

**Florian Thalmann**  
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<https://floriantthalmann.github.io>

## Education

- 2009-2014 University of Minnesota  
**PhD Music Theory**  
Supervisors: Guerino Mazzola, Michael Cherlin  
PhD thesis: “Gestural Composition with Arbitrary Musical Objects and Dynamic Transformation Networks”
- 2011-2014 University of Minnesota  
**MA Art History**  
Supervisors: Gabriel Weisberg, Stephen Ostrow  
Plan B Papers: “Raoul Larche Table Lamps: Art Nouveau à l'Ancienne?”  
“Irony, Ambiguity, and Musical Experience in Caravaggio's Musical Paintings”
- 2000-2007 University of Bern, University of Zurich, Switzerland  
**MSc Computer Science**  
Supervisors: Guerino Mazzola, Oscar Nierstrasz  
MSc thesis: “Musical Composition with Grid Diagrams of Transformations”  
BSc thesis: “Jam Tomorrow: Collaborative Music Generation in Croquet Using OpenAL”.  
Minors: Mathematics, Biology

## Research and Professional Experience

- June 2020 – April 2022 Post-doctoral Researcher at the Speech and Audio Processing Laboratory, Kyoto University. Working on Analysis of Large Music Collections.
- November 2019 – May 2020 Visiting Researcher at the Speech and Audio Processing Laboratory, Kyoto University. Working on Analysis of Large Music Collections.
- 2015 – 2019 Post-doctoral Research Assistant at the Center for Digital Music at Queen Mary University of London. Working on Semantic Audio, Computer Music, and Computational Musicology.
- 2009 – 2013 Teaching Assistant in Music Theory and Computer Music at School of Music, University of Minnesota
- June – October 2008 Software-Engineer at PostFinance as an external employee of Puzzle ITC. Further development of a software for internal task management (J2EE/Struts/Hibernate)
- August – November 2007 Research Fellow at the School of Music, University of Minnesota, Minneapolis/St. Paul, USA. Development of a prototype for visualization and interactive geometric manipulation of musical structures for the music composition software Rubato Composer (Java)
- 2001 – 2007 Independent software developer for the Federal Office of Metrology METAS  
Development of a software product for the statistical evaluation of measurements of volumes (Java)
- 2003 – 2004 Research associate, Computer Vision and Artificial Intelligence Group, Institute of Computer Science and Applied Mathematics, University of Berne  
Development of a tool for evaluating different methods for the recovery of missing information in graph sequences (Java)
- August – December 2004 Software developer at the Federal Office of Metrology METAS  
Development of an internet database for hardware management (J2EE/JSF/PostgreSQL)
- 2001 – 2003 Working student at Siemens Switzerland  
IT support and software development (VBA/SQL/Access)
- August – October 2000 Research Internship at the Federal Office of Metrology METAS  
Conceptualization of a statistical test for measurements of volumes, and evaluation using numerical simulation (MS Excel)

## Teaching Experience and Student Supervision

- 2013-2019 Supervising and advising of research and composition projects of various students including Daniel Tormoen (project on gestural composition with Leap Motion), Benjamin Klein, Jason Cress, Sarit Ghildayal (programming and/or composition with Rubato Composer)
- 2009-2013 Teaching Assistant in Music Theory and Analysis, Ear-Training, Music Technology, and Music Informatics at the School of Music of the University of Minnesota  
Courses taught:  
Theory and Analysis of Tonal Music I-III (main lecture or TA sections)  
Ear-Training and Sight-Singing I-III (TA sections)  
Intensive Theory and Analysis of 20th-Century Music (TA sections)

Ear-Training and Sight-Singing for 20th-Century Music (TA sections)  
Introduction to Music Information Technology (co-taught)  
Music Informatics Seminar (co-taught)  
Seminar on Composing with Rubato Composer and the Big Bang Rubette (co-taught)  
Various guest lectures and substitution in courses on music, mathematics, and technology

June 2010 “Komponieren mit Rubato — Algorithmik und Kreativität”, co-taught with Guerino Mazzola. Workshop at the Institute of Computer Science, University of Zurich.

