Dr.-Ing. Jakob Abeßer

Senior Scientist
Fraunhofer Institute for Digital Media Technologies (IDMT)
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PRINCIPAL INTERESTS

Audio signal processing, music information retrieval, environmental sound analysis, auditory scene analysis, machine learning, and deep learning.

ACADEMIC BACKGROUND

Ph.D. Media Technology 2014
Technische Universität Ilmenau, Germany

- Ph.D. research in audio signal analysis & synthesis, music information retrieval, and machine learning under supervision of Prof. Gerald Schuller.
- Dissertation title: *Automatic Transcription of Bass Guitar Tracks applied for Music Genre Classification and Sound Synthesis.* (final grade: magna cum laude)

Dipl.-Ing. Ingenieurinformatik (Computer Engineering) 2008
Technische Universität Ilmenau, Germany

- Focus areas: symbolic music analysis, machine learning
- Thesis title (in German): *Automatisierte Charakterisierung von Soloparts in Musikstücken.* (final grade 1,1)

EMPLOYMENT HISTORY

Principal Investigator 06/2022 - Present
Fraunhofer IDMT, Ilmenau, Germany

- Co-Investigator of the DFG-funded project *Informed Sound Activity Detection in Music and Audio Recordings (ISAD-2)* in collaboration with Prof. Meinard Müller
- Scientific leadership
- Project management / student supervision

Visiting post-doctoral Researcher 03/2022 - Present
International Audio Laboratories Erlangen, Erlangen, Germany

- Joint research with Prof. Meinard Müller on source separation, acoustic scene classification, and music information retrieval

Senior Scientist 04/2021 - Present
Fraunhofer IDMT, Ilmenau, Germany

- Scientific leadership & management
- Team and project management in several public and industry projects
- Supervision of bachelor/master/PhD students
- Deputy ombudsperson at Fraunhofer IDMT - coordination of activities to enable/ensure good scientific practice
- Acquisition of public and industry projects

Principal Investigator 01/2018 - 07/2021
Fraunhofer IDMT, Ilmenau, Germany

- Co-Investigator of the DFG-funded project *Informed Sound Activity Detection in Music Recordings (ISAD)* in collaboration with Prof. Meinard Müller
- Scientific leadership
- Project management / student supervision
- Research collaboration with Dr. Christof Weiß and Dr. Stefan Balke

Research Associate / Post-doctoral Researcher 10/2012 - 03/2017
The University of Music FRANZ LISZT, Weimar, Germany
- Software development, joint research with Prof. Martin Pfleider, Dr. Klaus Frieler, and Dr. Wolf-Georg Zaddach on audio-based analysis of jazz improvisation

Doctoral Researcher 05/2010-08/2010
Centre of Excellence in Music, Mind, Body and Brain, University of Jyväskylä, Finland
- 4 month research stay. Joint research in computational modeling/analysis of music ensemble performances with Prof. Petri Toiviainen, Prof. Tuomas Eerola, and Dr. Olivier Lartillot

Research Associate / PhD Student / Post-doctoral Researcher 10/2008 - 03/2021
Semantic Music Technologies group, Fraunhofer Institute for Digital Media Technologies (IDMT), Ilmenau, Germany
- Software developement, project work, project management
- Student supervision on bachelor, master, and PhD level
- Research collaboration (amongst others) with Hanna Lukashevich, Dr. Christian Dittmar, Dr. Anna Kruspe, Dr. Stylianos I. Mimilakis, and Dr. Christof Weiß

FURTHER EDUCATION

Seminars
- Exzellente Wissenschaft durch professionelle Promotionsbetreuung (Januar - März 2022)
- Deep Learning - Coursera Specialization (January - March 2018)
- Neural Networks for MAchine Learning - Coursera Specialization (January 2017)
- Patente - Informationen für Erfinder (20.07.2015)
- git - Distributed revision control (01.04.2015)
- Patente (23.11.2010)
- Projektmanagement Praxiswissen (09.-11.10.2012)
- Marktrecherche (23.04.2010)
- Erfolgreiche Einwerbung von Drittmitteln (09.-10.03.2010)

