Abstract

Estimation of time delay between signals received at two spatially separated sensors has considerable practical importance in the applications like source localization, direction finding etc., in RADAR, SONAR and other communication systems. In this paper cross correlation (CC) generalized cross correlation with phase transform (GCC-PHAT) and maximum likelihood (ML) estimation methods are used as the time delay estimation methods. Prior to the delay estimation, the received signals are de-noised by AdaBoost based EMD technique. The performance of the delay estimation is significantly degraded by the signal-to-noise ratio (SNR) level and hence this factor has been considered as a principal factor. The simulation results of the proposed method are compared with the basic EMD as a de-noising technique at various SNR levels. The results show that the proposed method improves the resolution in the delay estimation in the noisy environment.

References

- A. Quazi, &quot;An overview on the time delay estimate in active and passive systems..."

Index Terms

Computer Science
Signal Processing
Keywords

EMD  Sifting process  Monotonic property  Adaptive Boosting  Cross-correlation
Generalized cross correlation

Maximum likelihood

time delay estimation.