

USMIR 2-6 August 2010

Timetable USMIR 2-6 August 2010

	Mo 2 Aug	Tue 3 Aug.	Wedn. 4 Aug.	Thu. 5 Aug.	Fri. 6 Aug.
8:30-9:00	Registration/Coffee				
9:00-12:30	Introduction to USMIR: F. Wiering and M. Lesaffre	poster set up	Lecture A. Volk: rhythm/meter	teamwork	students presentations of teamwork
	Introduction to the teamworks: Chr. Muller	Lecture O. Cornelis: Problems and opportunities for MIR in ethnic music.	Lecture D. P. Biró: Decoding the song	Lecture B. de Haas: Harmony retrieval	
	Coffee	Coffee	Coffee	Coffee	Coffee
	Lecture M. Grachten & L. Van Noorden: Music information Wii-trieval	Lecture M. Lesaffre: User based music research	Lecture D. Janssens: Composing parameters.	Lecture I. Knopke:	students presentations of teamwork
12:30-13:30	Lunch	Lunch	Lunch	Lunch	Lunch
13:30-15:00	Workshop F. Wiering & P. van Kranenburg on melody retrieval	Workshop: M. Grachten: introduction to WEKA	teamwork	13:30-15:30 Keynote J. S. Downie	discussion and final evaluation
15:00-15:30	Coffee	Coffee	Coffee	Coffee	
15:30-17:00	Workshop O. Lartillot: the MIR Toolbox	teamwork	teamwork	teamwork	
17:00- ...	Free evening	POSTER SESSION	Free evening	Free evening	

Keynote lecture

J. Stephen Downie: The Pragmatics of Music Information Retrieval Experimentation and Evaluation

Abstract:

Music Information Retrieval (MIR) research has matured over the last decade. Since MIR research is inherently multidisciplinary, it correctly draws upon the research methods of its constituent domains: musicology, electrical engineering, computer science, sociology, information retrieval, library science, cognitive science, and so on. From each of these domains comes a set of scholarly expectations and praxes that determine what constitute meaningful questions and valid research results. In some cases,

MIR research questions are framed formally and answered via mathematical proofs. In others, the research approach taken deliberately eschews such formalisms in order to better understand the complex interactions of systems, musics, and users.

The annual Music Information Retrieval Evaluation eXchange (MIREX) has played a significant role in the maturation of MIR research. MIREX exemplifies the empirical/experimental approach to MIR evaluation. In this lecture, we will examine the history, influences, methods, successes, shortcomings, and limitations of MIREX. Using MIREX as starting point, we will broaden our discussion to investigate the wide range of issues associated with MIREX-style experimental evaluations. We will examine what kinds of questions can, or cannot, be answered by applying the experimental methods MIREX represents. For those questions that can be addressed, we will then examine the gamut of factors--from theoretic to pragmatic--that need to be balanced in order to ensure both the feasibility of a given experiment and the validity of its results.

Short bio:

J. Stephen Downie is an Associate Professor at the Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign (UIUC). He is Director of the International Music Information Retrieval Systems Evaluation Laboratory (IMIRSEL). He is Principal Investigator on the Networked Environment for Music Analysis (NEMA) project. He has been very active in the establishment of the Music Information Retrieval (MIR) community through his ongoing work with the International Society for Music Information Retrieval (ISMIR) conferences and now serves as ISMIR's President. He holds a BA (Music Theory and Composition) along with a Master's and a PhD in Library and Information Science, all earned at the University of Western Ontario, London, Canada.

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Lectures, tutorials and workshops

Dániel Péter Biró : Decoding the Song: Histogram-Based Paradigmatic and Syntagmatic Analysis of Melodic Formulae in Hungarian Laments, Torah Trope, Tenth Century Plainchant and Qur'an Recitation.

Abstract:

The lecture will discuss the results of a research project done by Dániel Péter Biró, Steven Ness, Matthew Wright, W. Andrew Schloss, George Tzanetakis at the University of Victoria.

