

# Adaptive Partitioning of Large-Scale Dynamic Graphs

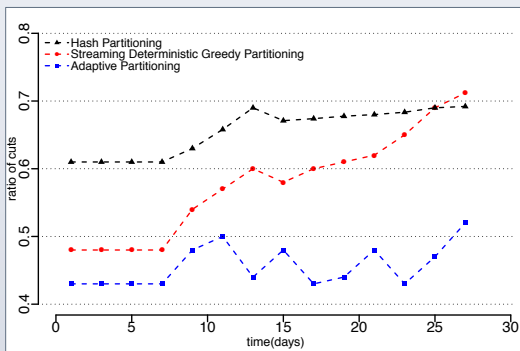
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## Problem Statement

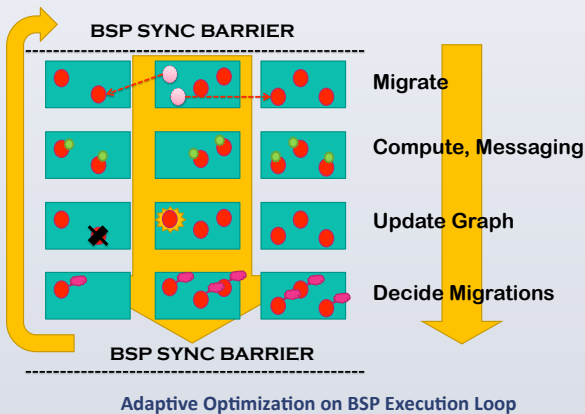
- Large-Scale Dynamic Graph Processing
- Graph partitioning impacts computation performance
- Graph changes degrade quality of partitioning



Evolution of partitioning on a graph from mobile CDR data

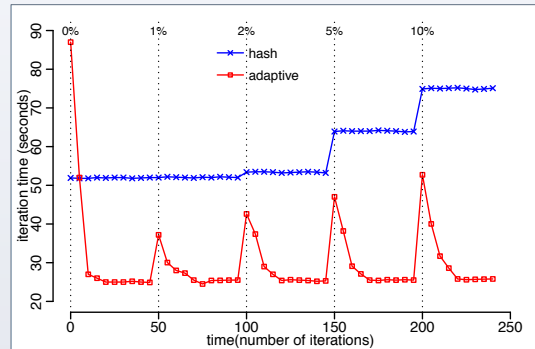
## Approach

- Iterative partitioning optimization
- Vertex-level decision, greedy migration
- Adaptive partitioning: Trigger migration decisions as the graph changes
- Computation and partitioning joint execution loop

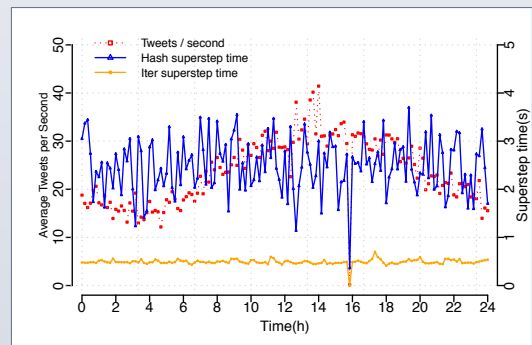


## Experiments

- Performance comparison with hash partitioning



Livejournal graph expanded with bursts of new nodes/edges



Twitter Stream analytics (TunkRank)

## Conclusions

- Migration overhead noticeable on initial steps
- Computation time stabilizes on frequent graph changes
- Vertex migrations improve computation performance

## References

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- [2] G. Malewicz, M. H. Austern, A. J. Bik, J. C. Dehnert, I. Horn, N. Leiser, and G. Czajkowski. Pregel: asystem for large-scale graph processing. In PODC , 2009.
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