github.com/alexanderlerch/2024-MIG

music informatics group

overview

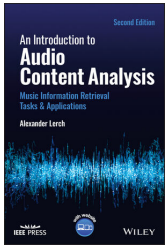
alexander lerch

Georgia Tech Center for Music Technology
College of Design

about
self-introduction

Georgia Tech Center for Music Technology
College of Design

- **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)



www.linkedin.com/in/lerch

introduction
music informatics group

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- **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*

musicinformatics.gatech.edu

introduction
dolby connections

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- **internships**
  - decade-long history of internships (15+)
- **full-time employees**
  - Music Informatics Group
    - Ying Zhan
    - Chris Latina
  - Computational Music for All
    - Anand Mahadevan
    - Iman Mukherjee
  - Robotic Musicianship
    - Rishikesh Daoo
- **other collaboration**
  - service on PhD committee: Grant Davidson
  - patent/publication on bandwidth extension: Mark Vinton

Dolby

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School of Music

tasks

selected tasks of interest

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- **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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- **sound and music generation**
  - controllable systems [13]
  - evaluation [14], [15]

methods

methods of interest

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- **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], [
  - statistical models for comparison of properties [21]
  - metrics for sound generation [22]

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links

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links

music informatics group: musicinformatics.gatech.edu

book: www.AudioContentAnalysis.org

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

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