



github.com/alexanderlerch/2024-MIG

music informatics group

overview

alexander lerch

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 *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 [1]

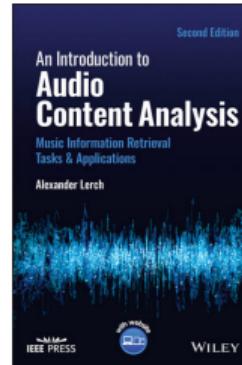
- music/audio *classification*
 - ▶ genre/events [2], [3]
 - ▶ instruments [4], [5], [6]
 - ▶ tagging [6], [7], [8]
 - ▶ pedestrians [9], [10]
- music *transcription*
 - ▶ drum transcription [11]
 - ▶ chord detection [12]
- music *performance analysis* [13]

■ audio processing

- source separation [14], [15], [16]

■ sound and music generation

- controllability [17]
- evaluation [18], [19]



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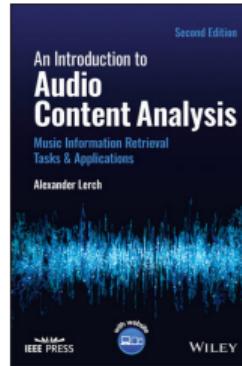
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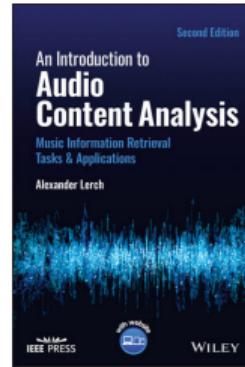
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methods of interest

■ representation learning

- improved structure of embedded representations [20], [21]
- enforcing the meaning of specific embedding dimensions [17], [18]
- ...

■ low-resource machine learning

- semi- and self-supervised learning [4], [22]
- reprogramming [3], [5]
- knowledge transfer [6], [7], [23]



■ objective evaluation of generative systems

- evaluation of controllable systems with correlated attributes [19], [24]
- statistical models for comparison of properties [25]
- metrics for sound generation [26]

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links

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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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