

Diffusion Adaptation Strategies for Distributed Estimation Based on the Family of Affine Projection Algorithms

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Abstract : This work presents the distributed processing solution problem in a diffusion network based on the adapt then combine (ATC) and combine then adapt (CTA) selective partial update normalized least mean squares (SPU-NLMS) algorithms. Also, we extend this approach to dynamic selection affine projection algorithm (DS-APA) and ATC-DS-APA and CTA-DS-APA are established. The purpose of ATC-SPU-NLMS and CTA-SPU-NLMS algorithm is to reduce the computational complexity by updating the selected blocks of weight coefficients at every iteration. In CTA-DS-APA and ATC-DS-APA, the number of the input vectors is selected dynamically. Diffusion cooperation strategies have been shown to provide good performance based on these algorithms. The good performance of introduced algorithm is illustrated with various experimental results.

Keywords : selective partial update, affine projection, dynamic selection, diffusion, adaptive distributed networks

Conference Title : ICISEEE 2015 : International Conference on Information Science, Electronics and Electrical Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : February 16-17, 2015