

The Origins of DAFx and its Future within the Sound and Music Computing Field

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The Origins of DAFx: COST Action



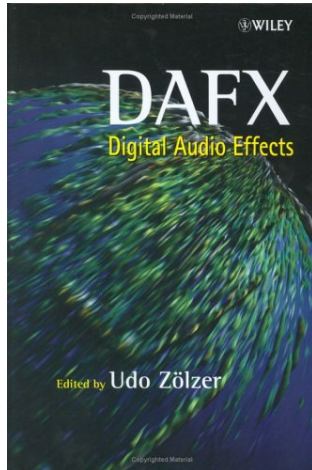
COST is one of the longest-running instruments of the EU supporting co-operation among scientists and researchers across Europe. COST now has 35 member countries and enables scientists to collaborate in a wide spectrum of activities in research and technology.

<http://www.cost.esf.org>

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The Origins of DAFx: The Book

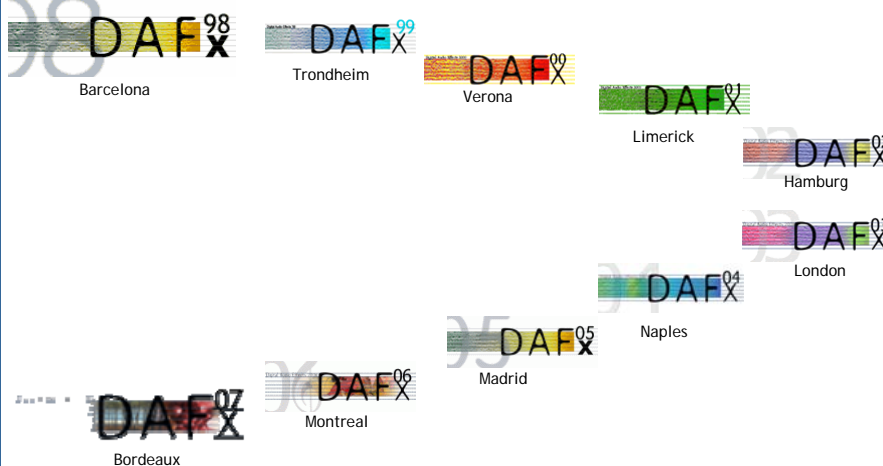


- Introduction
- Filters
- Delays
- Modulators and Demodulators
- Nonlinear Processing
- Spatial Effects
- Time-segment Processing
- Time-frequency Processing
- Source-filter Processing
- Spectral Processing
- Time and Frequency Warping Musical Signals
- Control of Digital Audio Effects
- Bitstream Signal Processing

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The Origins of DAFx: The Conference



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Who are we? What do we do?



- Sound and Music Computing?
or Computer Music, Audio Signal Processing, Musical Acoustics, ...?
- What is our research community?
Participants to ICMC, DAFX, ISMIR, NIME,?
- What do we study?
- What are the current challenges?

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The Sound and Music Computing Roadmap



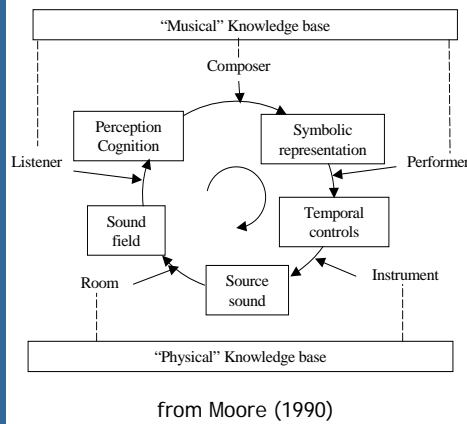
- *Objective:* identify, characterize and propose strategies for tackling the key research challenges.
- Targeted at the whole SMC community.
- It should be relevant to educators and policy makers, informing them of the key issues that should be emphasized in training and taken account of when making funding decisions.