### Review-board Publications

- Florian Thalmann, Kazuyoshi Yoshii, Thomas Wilmering, Geraint Wiggins, and Mark Sandler. A Method for Analysis of Shared Structure in Large Music Collections using Techniques from Genetic Sequencing and Graph Theory. 21st International Society for Music Information Retrieval Conference (ISMIR), 2020.
- Delia Fano Yela, Florian Thalmann, Vincenzo Nicosia, Dan Stowell, and Mark Sandler. Online visibility graphs: Encoding visibility in a binary search tree. *Physical Review Research*, 2020.
- Florian Thalmann, Geraint Wiggins, and Mark Sandler. Representing Modifiable and Reusable Musical Content on the Web with Constrained Multi-Hierarchical Structures. *IEEE Transactions on Multimedia*, 2020.
- Thomas Wilmering, Florian Thalmann, and Mark B. Sandler. Alignment and Timeline Construction for Incomplete Analogue Audience Recordings of Historical Live Music Concerts. In *Audio Engineering Society Convention 147*. New York City, 2019.
- Alo Allik, Florian Thalmann, Cornelia Metzgi, Mark Sandler. Join my party! How can we enhance social interactions in music streaming? In *Web Audio Conference WAC-2019*. Trondheim, 2019.
- Florian Thalmann, Thomas Wilmering, and Mark B. Sandler. Query-based Mashups of Historical Live Music Recordings. In *Proceedings of the 9th Conference of Japanese Association for Digital Humanities (JADH2019)*. Osaka, 2019.
- Florian Thalmann, Thomas Wilmering, and Mark B. Sandler. Cultural Heritage Documentation and Exploration of Live Music Events with Linked Data. *Workshop on Semantic Applications for Audio and Music*, Monterey, USA, 2018.
- Florian Thalmann, Lucas Thompson, and Mark B. Sandler. A User-Adaptive Automated DJ Web App with Object-Based Audio and Crowd-Sourced Decision Trees. *Web Audio Conference WAC-2018*, Berlin, 2018.
- Thomas Wilmering, Florian Thalmann, György Fazekas, and Mark B. Sandler. Bridging Fan Communities and Facilitating Access to Music Archives through Semantic Audio Applications. In *Audio Engineering Society Convention 143*. Audio Engineering Society, New York City, 2017.
- Florian Thalmann, Sebastian Ewert, Geraint Wiggins, and Mark B. Sandler. Exploring Musical Expression on the Web: Deforming, Exaggerating, and Blending Decomposed Recordings. *Proceedings of 3rd Web Audio Conference*, London, 2017.
- Thomas Wilmering, Florian Thalmann, and Mark B. Sandler. Towards a Framework for the Discovery of Collections of Live Music Recordings and Artefacts on the Semantic Web. *Proceedings of 3rd Web Audio Conference*, London, 2017.
- Mathieu Barthet, György Fazekas, Alo Allik, Florian Thalmann, and Mark B. Sandler. From interactive to adaptive mood-based music listening experiences in social or personal contexts. *Journal of the Audio Engineering Society*, 2016.
- Thomas Wilmering, Florian Thalmann, and Mark B. Sandler. Grateful live: Mixing Multiple Recordings of a Dead Performance into an Immersive Experience. In *Audio Engineering Society Convention 141*. Los Angeles, 2016.
- Mathieu Barthet, Florian Thalmann, György Fazekas, Mark B. Sandler, and Geraint Wiggins. Crossroads: Interactive Music Systems Transforming Performance, Production and Listening. *Proceedings of the CHI Workshop on Music and HCI, ACM Conference on Human Factors in Computing Systems (CHI)*, 2016.
- Florian Thalmann, György Fazekas, Geraint A. Wiggins, and Mark B. Sandler. Creating, Visualizing, and Analyzing Dynamic Music Objects in the Browser with the Dymo Designer. In *Proceedings of the Audio Mostly Conference*, pp. 39-46. ACM, Norrköping, 2016.
- Florian Thalmann, Alfonso Perez Carrillo, György Fazekas, Geraint A. Wiggins, and Mark B. Sandler. The Semantic Music Player: A Smart Mobile Player Based on Ontological Structures and Analytical Feature Metadata. *Proceedings of the 2nd Web Audio Conference*, Atlanta, 2016.
- Alfonso Perez-Carrillo, Florian Thalmann, György Fazekas, and Mark Sandler. Geolocation Adaptive Music Player. *Proceedings of the 2nd Web Audio Conference*, Atlanta, 2016.
- Florian Thalmann, Alfonso Perez Carrillo, György Fazekas, Geraint A. Wiggins, and Mark B. Sandler. The Mobile Audio Ontology: Experiencing Dynamic Music Objects on Mobile Devices. In *Semantic Computing (ICSC), 2016 IEEE Tenth International Conference on*, pp. 47-54. IEEE, 2016.
- Florian Thalmann. Harmony of the Spheres: A Physics-Based Android Synthesizer and Controller with Gestural Objects and Physical Transformations. In: *The 12th Sound and Music Computing Conference*, Maynooth, Ireland, 2015.
- Florian Thalmann, Daniel Tormoen, and Guerino Mazzola. “The Composing Hand: Musical Creation with Leap Motion and the BigBang Rubette”. *Proceedings of 14th International Conference on New Interfaces for Musical Expression (NIME)*. London, 2014.
- Florian Thalmann and Guerino Mazzola. “Using the Creative Process for Sound Design based on Generic Sound Forms”. In: *MUME 2013 proceedings*. Boston: AAAI Press, 2013.
- Guerino Mazzola and Florian Thalmann. “Theory and Software for Tracing Musical Creativity in Composition.” *Proceedings of the Conference on Tracking the Creative Process in Music (TCPM)*, University of Montreal, 2013.

