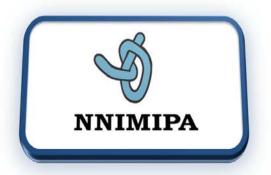
PROGRAM



Nordic Network for the Integration of Music Informatics, Performance and Aesthetics www.nnimipa.org



NNIMIPA goes to Marseille to present a satellite workshop on October 14, 2013 in conjunction with The 10th International Symposium on Computer Music Multidisciplinary Research (CMMR) themed Sound, Music and Motion, October 15-18, 2013. Please see

http://www.cmmr2013.cnrs-mrs.fr/



CMMR 2013 SATELLITE WORKSHOP October 14, 2013 Music, Movement and the Brain

NNIMIPA (http://www.nnimipa.org/) is organizing a satellite workshop during the 2013 CMMR meeting. The theme of the workshop is Music, Movement and the Brain. This workshop will feature papers, a research project within NNIMIPA, a panel and tutorials. It is the goal of NNIMIPA to organize this session so that the combined themes of movement and the brain provide a context for deeper discussion of how thinking and movement are related in the performance of music.

For more information about CMMR 2013, please consult the CMMR webpage at: cmmr2013.cnrs-mrs.fr.

10:00-10:20 Presentation of NNIMIPA (http://www.nnimipa.org/) Cynthia M. Grund, http://www.cynthiamgrund.dk/

10.20-10.40 Presentation of TRA (http://www.soundmusicresearch.org/TRA.htm) William Westney, http://www.depts.ttu.edu/music/Faculty/WilliamWestney.asp

10.40-11.20 Motion Capture Tutorial with James Yang.

11.20-11.40 Coffee Break

11.40-12.20 fMRI Tutorial with Michael O'Boyle

12.20-13.20 Lunch

13.20-13.50 Panel - Music, Movement and the Brain

13:50-15:10 NNIMIPA paper presentations

13:50-14:10 Anemone G. W. Van Zijl. Thoughts in Concert: Sound, Movement, and Perception

14:10-14:30 Mika Sihvonen. Mobile Video as a Tool for Music Education

14:30-14:50 Sigrún Lilja Einarsdóttir. Choral Capital and Choral Identity in the Academic

Context: The Oxford Choral Scholars

14:50-15:10 Helga Rut Gudmundsdóttir and Sandra Trehub. Pitch Analysis of Infants' and Toddlers' Songs and Adults' Ability to Recognize Young Children's Attempts at Song Singing without Understanding the Words (Presented by Helga Rut Gudmundsdóttir)

15.10-15.30 Coffee Break

15:30-17:00 NNIMIPA paper presentations 15.30-15.50 Søren R. Frimodt-Møller. Collaborative Composition Processes in Online Environments

15.50-16.30 Kristoffer Jensen and David Hebert. Use of Large Data Sets to Examine Relationships Between Music and Society: Methodological Issues in Some Ongoing Studies 16.30-16.50 Barry Eaglestone. Composition Software Research: Reflections on Creativity - or Thinking Outside the Box

17.00-18.00 NNIMIPA administrative meeting

Cynthia M. Grund

Associate Professor, Institute for the Study of Culture, University of Southern Denmark (SDU); Chief Coordinator for NNIMIPA and NNIMIPA-coordinator for SDU; NordForsk Project Manager

Presentation of NNIMIPA

As we commence a day of fascinating presentations, I will offer an overview of NNIMIPA's development as a forum for networked research. This will include contextualiation of lectures we will hear today and some glimpses into the future work of the network.

William Westney

Paul Whitfield Horn Professor of Piano and Browning Artist-in-Residence, School of Music, Texas **Tech** University, Lubbock, Texas, USA; Hans Christian Andersen Guest Professorial Fellow at SDU 2009-2010; NNIMIPA delegate representing the University of Southern Denmark

Presentation of TRA

In this brief presentation I will delineate the genesis and context of an experimental project being carried out by a research team in which I am collaborating with Cynthia M. Grund, Michael O'Boyle, and James Yang. Aspects of the project will be explained, including the sponsoring organization (TRA: The Transdisciplinary Research Academy at Texas Tech University), the hypotheses that underlie the research, and the methodology we followed.

Tutorials: Motion Capture and fMRI measures of "Technical" and "Expressive" Piano Performance.