SCIENTIFIC ACTIVITY

Activities
- Lead-Organizer of a structured session at the DAGA 2023 entitled "Sound Analysis for Music and Audio Signals" (jointly organized with Prof. Sebastian Stober and Prof. Meinard Müller)
- Mentoring position in the Woman in Music Information Retrieval (WiMIR) mentoring program, 2022 & 2023

- Member of the editorial board of the EURASIP Journal on Audio, Speech, and Music Processing (2022-2023)
- Guest editor for the journal issue "*Recent advances in computational sound scene analysis*" of the EURASIP Journal on Audio, Speech, and Music Processing (2021/2022)
- Joint Research Workshop "*Learning about Music with MIR*" with Dr. Estefanía Cano at the Woman in Music Information Retrieval (WIMIR) workshop 2019 in Delft, The Netherlands
- Paper Chair at the AES International Conference on Semantic Audio (2017) in Erlangen, Germany
- Co-Organizer of the First and Second International Research Workshop as part of the Jazzomat Research Project in 2014 and 2016 in Weimar, Germany
- Joint Tutorial "*Jazz solo analysis between music information retrieval, music psychology, and jazz research*" with Dr. Klaus Frieler and Dr. Wolf-Georg Zaddach (2016) as part of the 17th International Society for Music Information Retrieval (ISMIR) Conference in New York, NY, USA
- Regular reviewing activities for scientific conferences (ICASSP, ISMIR, ICMC, DAFx, DCASE, IS2) and journals (IEEE/ACM TASLP, EURASIP JASMP, JASA Express Letters)

Memberships

- International Society for Music Information Retrieval (ISMIR)
- Audio Engineering Society (AES)
- European Association For Signal Processing (EURASIP)
- German Acoustical Society (Deutsche Gesellschaft für Akustik - DEGA)
- Internet of Sounds Research Network (ISN)
- Deutscher Hochschulverband (DHV)

MANAGEMENT *Project Management (Selection)*

- CZS-funded project (2023-2028): Neuromorphe akustische Sensorik für leistungsfähige Hörgeräte von morgen (NeuroSensEar)
- DFG-funded project (2022-2024): Informed Sound Activity Detection in Music and Audio Signals (ISAD 2)
- EU-funded project (2022-today): Advanced biodiversity monitoring for results-based and effective agricultural policy and transformation (BioMonitor4CAP)
- Fraunhofer-funded project (2021-2022): Multi-modal AI-driven technologies for automatic construction site monitoring (Construction-sAIt)
- DFG-funded project (2018-2020): Informed Sound Activity Detection in Music Recordings (ISAD)

Project Work (Selection)

- Fraunhofer-funded project (2020-2023): Sensor Edge Cloud for Federated Learning (SEC-Learn)
- EU-funded project (2018-2021): Scalable privacy preserving intelligence analysis for resolving identities (SPIRIT)
- DFG-funded project (2012-2017): Melodisch-rhythmische Gestaltung von Jazzimprovisationen. Rechnerbasierte Musikanalyse einstimmiger Jazzsoli (Jazzomat)

- BMBF-funded project (2012-2013): Globale Musiksuche zur cross-modalen Synchronisation mit Videoinhalten (SyncGlobal)
- DFG-funded project (2010-2013): Development of Empiric Validation of a Model of Music-Practical Competences (Kopra-M)
- BMBF-funded project (2008-2011): Adaptive, Hybride Search Technologies for Global Music Portfolios (GlobalMusic2one)

TEACHING

Date of Lecture(s)	**Lecture**	**Evaluation**
Audio Systems Technology (TU Ilmenau)		
WS 2014/2015	(1 lecture)	-
WS 2017/2018	(1 lecture)	-
WS 2018/2019	(2 lectures)	-
WS 2019/2020	(3 lectures)	-
WS 2020/2021	(4 lectures)	-
WS 2021/2022	(6 lectures)*	
WS 2022/2023	(6 lectures)	-
KI-gestützte Audioanalyse von Musik und Soundscapes (HfM Weimar)**		
WS 2022/2023	(8 lectures)	0.83 (scale from 0(-) to 1(+))

