Workshop HfM Karlsruhe

Music Information Retrieval

Introduction

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International Audio Laboratories Erlangen

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Meinard Müller

- 2007 Habilitation
  Bonn University

universitätbonn

- 2007 – 2012
  Senior Researcher
  Saarland University & MPI Informatik

UNIVERSITÄT DES SAARLANDES
max planck institut informatik

- Since 2012
  Professor: Semantic Audio Processing
  Erlangen-Nürnberg University

FAU FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG
AUDIO LABS

Group Members

- Christof Weiß

- Frank Zalkow

- Sebastian Rosenzweig

- Patricio López-Serrano

Christof Weiß

- 2006 – 2012 Physics Diploma
  Würzburg University
- 2006 – 2012 Composition Diploma
  Würzburg University of Music
- 2012 – 2015: PhD
  Ilmenau, Fraunhofer IDMT
- Since 2015: AudioLabs Erlangen
- Freelancing composer

Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Hochschule
für Musik
Würzburg
university of music

Fraunhofer
IDMT

sdw
Stiftung der Deutschen Wirtschaft

FAU
FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

AUDIO
LABS

Frank Zalkow

- 2008 – 2012 Bachelor Musicology/Music Informatics (University of Music Karlsruhe)
- 2012 – 2015 Master Music Informatics (University of Music Karlsruhe)
- 2015 – 2016 Research Fellow in Musicology (Saarland University)
- since 2016 PhD Student, Group Meinard Müller (AudioLabs)

AUDIO LABS

Where are we?

Fraunhofer IIS

Fraunhofer-Gesellschaft

- Europe's largest organization for applied research
- 18,000 employees worldwide, total budget: 1.5 billion €
- 60 institutes covering a broad range of research areas

Fraunhofer Institute for Integrated Circuits IIS

- Largest Fraunhofer institute
- Staff >700 people
- MP3

Where are we?

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)

- One of Germany's largest universities
- More then 35,000 students

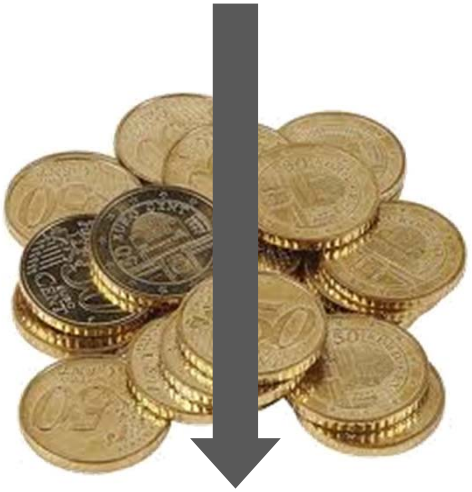
Collaboration between FAU and Fraunhofer IIS

- Roots of "MP3" audio compression scheme
- Research on audio coding in Erlangen since 1981

International Audio Laboratories Erlangen

Fraunhofer IIS

mp3



FAU FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

AUDIO LABS

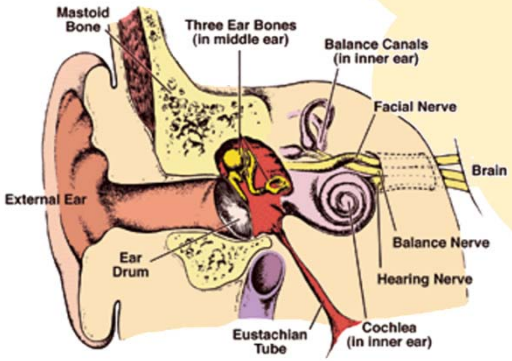
International Audio Laboratories Erlangen