James Yang

James Yang, Assistant Professor and Director, Human-Centric Design Research Laboratory. Department of Mechanical Engineering, Texas Tech University, Lubbock, Texas, USA

Motion Capture Tutorial

http://www.depts.ttu.edu/ME/faculty/faculty.php?name=James%20Yang:

When a piano player performs a piece of music, what is the optimal body motion to achieve positive audience response and self-satisfaction with ones performance? Due to human anthropometric variability, different piano players will have different body motion when playing the same piece. Thus, it is often difficult for a piano instructor to provide guidance to piano students on how to perform "best". Also, when teachers micro-manage students with too many detailed physical instuctions, the results can be less than effective.

Motion capture systems have been extensively used in biomechanics, sports, ergonomics, and other fields to record human kinematics data. Motion capture is also a useful tool for studying the effects of body motion on piano performance. In our study, optical markers were attached to human body parts to track their motion during piano performances. The motion capture system records the location of each

body part (or related parts) during movement. We asked piano players to perform a specific piece of music in both a "technical" and an "enjoyment" mode. "Technical" mode was defined as playing a given piece without adding any personal style, and emphasizing its technical correctness. The "Enjoyment" mode was defined as allowing the performer to play the piece with the primary intention of simply enjoying him- or herself. By analyzing the motion capture data we could compare body part movement differences (e.g., joint angle differences in the wrist when performing in the two modes) with the idea that playing in the enjoyment mode would result in more body and limb movement with freer amplitude and flow, which in turn contributes to enhanced piano performance.

Michael O'Boyle

Associate Dean for Research, College of Human Sciences, Texas Tech University, Lubbock, Texas, USA fMRI Tutorial

http://www.depts.ttu.edu/hdfs/oboyle.php:

Functional magnetic resonance imaging (fMRI) is a technique in which a strong magnetic field and radio waves are used to detect oxygenated blood-flow to various parts of the brain when a subject is engaged in some form of mental activity. As mentioned previously, in our study we created motion capture videos of piano performances played under technical or expressive instructional sets and measured the degree of movement of various body parts under each performance condition. Not only were these motion capture videos subjected to quantitative movement analysis, but we subsequently presented these videos to musician and non-musician participants while they were in the fMRI brain scanning environment. We asked these individuals to simply attend to the videos (informing them that the "stick figures" displayed were real humans playing the piano) and asked them to respond (on a scale of 1-7) to a set of 12 questions regarding the videos they saw (e.g., "I am confident that the performer is female; the piece was well played and held my attention", etc.). The notion here was to reveal the brain regions that were activated in both musicians and non-musician participants when viewing these motion captured performances. We anticipated that the piano pieces played in the "enjoyment" mode would activate emotional and reward centers in the brain of observers to a greater extent than those played under the "technical" instructional set, thus confirming the pedagogical notion that playing in the "enjoyment" mode results in "better" musical performance. Preliminary analyses of these data are consistent with this hypothesis. We also analyzed the brain activation associated with responding to each of the questions asked to examine the brain circuitry that is involved in the evaluation of these musical performances by observers, again with an expectation that pieces performed under the enjoyment instructional set would evoke more positive (and more confident) judgments.

Anemone G. W. Van Zijl

Department of Music, University of Jyväskylä, Finland

Thoughts in Concert: Sound, Movement, and Perception

Performing musicians face the question of how to best achieve an expressive performance. Should they, for instance, feel the emotions present in the music, or should they rather rely on the use of appropriate technical means, such as tempo, dynamics, articulation, and timbre? Moreover, does their focus have an effect on the characteristics and perception of their performances?

To investigate the effect of performers' focus on their performances, eight violinists were asked to play the same musical phrase in response to three different instructions. The first instruction was to focus on the technical aspects of playing. The second instruction was to give an expressive performance. Following a sadness-inducing mood induction task, the third instruction was to play while focusing on felt emotions. High quality audio and three-dimensional motion-capture recordings were made of all performances. The performances were analysed in terms of tempo, articulation, dynamics, timbre, and vibrato, as well as in terms of the amount, speed, acceleration, and smoothness of performers' movements. Subsequently, a selection of performances was presented to an audience. Thirty individuals rated how much they liked each performance, how killed they thought each performer was, and to what extent each performance was expressive of sadness.

Computational analyses of the audio and motion--capture data revealed differences between performance conditions. Statistical analyses of the perception data revealed that individuals preferred the expressive performances to the technical and emotional ones. In addition, the expressive performances were rated as played by the most skilled performers. The emotional performances were rated as being most expressive of sadness. The findings indicate that a performer's focus has an effect on the sound, movement, and perception of performances.

