Lecture

Music Processing Analysis (MPA)

Introduction

Meinard Müller
International Audio Laboratories Erlangen
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Meinard Müller

- Mathematics (Diplom/Master)
  Computer Science (PhD)
  Information Retrieval (Habilitation)

  Bonn University

universitätbonn

- Combinatorics (Postdoc)

  Keio University, Japan

慶應義塾
Keio University

- Senior Researcher

  Max-Planck Institute, Saarland

max planck institut
informatik

- Professor: Semantic Audio Processing

  Erlangen-Nürnberg University

FAU FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

Group Members

- Michael Krause

- Sebastian Rosenzweig

- Yigit Özer

- Peter Meier (external)

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Where are we?

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FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

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

Where are we?

Fraunhofer IIS

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

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AUDIO LABS

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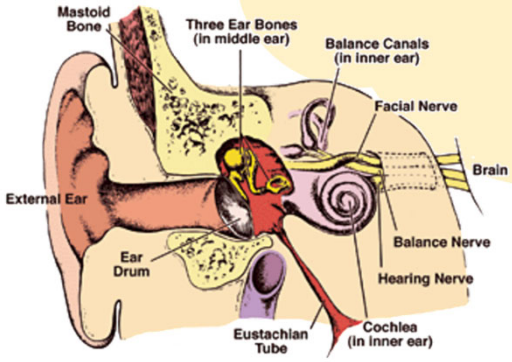
Audio Coding

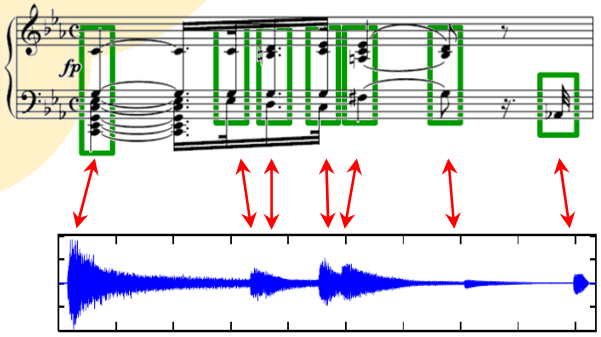
3D Audio

Audio



Psychoacoustics

Internet of Things



Music Processing

AudioLabs – FAU

- Prof. Dr. Jürgen Herre
  Audio Coding
- Prof. Dr. Bernd Edler
  Audio Signal Analysis
- Prof. Dr. Meinard Müller
  Semantic Audio Processing
- Prof. Dr. Emanuël Habets
  Spatial Audio Signal Processing
- Prof. Dr. Nils Peters
  Audio Signal Processing
- Dr. Stefan Turowski
  Coordinator AudioLabs-FAU






Related Courses

Audio Processing **Laboratory**

The objective of this lab course is to give students a hands on experience in audio processing.

- Offered every semester
- Short-Time Fourier Transform
- Speech Enhancement
- Statistical Methods
- Speech Analysis
- …

Registration via StudOn is mandatory!

Audio Processing **Seminar**

Various applications within audio and acoustic signal processing.

- Offered every semester
- Advanced topics
- Require lecture on DSP, audio, …
- Also music-related topics
- …

Registration via StudOn is mandatory!

Registration on studOn is mandatory!

Related Courses

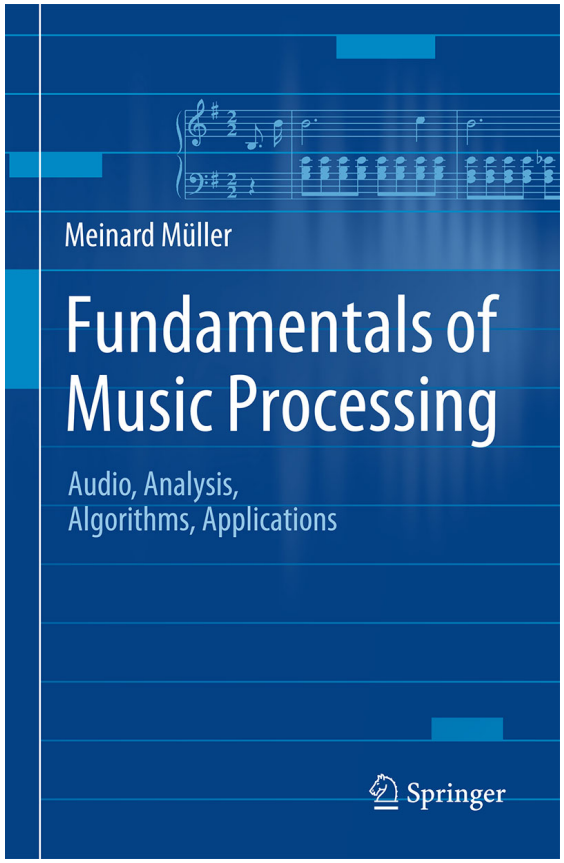
- Speech Enhancement
  Prof. Dr. Emanuël Habets
  AudioLabs
- Advanced Topics in Perceptual Audio Coding
  Prof. Dr. Jürgen Herre
  AudioLabs
- Music Processing – Synthesis
  Maximilian Schäfer (Prof. Dr.-Ing. Rudolf Rabenstein)
  Lehrstuhl für Digitale Übertragung (LMS)