The development of musical notation and the changing relationship between textual syntax and musical semiotics were inherently connected to the transformation of a culture based on oral transmission and ritual to one based on writing and hermeneutic interpretation. Along this historical continuum, notation functioned either to reconstruct a

previous, remembered melody or to construct a newly composed melody. For the chant scholar the question arises as to when and under what conditions melodic formulae became solidified as musical material. In the present study we examine examples from improvised, partially improvised, partially notated and gesture-based notational chant traditions: Hungarian *siratók* (laments), Torah cantillation, tenth century St. Gallen plainchant, and Qur'an recitation. We explore examples from these various traditions through computational tools for paradigmatic analysis of melodic formulae and gesture. Exploring the functionality of melodic gesture, musical syntax and musical semiotics in the specific contexts of speaking, singing, reading and writing enhances the comprehension of the relationship between melodic formula and textual syntax within these divergent forms of religious chant.

Short bio:

Dániel Péter Biró first started his musical studies at the Bartók Conservatory in Budapest, Hungary later studying as a Fulbright scholar at the Frankfurt Musikhochschule, in Bern and in Vienna. Dr. Biró completed his PhD at Princeton University in 2004 – his dissertation was a comparative study of early notational practices. He conducted research of Hungarian folk music at the Academy of Science in Budapest and of Jewish music in Israel. Awarded the Hungarian Government's Kodály Award for Hungarian composers, his compositions have been performed at the Konzerthaus in Vienna, Austria, at the Bartók Festival in Szombathely, Hungary, at the Alte Oper in Frankfurt, Germany, at the LITSK Festival for Computer Music in Princeton, U.S.A., and have been broadcast on Swiss, Austrian, German, Italian and Canadian radio. Recent commissions come from the Interart Festival Center, Hungary from the Schlachthaus Theater, Switzerland and from the Stuttgart Opera, Germany. In 2005 he was a fellow at the Mannes Institute for Advanced Studies in Music Theory. In 2006 he was a featured composer and lecturer at the Darmstadt International Summer Courses for New Music. In May 2007 his electroacoustic composition *Simanim (Signs/Traces)*, commissioned by the German Radio (HR) and done in cooperation with the Experimental Studio of the SWR, was premiered by members of the Frankfurt Radio Symphony Orchestra. In 2009 he was a featured composer and lecturer at the International Messiaen Week in Neustadt, Germany where he lectured on relationships between religious chant and new music. In 2009 he was awarded a grant from the Siemens Arts Foundation. Dániel Péter Biró is Associate Professor of Composition and Music Theory at the University of Victoria. He is co-editor of Search - Journal for New Music and Culture.

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Olmo Cornelis: Problems and opportunities for music information retrieval in ethnic music.

Abstract:

Access to digital music collections is nowadays facilitated by content-based methods that allow the retrieval of music on the basis of intrinsic properties of audio. However, access to ethnic music remains problematic, as this music does not always correspond to the Western concepts of music and metadata that underlie the currently available content-based methods. During this lecture, we will focus on the reasons why the existing techniques fail or fall short of expectations and what can be done about it. This lecture will thus focus on the characteristics of ethnic music and their distinction with the traditional Western musical concepts. Ethnic music is a vulnerable cultural heritage that has received only recently more attention within the Music Information Retrieval community.

Short bio:

Olmo Cornelis has studied Musicology and Music Composition at Ghent University and Ghent University College. Meanwhile he was working on a large digitization project at IPEM and RMCA (Royal Museum for Central Africa) where he encountered the problematic of content-based description of ethnic music. From these experiences he started a PhD in Arts, aiming at delivering very detailed descriptions of ethnic music in an automated way and working on music composition that explores the tension of symbioses of different cultures.