Mika Sihvonen

Senior Researcher in The School of Information Sciences University of Tampere, Tampere, Finland. NNIMIPA Coordinator, UTA

Mobile Video as a Tool for Music Education

Analysis of music students' movements and gestures, such as finger positions, has always been an important part of the work of a music teacher. Mistakes in fingering or wrong body position are easy to spot and show to the student by means of a video clip. In addition, the terabytes of video resources on the internet can be helpful when studying how to play or sing. With regard to artistic development, young students might imitate the body gestures of their idols or study playing technique in a very detailed way.

The instructional video has a relatively long tradition within music education technology and it has been usually been associated with robust main frame computers and professional video equipment. Today's mobile devices, however - such the smart phone and the tablet PC - might show themselves to be very useful tools in music teaching and learning. After recording a video clip with a modern mobile device, the clip can be used in many ways with regard to music learning, music teaching or participation in music culture.

In this presentation I present several methods for utilizing mobile video as a tool for music learning. The significance of the video expression can be multifaceted with regard to the students' or teachers' musical comprehension. We can use it as a merely instructional tool or as a source of inspiration. Video utilized in a networked file format poses yet another challenge for music schools - when recording, sharing, storing and editing live shows.

Sigrún Lilja Einarsdóttir

Assistant professor, Bifröst University, Iceland NNIMIPA Coordinator, Bifröst University, Iceland

Choral Capital and Choral Identity in the Academic Context: The Oxford Choral Scholars

This paper presents a prospective socio-musical study on the historic choral tradition of Oxford college choirs in a wide context. The aim of this research will be to observe the social structures, choral capital and choral identity of selected Oxford college choirs, with special emphasis on the Oxford choral scholars. The research approach consists of a multiple-case study, where the choice of 3-4 college choirs will be based on a background analysis as well as the existing historical literature on the Oxford choral tradition. This paper will thus give a short overview of the 'state-of-the-art' of Oxford college choirs and introduce the prospective design of the research project itself.

Helga Rut Guðmundsdóttir (and Sandra Trehub)

Associate Professor, University of Iceland (UI)

NNIMIPA Coordinator, UI

Pitch Analysis of Infants' and Toddlers' Songs and Adults' Ability to Recognize Young Children's Attempts at Song Singing without Understanding the Words

There is little systematic research on singing duinry the infant or toddler period. Nevertheless, there are claims that recognizable songs emerge between children's first and second birthdays, a period corresponding to children's typical progression from one-word to multi-word utterances. There are large individual differences in singing development, as there are in language development, but it is unclear whether the two domains proceed in parallel or independently. At three years of age, children rarely sing without words, and at five they typically produce the lyrics more accurately than the melody.

Prelinguistic babbling reveals melodic aspects of the ambient language. Some scholars propose that individual differences in language acquisition reflect divergent inclinations towards words or intonation, resulting in so-called "word-babies" or "intonation-babies." Case studies of song acquisition reveal melody-first and words-first babies, with the latter being more common. The early "words" of songs are word-like sounds that fill slots in rhythmic patterns rather than carrying referential meaning.

The primary goal of the present study was to ascertain whether the songs of infants and toddlers (sixteen months - three years) are recognizable on the basis of melody (pitch and rhythm patterns) alone. The singing, which was recorded by parents at home, was uploaded to YouTube or sent directly to the P.I. Although the collection currently includes 300 samples in six languages, songs for the present study were restricted to those that were (a) familiar or unfamiliar to North American listeners and (b) produced by several children with foreign (not English or French) lyrics. Two songs had highly familiar melodies (Twinkle, Happy Birthday) and two had unfamiliar melodies, with each song produced by six different children.

English- and French-speaking adults listened to the song samples (24 sung performances), naming the songs when possible and declaring them unfamiliar if not. Pitch analysis was applied to the audio files used in order to establish the size of the singing range used by the children. The results indicate

that the infants and toddlers in this sample used a larger singing range than commonly reported in the literature. The adult success rate for identifying the familiar standard songs was 93% indicating that infants and toddlers in these recordings were capable of communicating the essence of a standard song even when the production was not perfect in terms of pitch and the words not comprehensible to the listeners.

