ISMIR

ISMIR Tutorial

Abu Dhabi, UAE, November 08, 2026

ISMIR ABU DHABI 2026

Introduction to Music Information Retrieval: Three Perspectives

Part 0: Overview

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AUDIO LABS FAU Fraunhofer IIS Julius-Maximilians-Universität Würzburg CAIDAS zpd

Christof Weiß



- 2006–2012: Physics diploma, Universität Würzburg
  Music diploma (composition), Hochschule für Musik Würzburg

- 2012–2017: PhD Media technology, TU Ilmenau
- 2015–2022: PostDoc, AudioLabs Erlangen / FAU Erlangen-Nürnberg
- 2021: Visiting researcher (DFG Fellowship), Télécom Paris, France

- since 2022: Professor for Computer Science (Computational Humanities)
  Group Leader, DFG Emmy Noether Research Group
  Computational Analysis of Music Audio Recordings: A Cross-Version Approach

Christof Weiß: Research Group



- Lele Liu
- Yannik Venohr
- Yiwei Ding
- Benjamin Henzel
- Michael Kohl
- Yaozhong Zhang
- Natalia Fahmer
- Pascal Schmolenzky
- Christof Weiß

- + student assistants



Christof Weiß



Institute of Computer Science

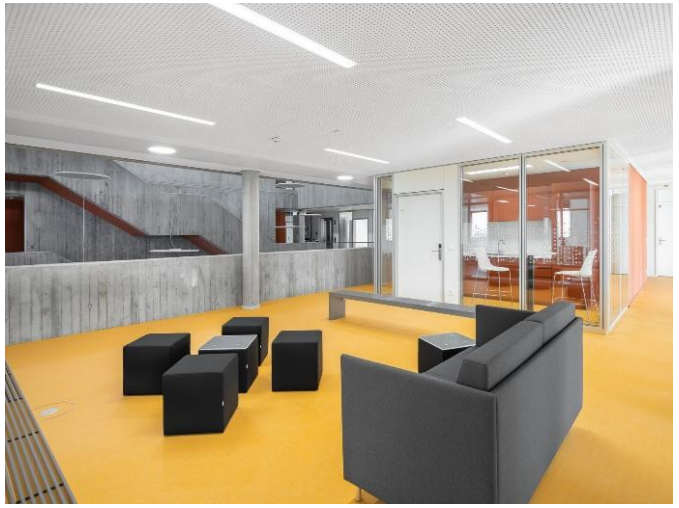
Philosophische Fakultät

Center for Artificial Intelligence and Data Science

Zentrum für Philologie und Digitalität

Christof Weiß











zpd

Zentrum für Philologie und Digitalität

Christof Weiß

M.Sc. Study Program **Computational Humanities**

- **Interdisciplinary Approach:**

Combines a technical focus on computational methods (e.g., AI) with humanities.

- **Bridging Media and Culture**

Embraces various modalities and cultural domains, including text (literature), audio (music), video (film), and image (art).

- **International Study Program:**

All courses in English.



Meinard Müller



- Mathematics (Diplom/Master, 1997)
- Computer Science (PhD, 2001)
- Information Retrieval (Habilitation, 2007)

- Senior Researcher at the MPI for Informtics (2007 to 2012)
- Professor Semantic Audio Processing (since 2012)

- Former Board Member and President of ISMIR (2009 to 2021)
- Editor-in-Chief for TISMIR (since 2024)

- IEEE Fellow for contributions to Music Signal Processing

International Audio Laboratories Erlangen

Fraunhofer IIS



- Fraunhofer Institute for Integrated Circuits IIS
- Largest Fraunhofer institute with > 1000 members
- Applied research for sensor, audio, and media technology

mp3

AUDIO LABS

FAU Friedrich-Alexander-Universität Erlangen-Nürnberg



- Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)
- One of Germany's largest universities with ≈ 40,000 students
- Strong Technical Faculty



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2026

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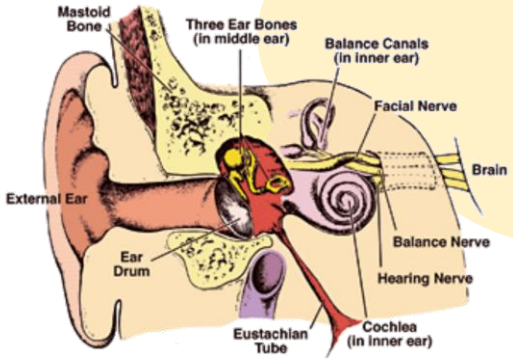
Audio Coding



3D Audio



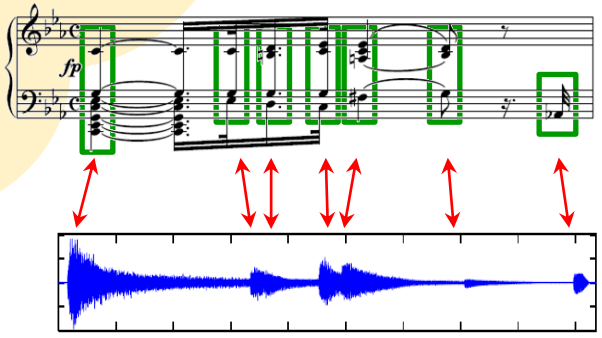
Audio



Psychoacoustics



Internet of Things



Music Processing

Meinard Müller: Research Group



- Ben Maman
- Johannes Zeitler
- Abhirup Saha
- Manuel Peters

- Sebastian Strahl
- Uli Berendes
- Vlora Arifi-Müller
- Stefan Balke










- Simon Schwär
- Peter Meier
- Ching-Yu Chiu (Sunny)
- Yigitcan Özer
- Michael Krause
- Christof Weiß
- Sebastian Rosenzweig

