Improvement of wiener filter based speech enhancement using compressive sensing (Conference Paper)

Sulong, A.\textsuperscript{a,b} Kadir, K.\textsuperscript{a} Gunawan, T.S.\textsuperscript{b} Khalifa, O.O.\textsuperscript{b}

\textsuperscript{a}Electrical Section, Universiti Kuala Lumpur British Malaysian Institute, Malaysia
\textsuperscript{b}Department of Electrical and Computer Engineering, International Islamic University Malaysia, P.O.Box 10, Kuala Lumpur, Malaysia

Abstract

Many researches have been addressed on design approach for speech enhancement. They are mainly focus on speech quality and intelligibility to produce high performance level of speech signal. Wiener filter is one of the adaptive filter algorithms to adjust filter coefficients and produce an output signal that satisfies some statistical criterion. The objective measures will optimize using informal listening test and Perceptual Evaluation of Speech Quality (PESQ). The cascaded design approach of the Wiener filter and compressive sensing (CS) algorithm with random matrices were applied to exhibit and produce the better results. Therefore, applying the speech signal to this algorithm design in terms of appropriate basis functions of relatively few nonzero coefficients in CS can achieve an optimal estimate of uncorrelated components of noisy speech without obvious degradation of speech quality. Aside from that, this algorithm can be promised the speech enhancement with high performance results and significantly improved comparing to classical methods. © 2014 IEEE.

Author keywords

Compressive sensing, PESQ, Speech Enhancement

References (20)

The university of Texas at Dallas

© 2014 IEEE.


Ma, I., Loizou, P.C.  
SNR loss: A new objective measure for predicting the intelligibility of noise-suppressed speech  

Baraniuk, R.G.  
Compressive sensing  
doi: 10.1109/MSP.2007.4286571  
View at Publisher

Kubin, Gernot, Kleijn, W.Bastiaan  
On speech coding in a perceptual domain  

Salomon, D.  

Figueiredo, M.A.T., Nowak, R.D., Wright, S.J.  
Gradient projection for sparse reconstruction: Application to compressed sensing and other inverse problems  
doi: 10.1109/JSTSP.2007.910281  
View at Publisher

Ma, J., Hu, Y., Loizou, P.C.  
Objective measures for predicting speech intelligibility in noisy conditions based on new band-importance functions  
doi: 10.1121/1.3097493  
View at Publisher

Wu, D., Zhu, W.-P., Swamy, M.N.S.  
Compressive sensing-based speech enhancement in non-sparse noisy environments  
www.ietdl.org/IET-SPR  
View at Publisher

Wu, D., Zhu, W., Swamy, M.N.S.  


© Copyright 2015 Elsevier B.V., All rights reserved.

About Scopus
What is Scopus
Content coverage
Scopus blog
Scopus API
Privacy matters

Language
日本語に切り替える
切換到简体中文
切換到繁體中文
Русский язык

Customer Service
Help
Contact us

Terms and conditions
Privacy policy
Copyright © 2017 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

Cookies are set by this site. To decline them or learn more, visit our Cookies page.