Søren R. Frimodt-Møller

Assistant Professor at the Department of Architecture, Design and Media Technology, Aalborg University Esbjerg

Collaborative Composition Processes in Online Environments

This presentation will discuss how the process of creating music in collaboration with others can be – and is – aided by online plaforms designated for music collaboration, as well as other more general platforms for collaborative work such as Skype, Dropbox, Google Docs etc. More specifically, it will be discussed how collaborative composing and arranging can take place when the musicians/composers are geographically dislocated, and what the open negotiation of a composition in its early non-finished stages may mean for our understanding of what a composition is. Drawing on my own expertise as a musician and music philosopher, as well as excerpts from interviews with composers and musicians, I will try in short terms to get a theoretical grasp of what constitutes a composition in Western music culture today, compared to the classical notion of a composition as written in a creative phase prior to and isolated from rehearsals and performances.

Kristoffer Jensen and David Hebert

Kristoffer Jensen

Associate Professor, Department of Architecture, Design and Media Technology, Aalborg University Esbjerg

NNIMIPA Coordinator, Aalborg University Esbjerg, Esbjerg, Denmark

David G. Hebert

Professor, Grieg Academy, Bergen University College, Norway NNIMIPA Coordinator, GA-BUC

Use of Large Data Sets to Examine Relationships Between Music and Society: Methodological Issues in Some Ongoing Studies

In this presentation we will discuss methodological challenges associated with exploring relationships between musical sound and social change via examination of large data sets, including computational analysis of digitized sound recordings (mp3 files) and discourse analysis of music-related text files. In one ongoing study [Jensen & Hebert (in preparation), working title: "Harmonic Evolution Across 70 Years of American Popular Music"], we are using computational strategies to develop harmonic profiles of songs and trace tendencies in these profiles across historical time. In a related study (presented elsewhere at the present conference in Marseille), Jensen has examined trends in the volume of bass within the same data set, but as we will explain, different issues are faced when examining harmonic profiles. In another study [Hebert & Jensen (in preparation), working title: "Music-Related Discourse among American Military and Diplomatic Personnel"], we are using publicly-accessible data to determine how music is discussed among both soldiers and government officials.

Two databases are used for these ongoing projects: (1) the American Billboard top 100 (between 1940 and 2012), and (2) the Plus-D and Afghanistan War Logs databases available on the Wikileaks website.

Questions discussed include what is the instigator of changes in the music that are observable across time: is it more the musician/producer that creates different music, or the music listener that chooses different songs?

The trust one ascribes to a database is dependent on the control one has upon it. In the case of the Billboard, the remixes, digitalization, etc, choice of single or not, may affect the quality of the music, the loudness, dynamics, timbre, etc. If no surety of the origin is available, a relative measure is preferable to an absolute measure, in order to even out discrepancies. In the case of Wikileaks, the files appear to constitute an ad-hoc selection of authentic material, and the possible biases of both sources and censors who seek to limit the availability of politically sensitive data must be taken into account.

What are we seeking to understand through this pioneering research? In the case of the Billboard study, any and all information related to how we listen to and enjoy music, such as loudness, dynamics, spectrum, different harmonic and melody measures, tempos, and many other features may be of relevance when considering the evolution of popular song recordings across generations. Most of these measures are by default absolute, which makes it difficult to know if variations found in them (across time) is caused more by changes in the original music, or in the subsequent processes (digitalization,

remixes, etc). In the case of the Wikileaks files, information about how music is discussed in official communications from both diplomatic and military spheres has only recently been made available with unprecedented levels of accessibility. This enables important questions to be addressed regarding the role of music in intercultural contact and the extent to which music is considered valuable and relevant by government and military. How do individuals in such public sector professions covertly discuss music-related topics in their reports, and in which contexts? A holistic description is essential, but our analysis also seeks to determine the extent to which the underlying assumptions of this discourse may either confirm or challenge previous research-based knowledge concerning the social significance of music.

Barry Eaglestone

Senior Lecturer, University of Sheffield, UK (Retired) Affiliated with NNIMIPA via The University of Southern Denmark

Composition Software Research: Reflections on Creativity - or Thinking Outside the Box

In this short presentation I reflect on results of research in which I have been involved in the past two decades into creativity in music composition In particular I revisit apparent tensions that emerged between the norms of **software** design and creative users and a reconfiguration of the conventional information system architecture that was devised to address those tension.

Please feel free to contact NNIMIPA by sending an e-mail to Cynthia M. Grund cmgrund@sdu.dk if you would like to participate in this satellite workshop.

Practical Information for Travelers:

When arriving at Marseille airport:

Take bus to Gare St Charles

http://www.marseille.aeroport.fr/acces-et-parking/acces/navettes-bus/marseille-garecentre

It is recommended to buy, at the station down in the metro section, a 10 ticket (carnet de dix) for travelling. It will also be used for CMMR activities.

