



music informatics group

overview

alexander lerch

github.com/alexanderlerch/2024-MIG

about

self-introduction

■ education

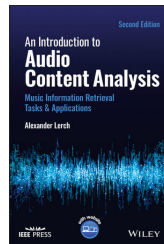
- Electrical Engineering (Technical University Berlin)
- Tonmeister (music production, University of Arts Berlin)

■ professional

- Associate Professor at the [School of Music, Georgia Institute of Technology](#)
- 2000-2013: Head of Research at [zplane.development](#)

■ background

- audio algorithm design (20+ years)
- commercial music software development (10+ years)
- entrepreneurship (10+ years)



introduction

music informatics group

■ mission

- create new technologies transforming and improving how we *make, produce, perform, discover, and consume music*
- advance the field of AI for audio through *informed, knowledge-driven machine learning*

■ objectives

- enable/improve *machine understanding of music* and musical language
- create *interpretable and controllable systems*
- design algorithms with *low data requirements*



tasks

selected tasks of interest

■ audio content analysis

- music/audio classification
 - ▶ genre/events [1], [2]
 - ▶ instruments [3]–[5]
 - ▶ tagging [5], [6]
 - ▶ pedestrians [7]
- music transcription
 - ▶ drum transcription [8]
 - ▶ chord detection [9]
- music performance analysis
 - ▶ student assessment [10]

■ audio processing

- source separation [11], [12]

■ sound and music generation

- controllable systems [13]
- evaluation [14], [15]

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methods

methods of interest

■ representation learning

- improved structure of embedded representations [16], [17]
- enforcing the meaning of specific embedding dimensions [13], [14]
- ...

■ low-resource machine learning

- semi- and self-supervised learning [3], [18]
- reprogramming [2], [4]
- knowledge transfer [5], [6], [19]

■ objective system evaluation

- evaluation of controllable systems with correlated attributes [15], [20]
- statistical models for comparison of properties [21]
- metrics for sound generation [22]

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links

music informatics group: musicinformatics.gatech.edu

book: www.AudioContentAnalysis.org

alexander lerch (alexander.lerch@gatech.edu):

- www.linkedin.com/in/lerch
- scholar.google.com/citations?user=29dF3UIAAAAJ
- github.com/alexanderlerch



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