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Bas de Haas: Music Retrieval Based on Tonal Harmony

Abstract:

In the last two decades Music Information Retrieval (MIR) has evolved into a broad research area in which two main directions can be discerned: symbolic music retrieval and the retrieval of musical audio. The first direction traditionally uses score-based representations and musical structures that resemble notes to tackle typical retrieval problems. One of the most important and most intensively studied of these is probably the problem of determining the similarity of a specific musical features, e.g. melody, rhythm, etc. Only recently, partly motivated by the growing interest in audio chord finding, MIR researchers have started using chords descriptions as principal representation for modeling music similarity. Naturally, these representations are specifically suitable for capturing the harmonic similarity of a musical piece. However, determining the harmonic similarity of sequences of chords gives rise to three questions. First, what is harmonic similarity? Second, why do we need harmonic similarity? Last, do chord descriptions provide a valid and

useful abstraction of the musical data for determining music similarity? In this talk I will shed some light on these issues.

Short bio:

Bas de Haas started as a PhD student at Utrecht University in 2007. He works on Music Information Retrieval and specifically focuses on developing methods that are founded in music cognition and perception. His most recent contributions are all concerned with the structure and similarity of tonal harmony.

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Maarten Grachten and Leon van Noorden: Music information Wii-trieval: browsing music collections by arm-gestures.

Abstract:

We will propose a gesture-based interface to browse music collections. Rather than searching for particular pieces, the focus will be on mapping the 'affective character' of the user's arm-gestures to a region of the collection that has a similar affective character. The mapping interface will be the Arousal-Valence space. Special attention will be paid to deriving arousal and valence descriptions of arm-gestures (using accelerometer measurements of a Wii-remote control or equivalent).

Short bio:

Maarten Grachten holds a M.Sc. in artificial intelligence, from the University of Groningen, The Netherlands (2001), and a Ph.D. in computer science and digital communication from Pompeu Fabra University, Spain (2006). He is currently employed as a post-doctoral researcher at the Institute for Psychoacoustics and Electronic Music (IPEM), University of Ghent, Belgium. A central topic in his research is the computational analysis of musical expression in sound and motion.

Leon van Noorden holds a degree in technical physics of the Technical University Eindhoven, The Netherlands, (1970) and a Ph.D. in auditory perception from the Institute for Perception Research (IPO) in Eindhoven (1975). Since 2005 he is visiting research professor at the IPEM with a main interest in the relation between music and movement.

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Daan Janssens: *Composing parameters*. Introduction to relations between notated and sounding music.

Abstract:

In classical music history, the relation between composer and score has always evolved in a complex way. Western music notation system has primarily been designed for pitch and rhythmical notation. On the other

hand, the notation of dynamics and certainly timbre is far from standardized, although composers assign more and more attention towards these musical parameters. Also so called 'extended instrumental techniques' – which appear frequently in 20th century 'contemporary classical music' – lack standard notation. During the second half of the 20th century, we often notice a discrepancy between the 'visuals' of a score, and the actual sounding music. Often, e.g. the 'beat', which can clearly be observed in a score, is completely indistinguishable in the final musical result. This lecture wants to search for relations between the ideas of a composer, which are mostly elaborated in a musical score, and the actual sounding music. We take a short historical look how composers approached musical parameters, thereby; we focus on the evolution of the parameters dynamics and timbre during the 20th century. Further, we search for the influence of digital media as music (notation) software on music composition and take a further look till which extend the availability and digitalization of our musical society influences the working methods and musical results of contemporary composers and music makers.

Short bio:

Daan Janssens (Bruges, °1983) studied composition and conducting at the Ghent Conservatory with Frank Nuyts, Filip Rathé and Godfried-Willem Raes. He attended different international master classes and seminars, both as composer and conductor (Darmstadt 2008 & Acanthes 2009, Ensemble Modern Composition Seminar 2008-2009). He collaborated with *Spectra Ensemble*, *ARSIS4*, *Ensemble Orchestral Contemporain*, *Neue Vocalsolisten Stuttgart*, *Jean-Guihen Queyras*... Since 2006 he is conductor of the contemporary music ensemble *Nadar*, and performed at *Ars Musica* (2008 & 2009), *Flagey*, *De Bijloke*, *De Nieuwe reeks*, *Harvest Festival Denmark*... Since 2007 he works as artistic researcher at the University College Ghent on the use of timbre transformation as composition model.