Then take Metro 2, to SAINTE-MARGUERITE-DROMEL

Map: http://www.rtm.fr/sites/default/files/planaxeslourds.pdf

Then take Bus 48, to AIGUIER C.N.R.S

Map: http://www.rtm.fr/sites/default/files/planreseau.pdf

In particular, our lodgings are located inside the campus at Laboratoire de Mécanique et d'Acoustique (Laboratory of Mechanics and Acoustics, 31 chemin Joseph-Aiguier 13009 Marseille. This is what is referred to as AIGUIER C.N.R.S in the travel information here on the NNIMIPA page. Please see also http://www.cmmr2013.cnrs-mrs.fr/CVenue.html.

CMMR 2013

October 15-18: For more information about CMMR 2013, please consult the CMMR webpage at: cmmr2013.cnrs-mrs.fr.

NNIMIPA was officially established during the 2007-2008 academic year, when funding provided by the University of Southern Denmark at Odense was matched by **Nordplus** in order to establish this Nordic cooperative initiative. Nordplus continued to provide funding for NNIMIPA activities held during the 2008-2009 and 2009-2010 academic years in the form of grants which were matched by the participating institutions. **NNIMIPA became a research network under NordForsk** (www.nordforsk.org) on September 1, 2010, with funding during 2010-2013 that has been extended to medio 2014. The decision to award the grant was made by the director of NordForsk following an evaluation carried out by a panel of independent experts.

NNIMIPA: Nordic Network for the Integration of Music Informatics, Performance and Aesthetics investigates new perspectives upon the aesthetics and the philosophy of music suggested and

facilitated by rapidly developing technologies for studying and producing music. The researchers and performers in the network approach music from a vantage point where information technology, communication and practice-based research are the focal points. Today's presentations provide a sampling of the work currently being done within the network.

Participating **NNIMIPA** institutions, coordinators and committees.

DENMARK

NNIMIPA-Committee, **Syddansk Universitet/University of Southern Denmark – SDU** (member since 2007):

- Cynthia M. Grund cmgrund@ifpr.sdu.dk (Chief Coordinator for NNIMIPA and NNIMIPA-coordinator for SDU; NordForsk Project Manager; philosophy; Editor-in-Chief for *JMM: The Journal of Music and Meaning www.musicandmeaning.net*).
- Samad Ahmadi, sahmadi@dmu.ac.uk (Reader in Optimisation and Computational Intelligence, Co-Director of the Virtual reality and Assisted Living Research Group (Vir.AL); Member of the Center for Computational Intelligence (CCI); Principal Lecturer, School of Computer Science and Informatics, Faculty of Technology, De Montfort University, The Gateway, Leicester, LE1 9BH, UK). Affiliated with NNIMIPA since medio 2012.
- Jenny Carter, jennyc@dmu.ac.uk (Course Leader: MSc Intelligent Systems & Robotics; MSc Intelligent Systems. Centre for Computational Intelligence De Montfort University). Affiliated with NNIMIPA since primo 2012.
- Barry Eaglestone (Senior Lecturer, U of Sheffield, UK -Retired; Cross-disciplinary application of IT to music and the humanities; databases).
- Søren R. Frimodt-Møller soren@frimodt-moller.dk (Philosophy; Managing Editor for *JMM: The Journal of Music and Meaning www.musicandmeaning.net*)
- Anne Helle Jespersen ahj@bib.sdu.dk (Research librarian in music; head of music section, Library of the University of Southern Denmark; ethnomusicology).

 Member of NNIMIPA-committee as of May 2012.
- William Westney bill.westney@gmail.com (Hans Christian Andersen Guest Professorial Fellow at SDU 2009-2010; Paul Whitfield Horn Professor of Piano and Browning Artist-in-Residence, School of Music, Texas Tech University; piano, music pedagogy and philosophy of performance).
- (Until ultimo 2011) Peter E. Nissen (Librarian; musicologist; member of the steering committee for *Den Virtuelle Musikbibliotek*, www.dvm.nu).
- (Until medio 2012) Bent Nielson (Formerly: Music pedagogy SMKS/ librarian SDU with responsibility for the jazz collection of the SDU Library; saxophonist).

 Joined NNIMIPA-committee in 2011.

