# sound of ai accelerator

mentor self-presentation

alexander lerch

# background education

■ PhD, TU Berlin

1994-2000

- Software-Based Extraction of Objective Parameters from Music Performances
- summa cum laude
- Diplom-Ingenieur Electrical Engineering, TU Berlin

2004–2008

- concentration: telecommunications/signal processing, minors: communications and technical acoustics
- summa cum laude
- (Diplom-Tonmeister (Music Production), UdK Berlin)

1996-2000

no degree



# background professional

#### **■** Full-time

• Assistant/Associate Professor, Georgia Institute of Technology

Co-Founder/Head of Research, zplane.development

2013–pres

2000-2013

### ■ Temporary

Visiting Professor, Central Conservatory of Music, China

• Visiting Professor, Shanghai Jiao Tong University, China

Visiting Professor, ShanghaiTech University, China

Post-Doc, University of Victoria, Canada

Summer 2023

Summer 2019

Summer 2018

2010



## research

#### areas of interest

## audio content analysis

- music/speech classification
- musical instrument recognition
- drum transcription
- chord detection
- auto tagging
- ...

## audio processing

- source separation
- audio effects
- . . . .

## music performance analysis

- extraction of objective performance parameters
- student assessment



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## methods methods of interest

## **■** representation learning

- improved structure of embedded representations
- transferring knowledge from other representations and tasks
- enforcing the meaning of specific embedding dimensions
- . . .

### ■ insufficient data for training

- semi- and self-supervised learning
- reprogramming
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#### objective system evaluation

- evaluation of controllable systems with correlated attributes
- statistical models for comparison of properties
- metrics for sound generation



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# zplane.development

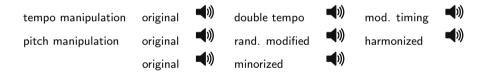
overview

- founded in 2000
  - founders: Tim Flohrer, Martin Schwerdtfeger, Alexander Lerch
- high-quality (production quality) state-of-the-art algorithms for music analysis and processing
  - research collaboration with universities
- products
  - cross-platform SDKs (software developer kits)
  - some end-user products



# zplane.development products

- technology provider to the music industry
- best known for algorithms time and pitch modification of music: time stretching. pitch shifting



- technology licensed mainly for
  - Digital Audio Workstations (DAW)
  - DJ software
  - music production tools





# zplane.development historical background

- started with minimal resources
  - no start-up ecosystem/support
  - no investors, but a bank loan
- started with minimal business knowledge
  - three engineers
  - no insights into market beyond consumer view
  - no experience with marketing or customer relations
- started with limited software engineering knowledge
  - experience with implementation of algorithms
  - no experience with architectural design, maintenance, etc.
  - limited experience with performance optimization



# zplane.development business model

#### ■ iteration 1

- service provider for music software industry
- iteration 2
  - develop SDK and exclusively sell it
- iteration 3
  - sell non-exclusively
  - negotiate for visibility
- iteration 4
  - royalties-based b2b model
- iteration 4.5
  - add simple end-user products for visibility and evening out cash-flow



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#### take-aways

- do your thing
  - get all the advise you can get but make up your own mind
  - you decide but always be open to question decisions/processes
  - have a clearly defined value system (but get out of your comfort zone!)
  - know when to listen to customers and when not
- don't believe...
  - ... your competitors' marketing everyone cooks with water
  - ... your own marketing it's ok not being a gen
- transparency where possible can build trust
  - explain decisions and problems to users
  - don't be afraid to share some technical details here and there
- IF you have long-term plans
  - minimize 3rd party dependencies (API calls, platforms, libraries,...)
  - don't over-engineer but spend a significant amount of time on automated tests
  - define coding and commenting style and commit behavior
  - avoid concentrating critical knowledge in only one person without fallback strategy

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#### contact

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