Table 1: Summary of past lectures/seminars. (* with additional virtual attendence of international students from the Artificial Intelligence Doctorate Academy (AIDA), **jointy held with Prof. Martin Pfleiderer)

Lectures / Seminars

- A list of all hold lectures and evaluation scores is summarized in Table 1.
- All lecture material (lectures / seminars) has been made publicly available at https://machinelistening.github.io/

SPECIAL ACHIEVEMENTS

Awards

- ERASMUS scholarship - study semester abroad at Université Paul Verlaine, Metz, France (2005)
- DAAD scholarship "Kurzzeitstipendium für Doktoranden" (2010, 4 month research stay at Centre of Excellence in Music, Mind, Body and Brain, University of Jyväskylä, Finland).
- Best paper award at 14th International Symposium on Computer Music Multidisciplinary Research (CMMR): "*Towards Deep Learning Strategies for Transcribing Electroacoustic Music*" (Matthias Nowakowski, Dr. Christof Weiß and Jakob Abeßer), 2019
- Best paper award at 15th International Symposium on Computer Music Multidisciplinary Research (CMMR): "*Deep Learning-Based Music Instrument Recognition: Exploring Learned Feature Representations*" (Michael Taenzer, Dr. Stylianos I. Mimilakis and Jakob Abeßer), 2021

Invited Talks (Selection)

- *NeuroSensEar* - Kick-Off Workshop, "*Sound Event Detection and Acoustic Scene Analysis*", 18.10.2023, TU Ilmenau, Germany
- Jahrestagung des DMV (Deutscher Musikverleger-Verband e.V.), "*Technische Aspekte in der KI-Musikanalyse*", 16.10.2023, Erfurt, Germany

- 17. Jenaer Akustiktag, EAH Jena, "*Erkennung akustischer Quellen in komplexen Szenarien*", 27.04.2022, Jena, Germany
- 48. Jahrestagung für Akustik (DAGA), "*Analyzing Bird and Bat Activity in Agricultural Environments using AI-driven Audio Monitoring*", 22.03.2022, Stuttgart, Germany
- AI4Media Workshop on Content-centered AI, "*Disentanglement Representation Learning for Music Annotation and Music Similarity*", 01.09.2021, virtual
- Innovationsforum "Akustisches Monitoring von Fertigungsprozessen (IMAMF)", "*Grundlagen Maschineller Lernverfahren und Künstlicher Intelligenz*", 10.06.2021, virtual
- Artificial Intelligence, Data & Analytics (AIDA) Seminar Series 2021, StanleyBlack&Decker, "*Machine Listening for Understanding Sound Scenes and Events*", 14.01.2021, virtual
- 2. Thüringer KI-Forum, "*Machine Listening - KI-basiertes Hören*", 07.12.2020, virtual
- AES International Conference on Semantic Audio, "*Deep Learning for Jazz Walking Bass Transcription*", 24.06.2017, Erlangen, Germany
- The Jazzomat Research Project: Perspectives for Computational Jazz Studies, 2nd Reasearch Workshop, "*Who's playing that solo? Recognizing jazz musicians by their 'unique sound'*", 24.09.2016, HfM Weimar, Germany
- Tutorial at the International Society for Music Information Retrieval Conference (ISMIR), "*Jazz solo analysis between music information retrieval, music psychology, and jazz research. Part III - Score-informed Solo Analysis*", 07.08.2016, New York, NY, USA
- 1st International Research Workshop, Jazzomat Research Project, "*Score-informed Estimation of Pitch-Gliding and Vibrato in Trumpet and Saxophone Solos*", 27.09.2014, HfM Weimar, Germany
- AES 53nd Converence on Semantic Audio, "*Instrument-Centered Music Transcription of Bass Guitar Tracks*", 28.01.2014, London, UK
- International Symposium on Computer Music Modeling and Retrieval (CMMR), "*Automatic String Detection for Bass Guitar and Electric Guitar*", 22.06.2012, London, UK
- International Conference on Acoustics, Speech, and Signal Processing (ICASSP), "*Feature-based Extraction of Plucking and Expression Styles of the Electric Bass Guitar*", 16.03.2010, Dallas, TX, USA