Lecture: Music Processing Analysis (MPA)

https://www.audiolabs-erlangen.de/fau/professor/mueller/teaching/2021w_mpa

- Dates, Material, Information … → See website!
- Time (Lecture): Mo 16-18
- Time (Exercise): Mo 14-16
- Mandatory elective course for CME, I&K, EEI, and ASC
  Credits: 2,5 ECTS (Lecture MPA)
- Elective course for CME
  Credits: 5 ECTS (Lecture & Exercise, MPA-LE)
- Vertiefungsmodul Informatik (Master of Science)
  Credits: 5 ECTS (Lecture & Exercise, MPA-LE)
- Oral exam

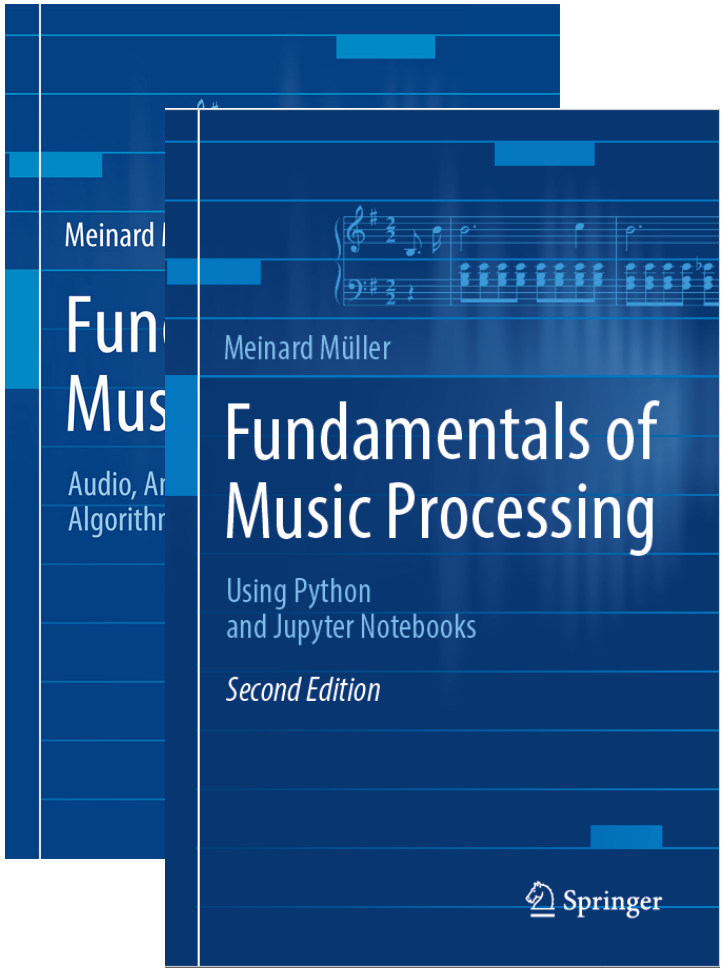
Book: Fundamentals of Music Processing



Meinard Müller
Fundamentals of Music Processing
Audio, Analysis, Algorithms, Applications
Springer, 2015

