A Robust Environmental Sound Recognition System using Frequency Domain Features

International Journal of Computer Applications
© 2013 by IJCA Journal
Volume 80 - Number 9
Year of Publication: 2013

Authors:
T. Sivaprakasam
P. Dhanalakshmi

10.5120/13887-1800

Abstract

In ubiquitous environments, analysis and classification of sound plays a critical role in various acoustic-based recognition systems. This work aims to contribute towards building an automatic sound recognition system that can understand the surrounding environment by the audio information. In this paper, an acoustic signal based context awareness system is proposed for detecting sound events in five different real-world environment. This approach is based on Back Propagation Neural Network (BPNN) classifier using a new feature set from frequency-domain features. The experiments on various categories illustrate that the results of recognition are significant and effective.

References

- Behnaz Ghoraani, and Sridhar Krishnan, "Time–Frequency Matrix Feature Extraction and Classification of Environmental Audio Signals", IEEE Transactions on
A Robust Environmental Sound Recognition System using Frequency Domain Features

- Ling Ma, Dan Smith and Ben Milner, "Environmental Noise Classification for Context-Aware Applications," School of Computing Sciences, University of East Anglia, Norwich, NR4 7TJ, UK, {ling. ma, dan. smith, b. milner}@uea.ac.uk.
- Michael Cowling and Renate Sitte, "Analysis of Speech Recognition Techniques for use in a Non-Speech Sound Recognition System," Griffith University Faculty of Engineering & Information Technology, Gold Coast, Qld, Australia 9726.
- Zixing Zhang and Bjørn Schuller, "Semi-Supervised Learning Helps in Sound Event Classification," Institute for Human-Machine Communication, Technische Universität München, Germany, zixing.zhang@schuller@tum.de.
A Robust Environmental Sound Recognition System using Frequency Domain Features

- Giovanni De Poli, "From audio to content", Chapter 4, Copyright 2006.
- Federico Avanzini Riccardo Levorato Emanuele Menegatti, "GMM Classification of Environmental Sounds for Surveillance Applications", University of Padova Department of Information Engineering, Master’s Degree in Computer Engineering (Laurea Magistrale in Ingegneria Informatica) Graduation Date: Padova, October 26th, 2010.

Index Terms

Computer Science  Pattern Recognition

Keywords

Spectral crest  Spectral decrease  Spectral slope  Spectral skewness  Spectral
Flatness
Back propagation neural network (BPNN).