Christoph Finkensiep

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Christoph Finkensiep

Education

2017–2023	**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* (Degree awarded in 2023) 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 2023	UNIVERSITY OF AMSTERDAM Assistant Professor in Generative AI in the Arts *Institute for Logic, Language and Computation; Faculty of Humanities*
	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
2022–2023	Postdoctoral Researcher
2017–2022	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

Courses

Fall 2024	"Introduction to Digital Methods and Programming" Bachelor Global Arts, Culture, and Politics, UNIVERSITY OF AMSTERDAM
Fall 2024	"Generative AI and Music" Master Music Studies, UNIVERSITY OF AMSTERDAM
Spring 2024	"Repertories and Collections: Working with Datasets in Arts and Culture" Master Music Studies, UNIVERSITY OF AMSTERDAM
Spring 2024, 25	"Introduction to Music and Cognition" Bachelor Musicology, UNIVERSITY OF AMSTERDAM
Fall 2023, 24	"Music Studies Extension – Corpus Studies and Modeling" Master Music Studies, UNIVERSITY OF AMSTERDAM
Fall 2023, 24	"Quantitative Methods in Music Studies" Bachelor Musicology, UNIVERSITY OF AMSTERDAM
Fall 2023	"How Music Works – Computational Perspectives" Master Music Studies, UNIVERSITY OF AMSTERDAM
Spring 2019, 20, 23	"Musical Improvisation, Invention and Creativity" – lectures and project supervision

Elective Bachelor Course, EPFL

|	
Spring 2019, 20, 23	"Digital Musicology" – tutorials, project supervision, lectures Master Digital Humanities, EPFL
2019	"Music, Musical Structure, Artificial Neural Networks, and the Mind" – tutorials Summer School of the Swiss Study Foundation, Magliaso, Switzerland
Winter 2013/14	"Introduction to Programming for Engineers" – tutorials Bachelor Engineering, University of Paderborn

Student Supervision

2023-2024	Diversity in Dutch Festival Lineups – Master thesis, UvA
	Using Amortized Bayesian Inference to Simulate Learning of Chord Types in Music Master thesis, UvA
	Controllable Long-Form Music Generation Through Section Conditioning – Master thesis, UvA
	Generating Novel Musical Sounds by Sampling from their Latent Spaces – Bachelor thesis, UvA
2022–2023	Latent Spaces of Music – Master thesis, ETH Zürich
	Voice-Leading Reduction to Harmonic Entities through Heuristic Search Bachelor thesis, University of Cambridge
	Harmonic Reduction based on Reinforcement Learning – Master project, EPFL
	Composer Classification from Scores – course project, EPFL
2020	Exploring Mutual Information Decay in Musical Sequences – Master project, EPFL
2018	Porting the MIDI Toolbox to Julia – student project, EPFL
	A MusicXML Parser for Julia – student project, EPFL

Publications

Articles, Conference Papers, and Book Chapters

forthcoming **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, P. Ericson, S. Klassmann, and M. Rohrmeier (accepted). "Chord Types and Ornamentation – A Bayesian Model of Extended Chord Profiles". In: *Music and Science*

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

2023   **C. Finkensiep**, M. Haeberle, F. Eisenbrand, M. Neuwirth, and M. Rohrmeier (2023). "Repetition-Structure Inference with Formal Prototypes". In: *Proceedings of the 24th International Society for Music Information Retreival Conference*. ISMIR. Milan, Italy

      M. Neuwirth, **C. Finkensiep,** and M. Rohrmeier (2023). "Musical Schemata: Modelling Challenges and Pattern Finding". In: *Mixing Methods: An Agenda for the Humanities in the Digital Age*. Ed. by B. Löffler, B. Schneider, T. Mager, and C. Hein. Bielefeld: transcript

      G. Cecchetti, **C. Finkensiep**, X. Guan, S. A. Herff, A. Fiveash, C. Pelofi, J. E. Drury, and M. A. Rohrmeier (2023). "Music Cognition between Theory and Experiment". In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. Vol. 45. ⚭ https://escholarship.org/uc/item/6j61p5b7 (visited on 01/08/2024)

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)

2024   🗩 Workshop "AI for Music Theory"   Oct. 4–6, 2024
with Egor Polyakov
GMTH Jahreskongress 2023
Cottbus, Germany

🗎 "Musical Structure Inference with Bayesian Modeling and Reinforced Parsing"
CogSci 2024   July 24–27, 2024
Rotterdam, The Netherlands

🗩 Workshop "Bayesian Modeling for Musicology"   Feb. 1–3, 2024
with Jan Hajič jr. and Fabian Moss
University of Würzburg, Germany

2023   🗩🗎 "Repetition Structure Inference with Formal Prototypes"   Nov. 7, 2023
ISMIR 2023
Milan, Italy

🗩 "Beyond Voices – A New Take on Polyphonic Structure in Western Tonal Music"   Oct. 25, 2023
Symposium in Honor of Simha Arom
University of Amsterdam, The Netherlands

🗩 Workshop "Modellbasierte Korpusforschung"   Sep. 22–24, 2023
with Martin Rohrmeier
GMTH Jahreskongress 2023
Freiburg, Germanny

🗩 Symposium "Music Cognition between Theory and Experiment"   July 26–29, 2023
(**co-organized** with Gabriele Cecchetti and Xinyi Guan)
CogSci 2023
Sydney, Australia

🗎 "Note Structure in Free Polyphony"   June 22–24, 2023
International Colloquium of Computational and Cognitive Musicology 2023
National and Kapodistrian University of Athens, Greece

🗩 "Seeing the Wood for the Trees – Note-Level Structure in Tonal Music"   May 2, 2023
Queen Mary University of London, United Kingdom

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 Jahreskongress 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, CogSci

Journals Music Theory and Analysis (MTA), TISMIR, Advances in Data Analysis and Classification (ADAC)

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
Dutch	intermediate
French	basic

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, PyMC, Haskell)
Markup Languages	LaTeX, HTML/CSS, LilyPond, Typst

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