Patents

- Input interface for generating control signals by acoustic gestures (US 9117429B2)
- Verfahren und Vorrichtung zur Erkennung von akustischen Anomalien (DE102020200946 (A1))
- Device, Method and Computer Program for Acoustic Monitoring of a Monitoring Area (US 20210043193A1)
- System and Method for Assisting Selective Hearing (US 2022/0159403 A1)

PUBLICATIONS

Publication Metrics

- Zitate: 1288
- h-index: 20
- i10-index: 4137[1]

Theses

- Jakob Abeßer. *Automatic Transcription of Bass Guitar Tracks applied for Music Genre Classification and Sound Synthesis*. PhD thesis, Technische Universität Ilmenau, 2014

Books (edited)

- Martin Pfleiderer, Klaus Frieler, Jakob Abeßer, Wolf-Georg Zaddach, and Benjamin Burkhart, editors. *Inside the Jazzomat - New Perspectives for Jazz Research*. Schott Campus, 2017

Proceedings (edited)

- Christian Dittmar, Jakob Abeßer, and Meinard Müller, editors. *Proceedings of the AES International Conference on Semantic Audio*, 2017

Journal Articles

- Jakob Abeßer, Sascha Grollmisch, and Meinard Müller. How robust are audio embeddings for polyphonic sound event tagging? *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 31:2658–2667, 2023
- Jakob Abeßer, Asad Ullah, Sebastian Ziegler, and Sascha Grollmisch. Human and machine performance in counting sound classes in single-channel soundscapes. 2023
- Stefan Balke, Julian Reck, Christof Weiß, Jakob Abeßer, and Meinard Müller. JSD: A dataset for structure analysis in jazz music. *Transactions of the International Society for Music Information Retrieval (TISMIR)*, 5(1):156172, 2022
- Michael Taenzer, Stylianos I. Mimilakis, and Jakob Abeßer. Informing piano multi-pitch estimation with inferred local polyphony based on convolutional neural networks. *Electronics*, 10(7), 2021
- Jakob Abeßer and Meinard Müller. Jazz bass transcription using a U-Net architecture. *Electronics*, 10(6), 2021
- Jakob Abeßer. A review of deep learning based methods for acoustic scene classification. *Applied Sciences*, 10(6), 2020
- Stefan Balke, Christian Dittmar, Jakob Abeßer, Klaus Frieler, Martin Pfleiderer, and Meinard Müller. Bridging the gap: Enriching YouTube videos with jazz music annotations. *Frontiers in Digital Humanities*, 5:1, 2018
- Jakob Abeßer and Gerald Schuller. Instrument-centered music transcription of solo bass guitar recordings. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 25(9):1741–1750, Sep. 2017
- Jakob Abeßer, Klaus Frieler, Estefanía Cano, Martin Pfleiderer, and Wolf-Georg Zaddach. Score-informed analysis of tuning, intonation, pitch modulation, and dynamics in jazz solos. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 25(1):168–177, Jan 2017
- Klaus Frieler, Martin Pfleiderer, Jakob Abeßer, and Wolf-Georg Zaddach. Midlevel analysis of monophonic jazz solos. A new approach to the study of improvisation. *Musicae Scientiae*, 20(2):143–162, 2016

[1] https://scholar.google.de/citations?user=15zM8xoAAAAJ&hl=de&oi=ao

- Klaus Frieler, Martin Pfleiderer, Jakob Abeßer, and Wolf-Georg Zaddach. Chasing the difference. Computer-aided comparison of improvisation in post-bop, hard bop, and bebop. *Jazzforschung / Jazz Research*, 46:249–274, 2017
- Jakob Abeßer. Automatic string detection for bass guitar and electric guitar. In Mitsuko Aramaki, Mathieu Barthet, Richard Kronland-Martinet, and Sølvi Ystad, editors, *From Sounds to Music and Emotions*, volume 7900 of *Lecture Notes in Computer Science*, pages 333–352. Springer, London, UK, 2012
- Jakob Abeßer, Hanna Lukashevich, and Paul Bräuer. Classification of Music Genres based on Repetitive Basslines. *Journal of New Music Research*, 41(3):239–257, 2012