Accompanying website:
www.music-processing.de

Book: Fundamentals of Music Processing



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2nd edition
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Using Python and Jupyter Notebooks
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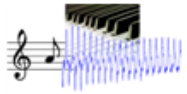
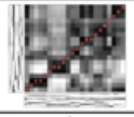
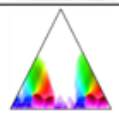
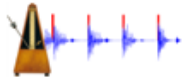
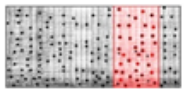
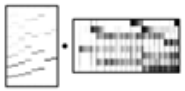
Book: Fundamentals of Music Processing

Chapter		Music Processing Scenario
1		Music Represenations
2		Fourier Analysis of Signals
3		Music Synchronization
4		Music Structure Analysis
5		Chord Recognition
6		Tempo and Beat Tracking
7		Content-Based Audio Retrieval
8		Musically Informed Audio Decomposition

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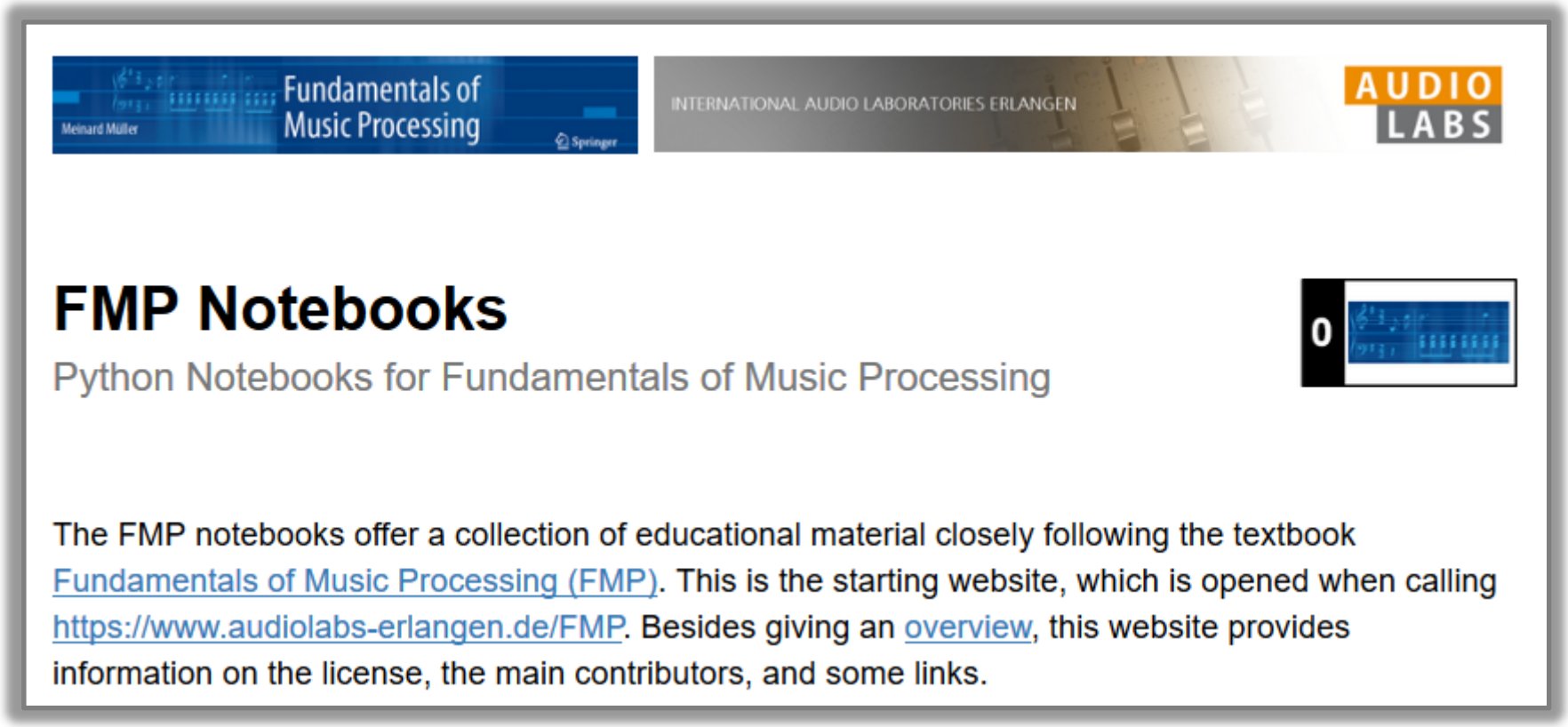
Software & Audio: FMP Notebooks



https://www.audiolabs-erlangen.de/FMP