Research training roadshow

Studying Music through Science and Technology

Presented by Institute of Musical Research, School of Advanced Study, University of London, in association with Lancaster Institute for the Creative Arts, Lancaster University and Queen Mary, University of London

Modern culture, in music research as in other fields, tends to divide science from art despite a strong strand of scientific music research dating back to the time of Pythagoras. This division is increasingly untenable in the light of the recent growth in 'Empirical Musicology' and developments in new technology. We aim in this session to show how bridging this divide and applying scientific method and computing technology can help to address typical problems in musicology. One particular focus will be applications of the software arising from the large-scale OMRAS 2 project of Goldsmiths' and Queen Mary, University of London. Jargon and arcane technicalities will be avoided.

Monday 11 May 2009, University of London, Senate House, Room NG16

10.30 am	Welcome and Introduction (refreshments available)
10.45 am	Alan Marsden, Lancaster University
	Computational research in music theory: 5ˆ or 3ˆ?
11.45 am	Ian Knopke, independent researcher
	Finding Repeated Motifs in the Masses of Palestrina
12.45 pm	Lunch break (lunch is not provided)
2.00 pm	Dan Tidhar, Queen Mary, University of London
	How musicologists may benefit from signal processing
3.00 pm	Tea break (refreshments provided)
3.30 pm	Neta Spiro, University of Cambridge
	Technical approaches to the study of recorded music: experiences from the CHARM project
4.30 pm	Round-Table Discussion
5.30 pm	Close

Tuesday 12 May 2009, Lancaster University, Institute for Advanced Studies, Meeting Room 3

10.30 am	Welcome and Introduction (refreshments available)
10.45 am	Dan Tidhar, Queen Mary, University of London
	How musicologists may benefit from signal processing
11.45 am	Neta Spiro, University of Cambridge
	Technical approaches to the study of recorded music: experiences from the CHARM project
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Free of charge. Advance registration required. To register, email music@sas.ac.uk

Abstracts

Ian Knopke, independent researcher

Finding Repeated Motifs in the Masses of Palestrina

Presented here is a computer-based system for finding repeated motifs across an entire collection of music. Our analysis material is the entire collection of masses by Palestrina, consisting of approximately a million notes. In addition to finding exact repetitions, it can also find transpositions, inversions, and retrogrades. While this work has obvious advantages for musical analysis, it is being presented primarily in a musicological context, relating to a current dialectic regarding the organization of counterpoint and form in Renaissance composition. There will also be some discussion of the value of automated or computer-assisted analysis techniques in the context of traditional musicological analysis, and the new opportunities these make possible.

Alan Marsden, Lancaster University

Computational research in music theory: $\hat{5}$ or $\hat{3}$?

For several decades, researchers have aimed to model or sometimes even test music theory by computational means. I will outline the general philosophy of this kind of work and describe some of the successes and failures, together with discussing the practicalities such research. Central to my talk will be recent work on computer software to automatically generate quasi-Schenkerian analyses. Not surprisingly, this kind of research typically raises questions different from those which were the original intended object of scrutiny. The assumptions of music theorists are laid bare, and the nature of music theory and music analyses are called into question. Nevertheless, classic questions in music theory, such as whether the theme of the first movement of Mozart's piano sonata in A major has an Ursatz starting on $\hat{5}$ or $\hat{3}$ are tantalisingly close to receiving some kind of objective answer.

Neta Spiro, University of Cambridge

Technical approaches to the study of recorded music: experiences from the CHARM project

Performances of the same piece can differ from one another in numerous ways and for different reasons. The aim of the current study was to analyze the timing and dynamic patterns of a large number of performances in order to explore possible reasons for both the occurrence of such patterns and their differences. The investigation focuses on twenty-nine performances of Chopin's Mazurka Op. 24 No. 2. A toolkit of methods is employed, including an approach that has been little used for this purpose: self-organizing maps. This method enables the systematic analysis and comparison of different performances by identifying recurrent expressive patterns and their location within the respective performances.

Dan Tidhar, Queen Mary, University of London

How musicologists may benefit from signal processing

My talk will aim to provide an overview of some of the tools developed at the Centre for Digital Music, and of some research directions we currently follow, and how these can be made useful for music research in general.

The two tools I'd like to present are the Sonic Visualiser and the Harmonic Visualiser. I'd like to demonstrate the Sonic Visualiser as a manual annotation tool, and as an automatic annotation tool e.g., beat extraction, key estimation, etc). I'll briefly present the concept of Vamp plugins, and will in particular demonstrate the Match plugin, and how it can be used for comparing different interpretations of a given piece. Regarding the Harmonic visualiser, I'd like to give a very brief explanation of sinusoidal modelling, and to demonstrate how it can be used for measuring and comparing vibrato.