## Efficient Filtering of Graph Based Data Using Graph Partitioning

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**Abstract :** An algebraic framework for processing graph signals axiomatically designates the graph adjacency matrix as the shift operator. In this setup, we often encounter a problem wherein we know the filtered output and the filter coefficients, and need to find out the input graph signal. Solution to this problem using direct approach requires O(N3) operations, where N is the number of vertices in graph. In this paper, we adapt the spectral graph partitioning method for partitioning of graphs and use it to reduce the computational cost of the filtering problem. We use the example of denoising of the temperature data to illustrate the efficacy of the approach.

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