Christoph Finkensiep

Digital and Cognitive Musicology Lab (DCML)
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Christoph Finkensiep

Education

2017-2022	**PhD** Digital and Cognitive Musicology Lab (DCML) École Polytechnique Fédérale de Lausanne, Switzerland
2014-2017	**M. Sc.** in Cognitive Science University of Osnabrück, Germany
2010-2014	**B. Sc.** in Computer Science University of Paderborn, Germany
Fall 2012	Exchange Semester University of Helsinki, Finland
2010	**Abitur** Gymnasium Horn-Bad Meinberg, Germany

Theses

2022	"The Structure of Free Polyphony" *PhD Thesis* Supervisor: Martin Rohrmeier (EPFL)
2017	"A Formal Model of Voice Leading" *Master Thesis* Supervisors: Kai-Uwe Kühnberger (University of Osnabrück), Martin Rohrmeier (TU Dresden)
2014	"Fast and Flexible Automatic Composition of Semantic Web Services" *Bachelor Thesis* Supervisor: Hans Kleine Büning (University of Paderborn)

Employment

since 2017	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE Doctoral Assistant *Digital and Cognitive Musicology Lab*
2017	TECHNICAL UNIVERSITY DRESDEN Student Assistant *Dresden Music Cognition Lab*
2015-2017	PROTESTANT CHURCH OF LADBERGEN Director of Brass Ensemble
2013-2014	UNIVERSITY OF PADERBORN Teaching Assistant *Introduction to Programming for Engineers*
2011-12	UNIVERSITY OF PADERBORN Student Assistant *Decision Support & Operations Research Lab*

Teaching Experience

Student Supervision

since 2022	Voice-Leading Reduction to Harmonic Entities through Heuristic Search Bachelor thesis, UNIVERSITY OF CAMBRIDGE
since 2022	Harmonic Reduction based on Reinforcement Learning – Master project, EPFL
2020	Exploring Mutual Information Decay in Musical Sequences – Master project, EPFL
2018	Porting the MIDI Toolbox to Julia – student project, EPFL
2018	A MusicXML Parser for Julia – student project, EPFL

Courses

Spring 2019 & 2020	"Musical Improvisation, Invention and Creativity" – lectures and supervision Bachelor Course, EPFL
Spring 2019 & 2020	"Digital Musicology" – tutorials and project supervision Master Course, EPFL
2019	"Music, Musical Structure, Artificial Neural Networks, and the Mind" – tutorials Summer School of the SWISS STUDY FOUNDATION, Magliaso, Switzerland
Winter 2013/14	"Introdcution to Programming for Engineers" – tutorials Bachelor Course, UNIVERSITY OF PADERBORN

Publications

Articles, Conference Papers, and Book Chapters

forthcoming   **C. Finkensiep**, P. Ericson, S. Klassmann, and M. Rohrmeier (in preparation). "Chord Types and Ornamentation – A Bayesian Model of Extended Chord Profiles". In: *Open Research Europe*

C. Finkensiep, M. Neuwirth, and M. Rohrmeier (accepted). "Music Theory and Model-Driven Corpus Research". In: *The Oxford Handbook of Music and Corpus Studies*. Ed. by D. Shanahan, J. A. Burgoyne, and I. Quinn. Oxford: Oxford University Press

C. Finkensiep, R. Widdess, and M. Rohrmeier (submitted). "Modeling Melody in Indian Music: Tonal Hierarchy, Generalized Neighbors and Graph Grammars". In: *Mathematical Approaches to World Music Analysis*. Ed. by S. Mukherji and R. Peck. Vol. 2. New Directions in World Music Analysis. New York: Routledge Press

2022   G. Cecchetti, S. A. Herff, **C. Finkensiep**, D. Harasim, and M. A. Rohrmeier (Nov. 5, 2022). "Hearing Functional Harmony in Jazz: A Perceptual Study on Music-Theoretical Accounts of Extended Tonality". In: *Musicae Scientiae*, p. 10298649221122245. 🔴 `10.1177/10298649221122245`. 🔗 `https://doi.org/10.1177/10298649221122245`