Conference Papers (peer-reviewed)

- Sascha Grollmisch, Estefanía Cano, Hanna Lukashevich, and Jakob Abeßer. Uncertainty in semi-supervised audio classification - a novel extension for fixmatch. In *Proceedings of the European Signal Processing Conference (EUSIPCO)*, Helsinki, Finland, 2023
- Hanna Lukashevich, Sascha Grollmisch, and Jakob Abeßer. Temperature scaling for reliable uncertainty estimation: Application to automatic music genre classification. In *Proceedings of the Uncertainty meets Explainability Workshop at the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, 2023
- Hanna Lukashevich, Sascha Grollmisch, Jakob Abeßer, Sebastian Stober, and Joachim Bös. How reliable are posterior class probabilties in automatic music classification? In *Proceedings of the Audio Mostly conference*, 2023
- Franca Bittner and Jakob Abeßer. An introduction to unsupervised domain adaptation in sound and music processing. In *Proceedings of the 49. Jahrestagung für Akustik (DAGA)*, 2023
- Sebastian Ribecky, Hanna Lukashevich, and Jakob Abeßer. Multi-input architecture and disentangled representation learning for multi-dimensional modeling of music similarity. In *Proceedings of the 152nd AES Convention*, 2022
- Jakob Abeßer. Classifying Sounds in Polyphonic Urban Sound Scenes. In *Proceedings of the 152nd Audio Engineering Society (AES) Convention*, Online, 2022
- Christon R. Nadar, Michael Taenzer, and Jakob Abeßer. Towards Interpreting and Improving the Latent Space for Musical Chord Recognition. In *Proceedings of the International Computer Music Conference (ICMC)*, Limerick, Ireland, 2022
- Jakob Abeßer, Jaydeep Chauhan, Prateek Pradeep Pillai, Michael Taenzer, and Stylianos I. Mimilakis. Predominant jazz instrument recognition: Empirical studies on neural network architectures. In *Proceedings of the European Signal Processing Conference (EUSIPCO)*, 2021
- Jakob Abeßer, Saichand Gourishetti, András Kátai, Tobias Clauß, Prachi Sharma, and Judith Liebetrau. IDMT-Traffic: An open benchmark dataset for acoustic traffic monitoring research. In *Proceedings of the European Signal Processing Conference (EUSIPCO)*, 2021
- Alexandra Draghici, Jakob Abeßer, and Hanna Lukashevich. A study on spoken language identification using deep neural networks. In *Proceedings of the 15th International Conference on Audio Mostly*, pages 253–256, 2020

