COMPUTATIONAL INTELLIGENCE ALGORITHMS FOR DIGITAL AUDIO APPLICATIONS

WCCI 2014 Special Session - Call for Papers

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Theme and Scope of the Session

Computational Intelligence (CI) is widely used to face complex modelling, prediction, and recognition tasks, and is largely addressed in different research fields. One of these, characterized by a mature orientation to market for many years already, is represented by Digital Audio, which finds application in diverse contexts like entertainment, security, and health. Scientists and technicians worldwide actively cooperate to develop new solutions and propose them for commercial exploitation, and, from this perspective, the employment of advanced CI techniques, in combination with suitable Digital Signal Processing algorithms, surely constitutes a plus.

In particular, this is typically accomplished with the aim of extracting and manipulating useful information from the audio stream to pilot the execution of automatized services, also in an interactive fashion. This often happens in conjunction with data coming from other media, like textual and visual, for which specific and application-driven fusion techniques are needed (which also require the involvement of advanced CI algorithms). Several are the Digital Audio topics touched by such a paradigm. In digital music applications we have music transcription, onset detection, genre recognition, just to name a few. Then, moving to speech processing, speech/speaker recognition, speaker diarization, and source separation are surely representative subjects with a florid literature already. Furthermore, auditory scene analysis, acoustic monitoring and sound detection and identification have lately encountered a certain success in the scientific community and can be thus included in this illustrative list.

In dealing with the problems correlated to these different topics, the adoption of data-driven learning systems is often a ``must''. This is not, however, immune to technological issues. Indeed, big amount of data frequently needs to be managed and processed, data which features can change over time due to the time-varying characteristics of the audio stream and of the acoustic environment. Moreover, in many applicative scenarios hard real-time processing constraints must be taken into account.

It is indeed of great interest for the scientific community to understand how and to what extent novel CI techniques can be efficiently employed in Digital Audio, in the light of all aforementioned aspects. The aim of this session is therefore to offer a CI oriented look at the large variety of Digital Audio research topics and applications and to discuss the most recent technological efforts from this perspective.

Topics

Intelligent Audio Analysis

Audio Information Retrieval

Music Content Analysis and Understanding

Speech and Speaker Analysis and Classification

Cross-domain Audio Analysis

Sound Detection and Identification

Computational Auditory Scene Analysis

Acoustic Monitoring

Context-aware Audio Source Separation

Intelligent Audio Interfaces

Important Dates

- **20 December 2013**: Due date for paper submission

- **15 March 2014**: Notification to authors

- **15 April 2014**: Camera-ready deadline for accepted papers

- **6-11 July 2013**: Conference Days

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