<http://www.soundandmusiccomputing.org>

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SMC Roadmap: Definition of the field

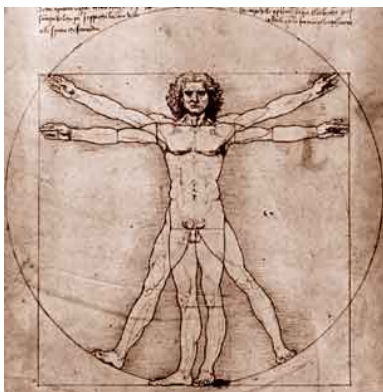


SMC research approaches the whole sound and music communication chain from a multidisciplinary point of view. By combining scientific, technological and artistic methodologies it aims at understanding, modeling and generating sound and music through computational approaches.

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SMC Roadmap: Research context



- Rapid progress in ICT
- Cognitive science: from musical mind to brain
- From subjective experience to cultural content in the Humanities
- The rise of multidisciplinary research

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SMC Roadmap: Education context



- The new European Higher Education Area
- Discipline oriented undergraduate education
- Multidisciplinary studies at Master's level
- The Professionalization of PhD studies

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SMC Roadmap: Industrial context



- Towards a knowledge-based economy
- A Global economy
- The development of the ICT sector
- The interdependence of the cultural & creative sector and ICT
- New models of exploitation of content
- New forms of Intellectual Property protection
- Revolution in the music business

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SMC Roadmap: Social and cultural context



- Transgression and uncertainty
- Beyond the logic of economic rationality
- Local specialization and global integration
- A Neo-evolutionary research model
- Innovation through artistic creation
- Focus on the user
- Ethics in research

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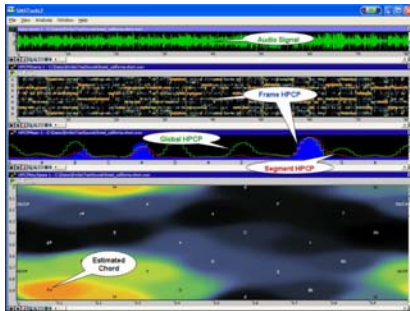
SMC Roadmap: Research areas



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SMC Roadmap: Sound research



Sound Description/Understanding

- Perceptual versus motor-based models
- Sound source recognition and classification
- Sound search and retrieval based on content

Sound Synthesis/Processing

- Interaction-centered sound modeling
- Physical modeling based on data analysis
- Audio content processing

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SMC Roadmap: Interaction research



Music Interfaces

- Multimodal music interfaces
- Integration of control and sound generation
- Feedback systems
- Effective interaction metaphors
- Mobile music

Performance Modeling and Control

- Understanding music performance
- Models for artistic music performance
- Multi-modal processing of expression
- Interaction in multimedia applications

Sound Interaction Design

- Evaluation of for sound design
- Everyday listening systems
- Soundscape Design

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SMC Roadmap: Music research



Music Description and Understanding

- `Narrow' SMC vs. multidisciplinary research
- Reductionist vs. multi-dimensional models
- Bottom-up vs. top-down modeling
- Understanding the music signal vs. understanding MUSIC

Music Generation Modeling

- Computational models
- Computer-assisted composition tools
- Notation and multiple interfaces

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Challenge 1: Design better sound objects and environments

- Extend the notion of musical instrument.
- Improve technologies for pervasively producing, transforming and delivering sounds.
- Intensify research in sound modeling that goes beyond imitation towards capturing the communicative potential of sound.
- Promote studies aimed at reducing sound and music pollution in public and private ecosystems.
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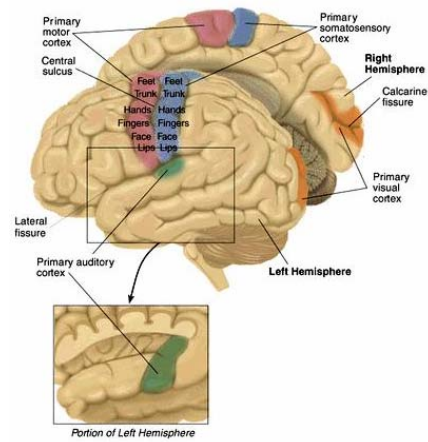


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Challenge 2: To understand, model, and improve human interaction with sound and music

- Promote computational modeling approaches in human auditory perception and cognition research.
- Provide extensive augmented perception paradigms.
- Intensify research on expressivity and communication in sound and music.
- Develop an embodied, integrated approach to perception and action.
- Intensify multimodal and multidisciplinary research on computational methods for bridging the semantic gap in music.



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Thanks!!!

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