- Florian Thalmann and Guerino Mazzola. "Visualization and Transformation in General Musical and Music-Theoretical Spaces". In: *Proceedings of the Music Encoding Conference 2013*. Mainz: MEI, 2013.
- Florian Thalmann and Guerino Mazzola. "Poietical Music Scores: Facts, Processes, and Gestures". In: *Second International Symposium on Music and Sonic Art – MuSA 2011, Baden-Baden*, August 2011.
- Guerino Mazzola and Florian Thalmann. "Musical Composition and Gestural Diagrams". In: *Proceedings of the third MCM conference, IRCAM, Paris*, 2011.
- Florian Thalmann and Guerino Mazzola. "Affine Musical Transformations Using Multi-Touch Gestures". In: *Ninad-journal of ITC SRA*, 2010.
- Florian Thalmann and Guerino Mazzola. "Gestural Shaping and Transformation in a Universal Space of Structure and Sound". In: *Proceedings of the 2010 International Computer Music Conference, New York City*, 2010.
- Guerino Mazzola, Catherine Losada, Florian Thalmann, and Schuyler Tsuda. "A Boulezian Creative Analysis of Boulez's structures". In: *Somashekhar Naimpally, Giuseppe Di Maio (eds.): Quaderni di Matematica, Theory And Applications of Proximity, Nearness and Uniformity*, vol 22, 2008.
- Florian Thalmann and Guerino Mazzola. "The BigBang Rubette: Gestural Music Composition with Rubato Composer". In: *Proceedings of the 2008 International Computer Music Conference, Belfast*, 2008.
- Guerino Mazzola and Florian Thalmann. "Grid Diagrams for Ornaments and Morphing". In: *Proceedings of the First International Conference of the Society for Mathematics and Computation in Music*, State Institute of Music Research, Berlin, 2007.
- Guerino Mazzola, Gérard Milmeister, Karim Morsy, and Florian Thalmann. "Functors for Music: The Rubato Composer System". In: *Digital Art Weeks Proceedings*, ETH, Zurich, 2006.
- Florian Thalmann and Markus Gaelli. "Jam Tomorrow: Collaborative Music Generation in Croquet Using OpenAL". In: *Proceedings of the Fourth International Conference on Creating, Connecting and Collaborating through Computing*, University of California, Berkeley, 2006.

### Books and Book Chapters

- Guerino Mazzola, René Guitart, Jocelyn Ho, Alex Lubet, Maria Mannone, Matt Rahaim, and Florian Thalmann. *Topos of Music III: Gestures - Musical Multiverse Ontologies*. Springer Series Computational Music Science, Heidelberg et al., 2018.
- Guerino Mazzola, Joomi Park, and Florian Thalmann. "Musical Creativity—Strategies and Tools in Composition and Improvisation". Springer Series Computational Music Science, Heidelberg et al. 2011.
- Guerino Mazzola, Florian Thalmann, et al.. "Musical Performance: A Comprehensive Approach: Theory, Analytical Tools, and Case Studies". Springer Series Computational Music Science, Heidelberg et al., 2010.
- Gérard Milmeister, Florian Thalmann and Guerino Mazzola. "The Rubato Composer Music Software: Component-Based Implementation of a Functorial Concept Architecture". Springer Series Computational Music Science, Heidelberg et al. 2009.
- Guerino Mazzola, Gérard Milmeister, Karim Morsy, and Florian Thalmann: "Functors for Music: The Rubato Composer System". In: *Randy Adams, S. Gibson, S. Muller Arisona (eds.): Transdisciplinary Digital Art: Sound, Vision and the New Screen*. Springer CCIS, Heidelberg et al. 2008.