International Audio Laboratories Erlangen

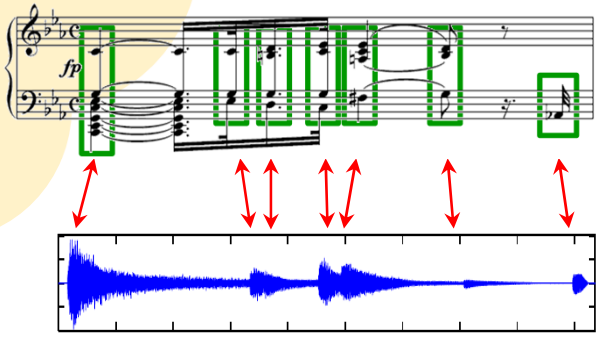
Audio Coding

3D Audio

Audio



Psychoacoustics

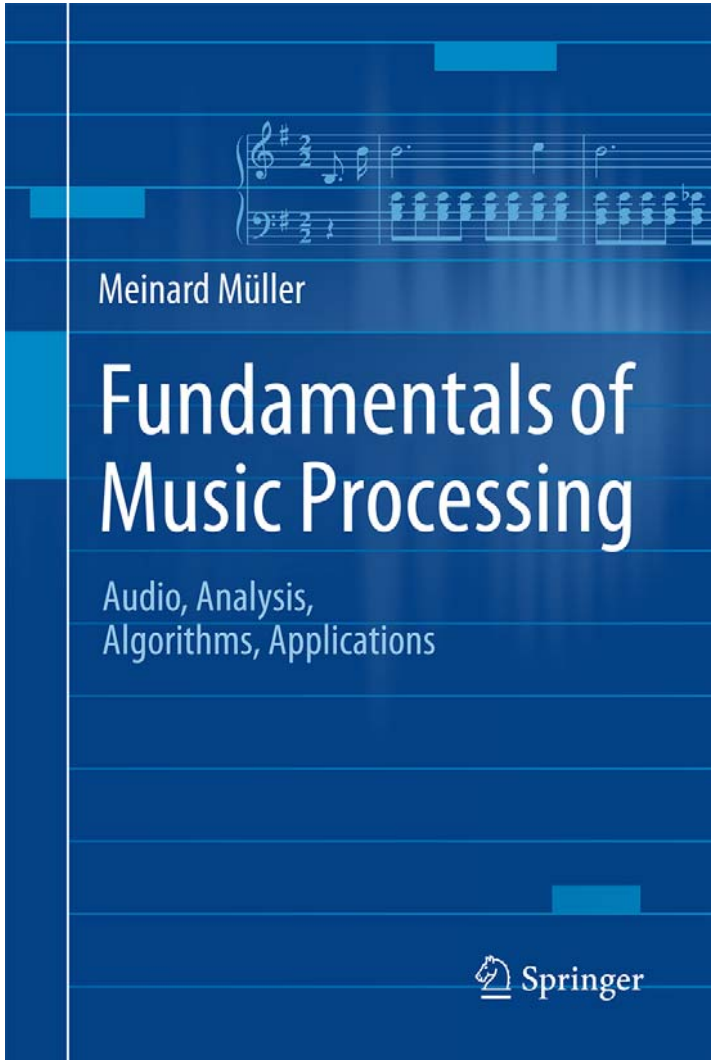


Music Processing

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. Frank Wefers
  Spatial Audio Signal Processing
- Dr. Stefan Turowski
  Coordinator AudioLabs-FAU

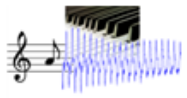
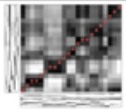
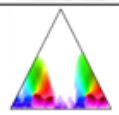
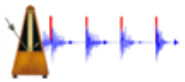
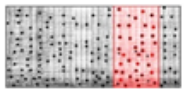
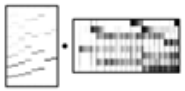
Book: Fundamentals of Music Processing



Meinard Müller
Fundamentals of Music Processing
Audio, Analysis, Algorithms, Applications
483 p., 249 illus., hardcover
ISBN: 978-3-319-21944-8
Springer, 2015

Accompanying website:
www.music-processing.de

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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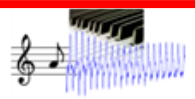
1		Music Represenations
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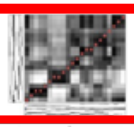
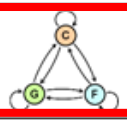
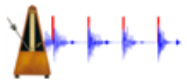
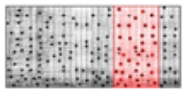
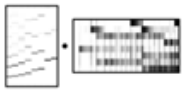
3		Music Synchronization
4		Music Structure Analysis
5		Chord Recognition
6		Tempo and Beat Tracking
7		Content-Based Audio Retrieval
8		Musically Informed Audio Decomposition

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Workshop MIR

Dienstag
14:00 – 16:00 Lecture: Introduction + Music Representations
16:00 – 18:00 Lecture: Audio Features

Mittwoch
10:00 – 12:00 Lecture: Harmony Analysis
13:00 – 15:00 Programming Exercise: Fourier Transform & Chroma Features

Donnerstag
10:00 – 11:00 Lecture: Music Synchronization
11:00 – 12:00 Lecture: Music Classification
13:00 – 17:00 Programming Exercise: Harmonic–Percussive Separation

Freitag
10:00 – 12:00 Student Mini-Projects / Further Exercises
13:00 – 16:00 Student Mini-Projects / Further Exercises

Course material:
www.audiolabs-erlangen.de/resources/MIR/2018_CourseMIR_HfM-Karlsruhe