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Title:

Accelerating the Clean-SC and CMF Beamforming Deconvolution Methods Using Neural Grid Compression

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Abstract:

Deconvolution algorithms can considerably improve the spatial resolution of sound sources when applied to beamforming techniques. However, they are often associated with additional computation time, which can be prohibitive for real-time applications, especially when using high-resolution scanning grids. Additionally, depending on the size of the problem, full deconvolution may not even be possible due to memory constraints.

Recently, it has been shown that a neural network approach to compress the possible source directions can speed up the results of the DAMAS deconvolution algorithm by orders of magnitude. In this paper, this neural grid compression preprocessing is evaluated for the CLEAN-SC and CMF deconvolution techniques, and it is shown that it is possible to achieve dramatic speedups without significant loss of accuracy and even improve the results in some examples, especially for the CLEAN-SC technique.

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