### Presentations, Invited Talks, Posters, and Demos

- Alo Allik, Florian Thalmann, Cornelia Metzger, Mark Sandler. moodplay.github.io: an online collaborative music player. In *Web Audio Conference WAC-2019*. Trondheim, 2019.
- Thomas Wilmering, Florian Thalmann, and Mark B. Sandler. Exploration of Grateful Dead Concerts and Memorabilia on the Semantic Web. International Semantic Web Conference (ISWC), Monterey, USA, 2018.
- David Moffat, Florian Thalmann, and Mark Sandler. Towards a Semantic Web Representation and Application of Audio Mixing Rules. 4th Workshop on Intelligent Music Production (WIMP), Huddersfield, UK, 2018.
- Alo Allik, Florian Thalmann, and Mark Sandler. MusicLynx: Exploring Music Through Artist Similarity Graphs. Companion Proceedings of the The Web Conference, Lyon, France, 2018.
- Adrian Hazzard, Chris Greenhalgh, Florian Thalmann, Gary Bromham. Are you experienced? Dynamic music listening., DMRN+12: Digital Music Research Network One-day Workshop, Queen Mary University of London, 2017.
- Florian Thalmann, Sebastian Ewert, Geraint A. Wiggins, Mark B. Sandler. Deforming Recordings of Musical Performances using Dynamic Music Objects. DMRN+10: Digital Music Research Network Workshop, London, 2015.
- Alfonso Perez-Carrillo, Florian Thalmann and György Fazekas. Geo-location adaptive music player. DMRN+10: Digital Music Research Network Workshop, London, 2015.
- Florian Thalmann, Sebastian Ewert, Mark Sandler, Geraint A. Wiggins. Spatially Rendering Decomposed Recordings - Integrating Score-Informed Source Separation and Semantic Playback Technologies. 16th International Society for Music Information Retrieval Conference, Malaga, 2015.
- Alfonso Perez-Carrillo, Florian Thalmann, Thomas Wilmering and Mark Sandler. GeoLocation-Adaptive Music Player. 16th International Society for Music Information Retrieval Conference, Malaga, 2015.
- Florian Thalmann, Alfonso Perez Carrillo, György Fazekas, Geraint Wiggins and Mark Sandler. Navigating Ontological Structures based on Feature Metadata Using the Semantic Music Player. 16th International Society for Music Information Retrieval Conference, Malaga, 2015.
- Florian Thalmann and Geraint Wiggins. Semantic Player: A Smart Creative Mobile Player Based on Ontological Metadata. 1st AES-Midlands Workshop on Intelligent Music Production, Birmingham, 2015.

July 2014: “The Composing Hand: Musical Creation with Leap Motion and the BigBang Rubette”. *14th International Conference on New Interfaces for Musical Expression (NIME)*, London.

April 2014: “Creativity and design as it applies to music and how new technologies are changing music.” with Guerino Mazzola. Guest lecture in Technology, Design, & Society, College of Design, University of Minnesota.

October 2013: “Using the Creative Process for Sound Design based on Generic Sound Forms”. with Guerino Mazzola. *MUME 2013*, Boston.

October 2013: “Theory and Software for Tracing Musical Creativity in Composition.” with Guerino Mazzola. *Conference on Tracking the Creative Process in Music (TCPM)*, Montreal.

May 2013: “Visualization and Transformation in a General Musical and Music-Theoretical Spaces”. *Music Encoding Conference 2013*, Mainz.

August 2011: “Poetical Music Scores, facts, Processes, and Gestures”. *Second International Symposium on Music and Sonic Art – MuSA 2011*, Baden-Baden.

June 2010: “Komponieren mit Rubato — Algorithmik und Kreativität”, with Guerino Mazzola. Guest seminar at the Institute of Computer Science, University of Zurich.

June 2010: “Gestural Shaping and Transformation in a Universal Space of Structure and Sound”. with Guerino Mazzola. *International Computer Music Conference*, New York City/Stony Brook.