2021   **C. Finkensiep** and M. Rohrmeier (2021). "Modeling and Inferring Proto-Voice Structure in Free Polyphony". In: *Proceedings of the 22nd International Society for Music Information Retreival Conference*. ISMIR. Online, pp. 189–196. 🔴 `10.5281/zenodo.5624431`

S. A. Herff, D. Harasim, G. Cecchetti, **C. Finkensiep**, and M. Rohrmeier (2021). "Hierarchical Syntactic Structure Predicts Listeners' Sequence Completion in Music". In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. CogSci. Vol. 43. Online. 🔗 `https://escholarship.org/uc/item/9w44g4x1`

D. Harasim, **C. Finkensiep**, L. Bigo, M. Giraud, F. Levé, D. R. W. Sears, D. Shanahan, and M. Rohrmeier (2021). "Music Cognition: The Complexity of Musical Structure". In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. CogSci. Vol. 43. Online. 🔗 `https://escholarship.org/uc/item/9qh5m4dc`

2020   **C. Finkensiep**, K. Déguernel, M. Neuwirth, and M. Rohrmeier (2020). "Voice-Leading Schema Recognition Using Rhythm and Pitch Features". In: *Proceedings of the 21st International Society for Music Information Retrieval Conference*. ISMIR. Montreal, Canada (online), pp. 520–526. 🔴 `10.5281/zenodo.4245482`

D. Harasim, **C. Finkensiep**, P. Ericson, T. J. O'Donnell, and M. Rohrmeier (2020). "The Jazz Harmony Treebank". In: *Proceedings of the 21st International Society for Music Information Retrieval Conference*. ISMIR. Montreal, Canada (online), pp. 207–215. 🔴 `10.5281/zenodo.4245406`

G. Cecchetti, S. A. Herff, **C. Finkensiep**, and M. Rohrmeier (2020). "The Experience of Musical Structure as Computation : What Can We Learn?" In: *Rivista di analisi e teoria musicale* XXVI, 2, 2020, pp. 91–127. 🔴 `10.53152/1032`. 🔗 `https://www.torrossa.com/en/resources/an/4943892`

2019   **C. Finkensiep**, R. Widdess, and M. Rohrmeier (2019). "Modelling the Syntax of North Indian

Melodies with a Generalized Graph Grammar". In: *Proceedings of the 20th International Society for Music Information Retrieval Conference*. ISMIR. Delft, The Netherlands, pp. 462–469. 🔗 `10.5281/zenodo.3527844`

2018 **C. Finkensiep**, M. Neuwirth, and M. Rohrmeier (2018). "Generalized Skipgrams for Pattern Discovery in Polyphonic Streams". In: *Proceedings of the 19th International Society for Music Information Retrieval Conference*. ISMIR. Paris, France, pp. 547–553. 🔗 `10.5281/zenodo.1492473`. 🔗 `http://ismir2018.ircam.fr/doc/pdfs/202_Paper.pdf`

Talks and Presentations

(💬 = invited talk, 🗨 = conference talk, 🗎 = poster)

2022   💬 "Can Machines be Creative?"   Nov. 23, 2022
CREATE Salon on Computational Creativity
UNIVERSITY OF AMSTERDAM, The Netherlands

🗨 "Protovoices – A Model of Tonal Structure at the Surface"   Sep. 30, 2022
in symposium: "Abstraction, Theory Building, Models" (**co-organizer**)
🗨 "Models in Practice" (workshop, with Johannes Hentschel)
GMTH Kongress 2022
Salzburg, Austria

2021   🗨🗎 "Modeling and Inferring Proto-Voice Structure in Free Polyphony"   Nov. 8-12, 2021
ISMIR 2021, online

🗨 "Modeling Hierarchical Structure at the Note Level"   July 29, 2021
in symposium: "Music Cognition: The Complexity of Musical Structure"
(**co-organized** with Daniel Harasim)
CogSci 2021, online

2020   🗨🗎 "Voice-Leading Schema Recognition"   Oct. 12-16, 2020
ISMIR 2020, online

2019   🗨🗎 "A Graph Grammar for North Indian Melodies"   Nov. 6, 2019
ISMIR 2019
Delft, The Netherlands