- David S. Johnson, Wolfgang Lorenz, Michael Taenzer, Stylianos Mimilakis, Sascha Grollmisch, Jakob Abeßer, and Hanna Lukashevich. DESED-FL and URBAN-FL: Federated learning datasets for sound event detection. In *Proceedings of the European Signal Processing Conference (EUSIPCO)*, 2021
- Matthias Nowakowsi, Christof Weiß, and Jakob Abeßer. Towards deep learning strategies for transcribing electroacoustic music. In *Proceedings of the 15th International Symposium on Computer Music Multidisciplinary Research (CMMR)*, 2020
- Tobias Clauß and Jakob Abeßer. Identifikation urbaner Geräuschquellen mittels maschineller Lernverfahren. *Lärmbekämpfung*, (3), 2020
- Michael Taenzer, Jakob Abeßer, Stylianos Ioannis Mimilakis, Christof Weiß, Meinard Müller, and Hanna Lukashevich. Investigating CNN-based instrument family recording for western classical music recordings. In *Proceedings of the 20th International Society for Music Information Retrieval Conference (ISMIR)*, Delft, Netherlands, 2019
- Christon-Ragavan Nadar, Jakob Abeßer, and Sascha Grollmisch. Towards CNN-based acoustic modeling of seventh chords for recognition chord recognition. In *Proceedings of the 16th Sound & Music Computing Conference (SMC)*, Malaga, Spain, 2019
- Stylianos Ioannis Mimilakis, Christof Weiß, Vlora Arifi-Müller, Jakob Abeßer, and Meinard Müller. Cross-version singing voice detection in opera recordings: Challenges for supervised learning. In *Proceedings of the 12th International Workshop on Machine Learning and Music (MML)*, Würzburg, Germany, 2019
- Sascha Grollmisch, Jakob Abeßer, Judith Liebetrau, and Hanna Lukashevich. Sounding industry: Challenges and datasets for industrial sound analysis. In *Proceedings of the 27th European Signal Processing Conference (EUSIPCO)*, A Coruña, Spain, 2019
- Jakob Abeßer and Meinard Müller. Fundamental frequency contour classification: A comparison between hand-crafted and CNN-based features. In *Proceedings of the 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, 2019
- Jakob Abeßer and Sara Kepplinger. Smart solutions to cope with urban noise pollution. *ERCIM*, 2019
- Jakob Abeßer, Marco Götze, Tobias Clauß, Dominik Zapf, Christian Kühn, Hanna Lukashevich, Stephanie Kühnlenz, and Stylianos Ioannis Mimilakis. Urban noise monitoring in the Stadtlärm project - A field report. In *Proceedings of the Detection and Classification of Acoustic Scenes and Events (DCASE) Workshop*, New York, NY, USA, 2019
- Christof Weiß, Stefan Balke, Jakob Abeßer, and Meinard Müller. Computational corpus analysis: A case study on jazz solos. In *Proceedings of the 19th International Society for Music Information Retrieval Conference (ISMIR)*, pages 416–423, Paris, France, 2018
- Juan S. Gómez, Jakob Abeßer, and Estefanía Cano. Jazz solo instrument classification with convolutional neural networks, source separation, and transfer learning. In *Proceedings of the 19th International Society for Music Information Retrieval Conference (ISMIR)*, pages 577–584, Paris, France, 2018
- Tobias Clauß, Jakob Abeßer, Hanna Lukashevich, Robert Gräfe, Franz Häuser, Christian Kühn, and Thomas Sporer. Stadtlärm - a distributed system for noise level measurement and noise source identification in a smart city environment.

In *Proceedings of the Deutsche Jahrestagung für Akustik (DAGA)*, pages 285–288, Munich, Germany, 2018