February 2010: “Concepts and Software for Gestural Musical Realtime Composition”. with Guerino Mazzola, *Computer Science & Engineering Colloquium*, University of Minnesota.

December 2009: “Gestural Realtime Manipulation of Denotators for Music Composition”. *Séminaire MaMuX*, IRCAM, Paris.

December 2008: “Gestural Music Composition with Rubato Composer”. *Swiss Open Systems User Group OBL*, Bern.

August 2008: “The BigBang Rubette: Gestural Music Composition with Rubato Composer”. *International Computer Music Conference*, Belfast.

July 2006: “Functors for Music: The Rubato Composer System”. with Guerino Mazzola, Gérard Milmeister, Karim Morsy, *Digital Art Weeks*, ETH, Zurich.

## **Awards**

Fellowship for Prospective Researchers, Swiss National Science Foundation, January-December 2013

Research Grant, School of Music, University of Minnesota, September 2012

Graduate Research Partnership Program Award of the University of Minnesota for the project “Musical Composition with Compound Multi-Touch Gestures”, May 2010

Grant for a PhD in Music Theory at the University of Minnesota, Hasler Stiftung Bern, October 2008

Grant for the presentation of “The BigBang Rubette: Gestural Music Composition with Rubato Composer” at ICMC in Belfast, Hasler Stiftung Bern, July 2008

Grant for the project “Programming and perception of complex rhythms in music” at the University of Minnesota, Hasler Stiftung Bern, July 2007

## **Scientific Activities**

### *Program Chair:*

Web Audio Conference 2017, with Sebastian Ewert

### *Program Committee:*

International Society for Music Information Retrieval Conference (ISMIR) 2015-

Workshop on Semantic Applications for Audio and Music 2018

The Music Never Stopped: The Future of the Grateful Dead Experience in the Information Age. Workshop at AES 2017

International Conference on Mathematics and Computation in Music 2017-

Web Audio Conference 2017-

Audio Mostly 2017-

### *Reviews for Journals:*

ACM Transactions on Multimedia Computing Communications and Applications

Journal of Mathematics and Computation in Music

Journal of the Audio Engineering Society

Personal and Ubiquitous Computing

## **Musical and Artistic Activities**

*Performance:* 600+ concerts in 14 countries, solo and as a member of different groups in the area of improvised, electronic, and popular music. Performed at festivals such as Musikfestival Bern, Mad Scientist Festival, Gurten Festival, Paléo Festival, Open Air St. Gallen, Chiemsee Summer, Rock Oz Arènes, Mighty Sounds Festival, Open Air Gampel, etc

*Instruments:* computer and electronics, trumpet, Akai EWI, saxophones, piano

*Composition:* electronic music and numerous jazz and popular music compositions and arrangements

*Recordings:* appearance on 10+ commercial records as a musician and composer

*Production:* production, recording, and mixing of various bands

## **Technological Skills**

*Programming:* Javascript/Typescript, Python/Keras/Pandas/SciPy/NumPy, Java, Android SDK/NDK, iOS, Smalltalk, C/++, OpenGL, Processing, RDF/SPARQL, JSON-LD, SQL, Latex, MetaPost, HTML5, Bootstrap, XML, UML

*Music Programming:* SuperCollider, Max/MSP, Pd, Native DSP, VST/AU, Lilypond, CSound, OpenAL, Web Audio API, JSyn

*Production/Composition:* Recording acoustic instruments, synthesizer programming, mixing, mastering, Ableton Live, Sibelius

## **Languages**

German and French: native bilingual

English: fluent

Spanish: good knowledge

Japanese: good knowledge

Italian: basic knowledge

## **References**

Prof. Dr. Mark Sandler, Centre for Digital Music, Queen Mary University of London, [mark.sandler@qmul.ac.uk](mailto:mark.sandler@qmul.ac.uk)

Prof. Dr. Geraint Wiggins, Artificial Intelligence Lab, Vrije Universiteit Brussel, Belgium, [geraint.wiggins@vub.be](mailto:geraint.wiggins@vub.be)

Prof. Dr. Guerino Mazzola, School of Music, University of Minnesota, [mazzola@umn.edu](mailto:mazzola@umn.edu)

Prof. Dr. Michael Cherlin, School of Music, University of Minnesota, [cherl001@umn.edu](mailto:cherl001@umn.edu)

Prof. Dr. Gabriel Weisberg, Department of Art History, University of Minnesota, [weisb001@umn.edu](mailto:weisb001@umn.edu)