- Frank Zalkow
- Hendrik Schreiber
- Christian Dittmar
- Stefan Balke
- Jonathan Driedger
- Thomas Prätzlich
- …















Introduction to Music Information Retrieval

Three Perspectives

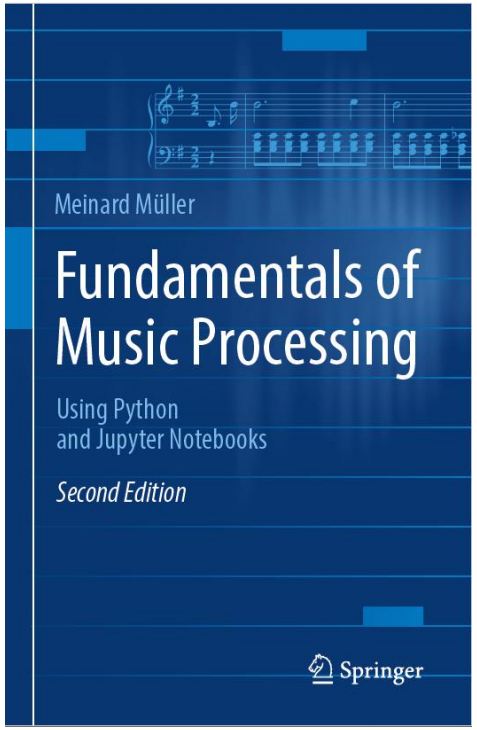
Part 0:	Overview
Perspective / Part 1:	A Signal Processing Perspective
	Coffee Break
Perspective / Part 2:	A Computational Musicology Perspective
Perspective 3:	An Educational Perspective

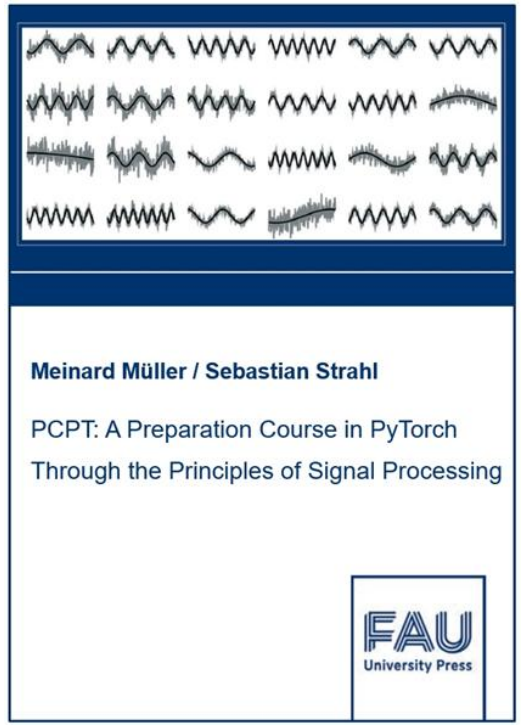
Literature

- Brian McFee, Colin Raffel, Dawen Liang, Daniel P. W. Ellis, Matt McVicar, Eric Battenberg, and Oriol Nieto: **Librosa: Audio and Music Signal Analysis in Python**. Proceedings of the Python in Science Conference, 2015. DOI: 10.25080/Majora-7b98e3ed-003.
- Brian McFee, Jong Wook Kim, Mark Cartwright, Justin Salamon, Rachel M. Bittner, and Juan Pablo Bello: **Open-Source Practices for Music Signal Processing Research: Recommendations for Transparent, Sustainable, and Reproducible Audio Research**. IEEE Signal Processing Magazine, 36(1), 128–137, 2019. DOI: 10.1109/MSP.2018.2875349.
- Meinard Müller: **Fundamentals of Music Processing – Using Python and Jupyter Notebooks**. Springer Verlag, 2021. DOI: 10.1007/978-3-030-69808-9.
- Meinard Müller, Brian McFee, and Katherine Kinnaird: **Interactive Learning of Signal Processing Through Music: Making Fourier Analysis Concrete for Students**. IEEE Signal Processing Magazine, 38(3), 73–84, 2021. DOI: 10.1109/MSP.2021.3052181.
- Meinard Müller and Sebastian Rosenzweig: **PCP Notebooks: A Preparation Course for Python with a Focus on Signal Processing**. The Journal of Open Source Education (JOSE), 5(47), 2022. DOI: 10.21105/jose.00148.
- Meinard Müller and Frank Zalkow: **FMP Notebooks: Educational Material for Teaching and Learning Fundamentals of Music Processing**. Proceedings of the International Conference on Music Information Retrieval (ISMIR), Delft, The Netherlands, 2019. DOI: 10.5281/ZENODO.3527871.
- Meinard Müller and Sebastian Strahl: **PCPT: A Preparation Course in PyTorch. Through the Principles of Signal Processing**. FAU University Press, 2026. DOI: 10.25593/978-3-96147-945-0

Sources

- FMP Notebooks:
  https://www.audiolabs-erlangen.de/FMP
- Preparation Course Python (PCP):
  https://www.audiolabs-erlangen.de/PCP
  https://github.com/groupmm/PCP
- Preparation Course PyTorch (PCPT):
  https://www.audiolabs-erlangen.de/PCPT
  https://github.com/groupmm/PCPT





Further Resources:
https://www.audiolabs-erlangen.de/fau/professor/mueller/resources