- Jakob Abeßer, Robert Gräfe, Christian Kühn, Tobias Clauß, Hanna Lukashevich, Marco Götze, and Stephanie Kühnlenz. A distributed sensor network for monitoring noise level and noise sources in urban environments. In *Proceedings of the 6th IEEE International Conference on Future Internet of Things and Cloud (FiCloud)*, pages 318–324, Barcelona, Spain, 2018
- Jakob Abeßer, Stefan Balke, and Meinard Müller. Improving bass saliency estimation using label propagation and transfer learning. In *Proceedings of the 19th International Society for Music Information Retrieval Conference (ISMIR)*, pages 306–312, Paris, France, 2018
- Jakob Abeßer, Stylianos Ioannis Mimilakis, Robert Gräfe, and Hanna Lukashevich. Acoustic scene classification by combining autoencoder-based dimensionality reduction and convolutional neural networks. In *Proceedings of the 2nd DCASE Workshop on Detection and Classification of Acoustic Scenes and Events*, Munich, Germany, 16-17 November 2017
- Jakob Abeßer, Stefan Balke, Klaus Frieler, Martin Pfleiderer, and Meinard Müller. Deep learning for jazz walking bass transcription. In *Proceedings of the AES International Conference on Semantic Audio*, Erlangen, Germany, 2017
- Stylianos Ioannis Mimilakis, Estefanía Cano, Jakob Abeßer, and Gerald Schuller. New sonorities for jazz recordings: separation and mixing using deep neural networks. In *Proceedings of the 2nd AES Workshop on Intelligent Music Production*, London, UK, 2016
- Stefan Balke, Jonathan Driedger, Jakob Abeßer, and Meinard Müller. Towards evaluating multiple predominant melody annotations in jazz recordings. In *Proceedings of the 17th International Society for Music Information Retrieval Conference (ISMIR)*, pages 246–252, New York, USA, 2016
- Carsten Bönsel, Jakob Abeßer, Sascha Grollmisch, and Stylianos Ioannis Mimilakis. Automatic best take detection for electric guitar and vocal studio recordings. In *Proceedings of the 2nd AES Workshop on Intelligent Music Production*, London, UK, 2016
- Daniel Matz, Estefanía Cano, and Jakob Abeßer. New sonorities for early jazz recordings using sound source separation and automatic mixing tools. In *Proceedings of the International Society for Music Information Retrieval Conference (ISMIR)*, pages 749–755, Málaga, Spain, 2015
- Jakob Abeßer, Estefanía Cano, Klaus Frieler, Martin Pfleiderer, and Wolf-Georg Zaddach. Score-informed analysis of intonation and pitch modulation in jazz solos. In *Proceedings of the International Society for Music Information Retrieval Conference (ISMIR)*, pages 823–829, Málaga, Spain, 2015
- Anna M. Kruspe, Jakob Abeßer, and Christian Dittmar. A GMM approach to singing language identification. In *Proceedings of the AES International Conference on Semantic Audio*, pages 140–148, London, UK, 2014
- Christian Kehling, Jakob Abeßer, Christian Dittmar, and Gerald Schuller. Automatic tablature transcription of electric guitar recordings by estimation of score- and instrument-related parameters. In *Proceedings of the International Conference on Digital Audio Effects (DAFx)*, Erlangen, Germany, 2014
- Arndt Eppler, Andreas Männchen, Jakob Abeßer, Christof Weiß, and Klaus Frieler. Automatic style classification of jazz records with respect to rhythm, tempo, and tonality. In *Proceedings of the Conference on Interdisciplinary Musicology (CIM)*, pages 162–167, Berlin, Germany, 2014

- Jakob Abeßer, Martin Pfleiderer, Klaus Frieler, and Wolf-Georg Zaddach. Score-informed tracking and contextual analysis of fundamental frequency contours in trumpet and saxophone jazz solos. In *Proceedings of the International Conference on Digital Audio Effects (DAFx)*, pages 181–186, Erlangen, Germany, 2014
- Jakob Abeßer, Estefanía Cano, Klaus Frieler, and Martin Pfleiderer. Dynamics in jazz improvisation - Score-informed estimation and contextual analysis of tone intensities in trumpet and saxophone solos. In *Proceedings of the Conference on Interdisciplinary Musicology (CIM)*, pages 156–161, Berlin, Germany, 2014
- Anna Marie Kruspe, Jakob Abeßer, and Christian Dittmar. Towards coarse-scale event detection in music. In *Proceedings of the Audio Mostly Conference on Interaction with Sound*, Piteå, Sweden, 2013
- Mikus Grasis, Jakob Abeßer, Christian Dittmar, and Hanna Lukashevich. A Multiple-Expert Framework for Instrument Recognition. In *Proceedings of the International Symposium on Computer Music Multidisciplinary Research (CMMR)*, Marseilles, France, 2013
- Klaus Frieler, Jakob Abeßer, Wolf-Georg Zaddach, and Martin Pfleiderer. Introducing the Jazzomat Project and the Melo(S)py Library. In *Proceedings of the International Workshop on Folk Music Analysis (FMA)*, pages 76–78, Utrecht, Netherlands, 2013
- Christian Dittmar, Andreas Männchen, and Jakob Abeßer. Real-time guitar string detection for music education software. In *Proceedings of the nternational Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS)*, Paris, France, 2013
- Jakob Abeßer, Patrick Kramer, Christian Dittmar, and Gerald Schuller. Parametric Audio Coding of Bass Guitar Recordings using a Tuned Physical Modeling Algorithm. In *Proceedings of the International Conference on Digital Audio Effects (DAFx)*, Maynooth, Ireland, 2013
- Jakob Abeßer, Johannes Hasselhorn, Christian Dittmar, Andreas Lehmann, and Sascha Grollmisch. Automatic Quality Assessment of Vocal and Instrumental Performances of Ninth-grade and Tenth-grade Pupils. In *Proceedings of the International Symposium on Computer Music Multidisciplinary Research (CMMR)*, Marseilles, France, 2013
- Jakob Abeßer, Klaus Frieler, Martin Pfleiderer, and Wolf-Georg Zaddach. Introducing the Jazzomat project - Jazz solo analysis using Music Information Retrieval methods. In *Proceedings of the International Symposium on Computer Music Multidisciplinary Research (CMMR)*, Marseilles, France, 2013
- Johannes Krasser, Jakob Abeßer, Holger Großmann, Christian Dittmar, and Estefanía Cano. Improved Music Similarity Computation based on Tone Objects. In *Proceedings of the Audio Mostly Conference on Interaction with Sound*, Corfu, Greece, 2012
- Christian Dittmar, Jakob Abeßer, Sascha Grollmisch, Johannes Hasselhorn, and Andreas Lehmann. Automatic singing assessment of pupil performances. In *Proceedings of the International Conference on Music Perception and Cognition and the 8th Triennial conference of the European Society for the Cognitive Sciences of Music (ICMPC-ESCOM)*, pages 263–264, Thessaloniki, Greece, 2012
- Vedant Dhandhania, Jakob Abeßer, Anna Kruspe, and Holger Großmann. Automatic and manual annotation of time-varying perceptual properties in movie