NNIMIPA-Committee, **Syddansk Musikkonservatorium og Skuespillerskole** – SMKS (member since 2007 while still Vestjysk Musikkonservatorium/Academy of Music and Music Communication, Esbjerg, Denmark (VMK); as of 1/1-2010 renamed **Academy of Music and Dramatic Arts/Syddansk Musikkonservatorium & Skuespillerskole (SMKS)** after merging with the Carl Nielsen Academy of Music Odense/Det Fynske Musikkonservatorium (DFM) and The School of Dramatic Arts Odense/Skuespillerskolen ved Odense Teater (SkO)):

Fredrik Søegaard fsoegaard10@smksnet.dk (NNIMIPA-Coordinator for SMKS, guitar). Inge Bjarke ibjarke@webspeed.dk (Music theory/piano.) Member as of May 2012. Hanne Bramsen Buhl habuhl10@smksnet.dk (Piano). Guri Frenning gufr@bib.sdu.dk (Librarian/musicologist/percussionist).

Helene Gjerris helene@gjerris.dk (Singing and Performance).

Member-at-large: Morten Heide post@mortenheide.dk (Piano/choral direction, www.mortenheide.dk).

NNIMIPA-Committee, **Aalborg University Esbjerg** (a.k.a. **Esbjerg Institute of Technology**) **– AUE** (member since 2007):

Kristoffer Jensen krist@create.aau.dk (NNIMIPA-Coordinator for AUE; Music informatics, electroacoustic composition and performance).

Søren R. Frimodt-Møller sfm@create.aau.dk (Music informatics, philosophy).

FINLAND

NNIMIPA-Coordinator, Aalto University - AaU, Helsinki, (Member as of February 2012):

Tere Vadén tereensio@gmail.com (Philosophy, hypermedia, practice-based research).

NNIMIPA-Coordinator, University of Tampere - UTA (member since 2007):

Mika Sihvonen, mika.sihvonen@uta.fi (Interactive Media, Digital Archives, Music Education). UTA-coordinator 2013-.

Mika Mustikkamäki mika.mustikkamaki@gmail.com (Information Studies, New Literacies, Media Education). UTA-coordinator as of primo 2012 and for the rest of 2012.

NNIMIPA/NordPlus, then Nordforsk coordinator: 2007-primo 2012: Tere Vadén tereensio@gmail.com (Philosophy, hypermedia, practice-based research).

NNIMIPA-Coordinator, Sibelius Academy, Helsinki – SiBa (member since 2007):

Lauri Vakeva lauri.vakeva@siba.fi (Music Education).

NNIMIPA/NordPlus Coordinator: 2007-2008 Ulla-Britta Broman-Kananen; NNIMIPA/NordPlus /NordForsk Coordinator 2009- mid 2010 David Hebert. Student Associates:

Dāvis Ozoliņš davis.ozolins@siba.fi; daozolin@siba.fi.

(At large) Josué Moreno jomoreno1@gmail.com.

ICELAND

NNIMIPA-Coordinator, **Bifröst University – BU** (Member as of September 2010):

Sigrún Lilja Einarsdóttir sigrunlilja@bifrost.is (Socio-musicology with emphasis on choral culture); followed Njörður Sigurjónsson as NNIMIPA-Coordinator for BU).

NNIMIPA-Coordinator, University of Iceland – UI (Member as of September 2010):

Helga Rut Guðmundsdóttir helgarut@hi.is (Music education with emphasis on early childhood).

NORWAY

NNIMIPA-Coordinator, **Grieg Academy, Bergen University College – GA-BUC** (member as of 2011):

David Hebert davidgabrielmusic@yahoo.com (Ethnomusicology; music technology studies).

Member-at-large: Alex Ruthmann <u>alex.ruthmann@gmail.com</u> (music education, music technology, creative computation).

NNIMIPA-Coordinator at **Stord Haugesund University College** (member as of June 2012):

Oded Ben-Horin oded.ben@hsh.no (Science-music collaborations, vocal jazz, improvisations).

NNIMIPA-Coordinator at **University of Oslo – UiO** (member since 2009):

Alexander Refsum Jensenius a.r.jensenius@imv.uio.no (Musicology, music informatics, piano).

SWEDEN

NNIMIPA-Coordinator, **Kungliga Tekniska Hogskolan/Royal Institute of Technology– KTH**, Stockholm (member since 2007):

Anders Friberg afriberg@kth.se (Music informatics, piano).

NNIMIPA-Coordinator, **Malmö Academy of Music, Lund University – MHM-LU** (member since December 2010):

Stefan Östersjö Stefan. Ostersjo@mhm.lu.se (Practice-based research, performance studies, guitar).