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Ian Knopke: Extracting Musicologically-Relevant Information from Large Collections of Symbolically-Encoded Music

Abstract:

Much recent MIR discussion has centered on the need to incorporate more musicological knowledge into the field. There is a growing feeling that signal-processing and machine learning methods alone may not lead to further progress within the field without the incorporation of domain-specific, musicological information. This is especially visible in the largely-unexplored area of symbolic music processing, in part because of the greater amount of musicological knowledge required to operate in this domain that may be difficult for researchers from an engineering background to acquire.

This lecture is about extracting and mining unknown, musicologically-informed patterns and motifs from large collections of symbolically-encoded music. Specific implementation details of pattern searching such as transpositions, inversions, retrogrades, palindromes, and other commonalities will be discussed, as well as the difficulty of directly applying existing string-processing algorithms to the inherently multidimensional domain of music. Additional topics, if time permits, will include: where to find symbolic music data sets, different encoding systems, a brief introduction to the basics of music notation, search engines, probabilistic extensions, and ways to combine these systems with signal-processing methods.

Short bio:

Ian Knopke is a music technician, theorist, performer, and composer from Canada. He received his Ph.D. from McGill University, researching search engines for sound and music on the Internet, before teaching and working as a researcher at Indiana University in Bloomington, Indiana (USA). Ian currently works for the British Broadcasting Company in the Future Media and Technology group on real-time metadata and search problems.

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Olivier Lartillot The MIRToolbox : music analysis from audio

Abstract:

This workshop proposes an overview of MIRtoolbox, a Matlab toolbox for musical feature design, extraction and analysis from audio. An innovative environment integrated into the toolbox adds an extra layer on the top of the Matlab programming environment that makes it easier to use for both beginners and expert users, for pedagogy and for research purposes. A synthetic tour of the complete set of signal processing operators and musical feature extractors will be accompanied with concise explanation of the different concepts on concrete examples. During this workshop à la carte, participants will have the opportunity to dwell into the set of signal processing operators and musical feature extractors and attempt various analyses on concrete musical examples of their choice.

Short bio:

Olivier Lartillot is an Academy of Finland research fellow at the Finnish Centre of Excellence in Interdisciplinary Music Research at the University of Jyväskylä. He obtained a degree in engineering at Supélec Grande École, France, and a PhD degree in Computer Science at Ircam / University of Paris 6 in 2004. He also obtained a BA in Musicology from the University of Paris-Sorbonne. He designed MIRtoolbox with Petri Toiviainen and Tuomas Eerola. Olivier Lartillot has published more than 50 scientific papers on these topics, serves as a reviewer for several international journals and is member of Program Committees.

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Micheline Lesaffre: Challenges of user participation in music research.

Abstract:

In this lecture user-based music research is approached from the viewpoint of embodied music cognition and music mediation technology. Interaction with embodied mediation technology for musical activities is a fairly young but intriguing research domain that requires building and testing of paradigms involving prospective users of new interactive music systems. Moreover, with the development of embodied music interaction tools, the relation between music consumer and musical content meets totally new relationships. For that reason user-oriented studies and usability studies become more and more important in music research. The research domain is currently expanding its methodologies in order to address different aspects of music involvement and usages of musical tools. This expansion will affect future dimensions of Music Information Retrieval.

