 500 iterations, respectively. The curves are the corresponding $cost(P, C_f)/cost(P, C_0)$ where C_f is the center set after each iteration. "LSDS++-Closest" is the strategy to choose the closest point to the current center for swapping in every iteration.