💬 "A Graph Representation of Hierarchical Voice-Leading"   July 2, 2019
Workshop: "Corpus Research as a Means of Unlocking Musical Grammar"
UNIVERSITY OF TEL-AVIV & BAR-ILAN UNIVERSITY, Israel

🗎 "Representing Hierarchical Voice-Leading Structure with Graph Transformations"
SEMPRE Graduate Conference 2019   Mar. 25, 2019
Cambridge, UK

🗨 "From Bach to the Beatles"   Feb. 21, 2019
with Markus Neuwirth & Martin Rohrmeier
"Mixed Methods" in the Humanities mid-term meeting, Volkswagen Foundation
Hildesheim, Germany

"Schema Matching mit Skipgrams"   Feb. 20, 2019
HOCHSCHULE FÜR MUSIK FREIBURG, Germany

2018   "Generalized Skipgrams"   Sep. 26, 2018
ISMIR 2018
Paris, France

"Schema Matching with Skipgrams"   Sep. 19, 2018
DCML Workshop 2018
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, Switzerland

"Digitale Musikforschung: Projekte und Fallstudien"   June 14-15, 2018
with Markus Neuwirth
UNIVERSITY OF MUSIC AND PERFORMING ARTS MANNHEIM, Germany

2017   "Formalizing Four-Part Voice Leading Rules"   Jan. 17, 2017
TECHNICAL UNIVERSITY DRESDEN, Germany

Open-Source Code

Implementation of the Protovoice Model (Haskell)
 DCMLab/protovoices-haskell

Annotation Tool for Protovoice Analyses (PureScript)
 DCMLab/protovoice-annotation-tool

Annotation Tool for Voice-Leading Schemata (ClojureScript)
 DCMLab/schema_annotation_app

Annotation Tool for Tree Analyses (ClojureScript)
 DCMLab/tree-annotation-code

Matcher for Voice-Leading Schemata (Julia)
 DCMLab/schemata_code/tree/ismir2020

Libraries for Musical Pitches and Intervals

- musicology-pitch (Haskell)
   DCMLab/haskell-musicology/tree/master/musicology-pitch

- pitchtypes (Python)
   DCMLab/pitchtypes

- Pitches.jl (Julia)
   DCMLab/Pitches.jl

- purescript-pitches (PureScript)
   DCMLab/purescript-pitches

- pitches (Rust)
   DCMLab/rust-pitches

Reviewer Activity

Conferences	ISMIR
Journals	Music Theory and Analysis (MTA), TISMIR

Scholarships and Awards

2021	Best Reviewer Award, *ISMIR 2021*
2010-2017	Student Scholarship, *German Academic Scholarship Foundation*
2012	ERASMUS Scholarship (exchange semester), *European Union*
2011	3rd Place for Task 2, *Data Mining Cup*

Memberships and Responsibilities

2019-2021	Student Representative *Doctoral School of Digital Humanities*, EPFL
2013-2014	Student Represtenative *German Academic Scholarship Foundation*, UNIVERSITY OF PADERBORN
since 2021	Member of the *Cognitive Science Society*
since 2019	Member of the *UNIL-EPFL dhCenter*
since 2018	Member of the *International Society for Music Information Retrieval (ISMIR)*

Skills

Languages

German	native speaker
English	fluent
French	basic skills

Computing

Programming Languages	Haskell, Python, Julia, PureScript, Clojure/ClojureScript, Common Lisp, JavaScript, Rust, Java, C/C++, PHP
Frameworks / Libraries	numpy, pandas, PyTorch, halogen, monad transformers, probabilistic programming (pyro, Haskell)

Markup Languages	LaTeX, HTML/CSS, LilyPond

Music

since 1998	**Trombone** 10 years of lessons, including university level Experience in various jazz and classical ensembles, solo literature

- Minor during Bachelor (2011-2014)
- Musikakademie, German Academic Scholarship Foundation (bass trombone, 2012-14, 2016-17)
- Landesjugendposaunenchor Westfalen Lippe (lead trombone, 2013-2019)
- Big Band Hochschule Osnabrück, Jazz Department (bass trombone, 2014-2015)

since 2001	Piano
since 2007	Conducting (brass ensemble)
since 2013	Choir Singing