Short Bio:

Micheline Lesaffre holds a PhD in musicology from Ghent University, with a thesis on user-behavior in relation to music information retrieval (MIR). Her focus is on the usability of music tools, user-oriented experiences, and social-economic issues related to stakeholders in the cultural/creative sector. Currently she works as a postdoctoral researcher at IPEM that is the research center of the department of musicology of Ghent University. Her research focus is now on user-oriented analysis in context of embodied music cognition and mediation technologies for cultural and creative applications. She was a member of the organizing committee and teaching staff of the International Summer School in Systematic Musicology (ISSSM, Ghent University 2006, 2007, 2008) and was member of the teaching staff of the International Summer School in Systematic, Comparative and Cognitive Musicology (ISSSCCM, Univ. of Jyväskylä 2009)

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Chris Muller

Short Bio:

Chris Muller was born in Delft in 1980. After graduating high school in 1998, he studied biology in Utrecht University, during this MSc he spent one year working on motion detection psychophysics at UCL Psychology in London, and one year doing the same (though different) in Utrecht. MSc topics were mainly those related to human perception, cognition and visual perception. After biology, he did a PhD in psychophysics in human 3D perception at Erasmus University Rotterdam and VU University

Amsterdam, the resulting thesis is entitled "Uncertainty, reality as a useful illusion". During this PhD, he gravitated more and more towards music research and performed several pilot experiments on violin- and fretless bass playing. At IPEM, he will continue on this course. Further research interests include Theory of Mind, Multi-Modal Sensory Integration, the Binding Problem & Body Schema. Currently, Chris is a drummer in Kier, This Leo Sunrise and sKelet. In the latter he is also a guitarist. His solo recordings are under the name Heidensieck. He is a member of the Rotterdam Improvisation Pool, with which he performs and organizes improvisation concerts.

Anja Volk: Computational modeling of rhythm and meter in music

Abstract:

Rhythm and meter in music play a crucial role for many musical activities, such as recognizing or memorizing music. In MIR research, many algorithms to extract rhythm-related features such as beat or tempo have been developed. However, both music theory and music cognition studies have investigated more complex aspects of rhythm and meter that go beyond beat induction. In this lecture, we give an overview over important rhythmic-metric characteristics and their computational modeling. Topics of the lecture include

- musicological theories of rhythm and meter
- cognitive studies on rhythm and meter
- computational approaches to rhythm and meter

Short bio:

Anja Volk obtained masters degrees in Musicology and Mathematics and holds a PhD in computational musicology from Humboldt University Berlin (2002). From 2003 to 2005 she worked as a Postdoctoral Research Fellow at the University of Southern California in the Music Computation and Cognition Laboratory. From 2006-2010 she worked on melody retrieval of folksongs in the WITCHCRAFT project at Utrecht University.

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Frans Wiering and Peter van Kranenburg: Workshop on melody retrieval

Abstract:

Melody is both an obvious and an enigmatic property of music. Listeners have no problem at all to identify and compare melodies. It is however very difficult to understand the process whereby humans do so. Yet such an understanding is a prerequisite for designing and evaluating MIR methods that deal with melody. This workshop will present an overview of melodic similarity and melody retrieval research from a 'musical' viewpoint. It will consist of short lectures and practical exercises. Topics of the lectures are:

- musicological theories of melody
- music cognition and the concept of melodic similarity
- similarity measures for melody

The exercises will be about:

- musical analysis of melody
- exploring melodic similarity measures
- quantitative and qualitative evaluation of similarity measures

Short bio:

Frans Wiering holds a Ph.D. in Musicology from the University of Amsterdam (Netherlands). Since the late 1980s, he has been researching computer applications in musicology. He is currently an Assistant Professor at the Department of Information and Computing Sciences of Utrecht University (Netherlands), mainly researching music information retrieval. He is General Chair of ISMIR 2010.

Peter van Kranenburg obtained masters degrees in Electrical Engineering (2003, Delft University of Technology) and Musicology (2004, Utrecht University). Since 2006, he is Ph.D. researcher at Utrecht University in the WITCHCRAFT project. His research focuses on the computational modeling of similarity of folk-song melodies for retrieval purposes.

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