soundtracks. In *Proceedings of the Sound and Music Computing Conference (SMC)*, pages 461–466, Copenhagen, Denmark, 2012

- Anna Kruspe, Hanna Lukashevich, Jakob Abeßer, Holger Großmann, and Christian Dittmar. Automatic classification of music pieces into global cultural areas. In *Proceedings of the AES International Conference on Semantic Audio*, pages 44–53, Ilmenau, Germany, 2011
- Anna Kruspe, Hanna Lukashevich, and Jakob Abeßer. Artist Filtering for Non-western Music Classification. In *Proceedings of the Audio Mostly Conference: A Conference on Interaction with Sound*, pages 82–87, Coimbra, Portugal, 2011
- Jakob Abeßer, Olivier Lartillot, Christian Dittmar, Tuomas Eerola, and Gerald Schuller. Modeling Musical Attributes to Characterize Ensemble Recordings using Rhythmic Audio Features. In *Proceedings of the IEEE Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 189–192, Praha, Czech Republic, 2011
- Jakob Abeßer, Christian Dittmar, and Gerald Schuller. Automatic Recognition and Parametrization of Frequency Modulation Techniques in Bass Guitar Recordings. In *Proceedings of the Audio Engineering Society (AES) International Conference on Semantic Audio*, pages 1–8, Ilmenau, Germany, 2011
- Thomas Völkel, Jakob Abeßer, Christian Dittmar, and Holger Großmann. Automatic Genre Classification of Latin American Music using Characteristic Rhythmic Patterns. In *Proceedings of the Audio Mostly Conference on Interaction with Sound*, Piteå, Sweden, 2010
- Michael Stein, Jakob Abeßer, Christian Dittmar, and Gerald Schuller. Automatic Detection of Audio Effects in Guitar and Bass Recordings. In *Proceedings of the Audio Engineering Society (AES) Convention*, pages 522–533, London, UK, 2010
- Christian Dittmar, Sascha Grollmisch, Hanna Lukashevich, Holger Großmann, Estefanía Cano, and Jakob Abeßer. Songs2See and GlobalMusic2One: Two Ongoing Projects in Music Information Retrieval Research at Fraunhofer IDMT. In *Proceeding of the International Symposium on Computer Music Modeling and Retrieval (CMMR)*, pages 259–272, Málaga, Spain, 2010. Springer-Verlag
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