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Andrew McLeod

Research Experience

- Oct **Researcher**, *Fraunhofer IDMT*, Ilmenau, Germany.
2022–Present Semantic Music Technologies group
- Feb **Researcher**, *EPFL*, Lausanne, Switzerland.
2020–Aug Working with Martin Rohrmeier
2022 Topic: SNF Grant “Distant Listening to Harmony”; tracking harmony over time
- Oct **Researcher**, *Kyoto University*.
2018–Nov Working with Kazuyoshi Yoshii
2019 Topic: Language modelling for automatic music transcription
- July–Sept **Research Associate**, *University of Edinburgh*.
2018 Working with Mark Steedman
Topic: Language modelling for automatic music transcription
- August 2017 **Academic Visitor**, *Queen Mary University of London*, Centre for Digital Music.
Hosts: Emmanouil Benetos and Rodrigo Schramm
- 2013–2014 **Research Associate**, *Emory University*, Atlanta, GA, USA.
Working with James Lu
Topic: Patchwriting and general NLP

Teaching

- 2020–2022 **Digital Musicology (DH-401)**, *EPFL*, with Prof. Dr. Martin Rohrmeier.
- Psychoacoustics & Signal Processing lectures
 - 4 paper discussions

Education

- 2014–2018 **Informatics PhD**, *University of Edinburgh*, School of Informatics, Edinburgh, UK.
Supervisors: Mark Steedman (Primary), and Simon King (Assistant)
Thesis: *The Language of Music: A Computational Model of Music Interpretation*.
Examiners: Chris Lucas (internal) and David Temperley, Eastman School of Music (external).

2009–2013 **Math/CS joint BS/MS with Highest Honors**, Emory University, Atlanta, USA.

Advisor: Li Xiong

Automatic Transcription of Polyphonic Musical Signals with Linear Matching Pursuit.

Examiners: Ken Mandelberg and Shun Yan Cheung.

- Dean's List in Fall 2009, Spring 2010, Spring 2011, Fall 2011, and Spring 2012.
- 2012 and 2013 Deborah Jackson Award winner for outstanding performance by an undergraduate student.
- 2013 Trevor Evans Award winner for outstanding performance by a Math/CS major.

Refereed Journal Articles

- [1] Andrew McLeod and Martin Rohrmeier. Detecting chord tone alterations and suspensions. *Journal of New Music Research*, 2024, accepted.
- [2] Silvan David Peter, Carlos Eduardo Cancino-Chac  n, Francesco Foscarin, Andrew Philip McLeod, Florian Henkel, Emmanouil Karystinaios, and Gerhard Widmer. Automatic note-level score-to-performance alignments in the asap dataset. *Transactions of the International Society for Music Information Retrieval*, 6(1):27–42, 2023.
- [3] Andrew McLeod, Rodrigo Schramm, Mark Steedman, and Emmanouil Benetos. Automatic transcription of polyphonic vocal music. *Applied Sciences*, 7(12), 2017.
- [4] Andrew McLeod and Mark Steedman. HMM-based voice separation of MIDI performance. *Journal of New Music Research*, 45(1):17–26, 2016.

Refereed Conference Papers

- [1] Johannes Hentschel, Andrew McLeod, Yannis Rammos, and Martin Rohrmeier. Introducing DiMCAT for processing and analyzing notated music on a very large scale. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 516–523, 2023.
- [2] Andrew McLeod. An analysis of automatically generated music. In *INFORMATIK 2023 - Designing Futures: Zuk  nfte gestalten*, pages 815–820, Bonn, 2023. Gesellschaft f  r Informatik e.V.
- [3] Andrew McLeod, Xavier Suermondt, Yannis Rammos, Steffen A. Herff, and Martin A. Rohrmeier. Three metrics for musical chord label evaluation. In *Forum for Information Retrieval Evaluation (FIRE)*, 2022.
- [4] Leonhard Driever, Mels Loe Jagt, Kuan Lon Vu, Daniel Harasim, Andrew McLeod, and Martin Rohrmeier. Improving chord prediction in jazz music using melody information. In *Sound and Music Computing Conference (SMC)*, pages 146–153, 2022.
- [5] Andrew McLeod and Martin Rohrmeier. A modular system for the harmonic analysis of musical scores using a large vocabulary. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 435–442, 2021.
- [6] Johannes Hentschel, Fabian C. Moss, Andrew McLeod, Markus Neuwirth, and

Martin Rohrmeier. Towards a unified model of chords in western harmony. In *Music Encoding Conference (MEC)*, 2021.

- [7] Andrew McLeod, Xavier Suermondt, Steffen A. Herff, and Martin Rohrmeier. Perceptually-informed chord label evaluation. In *International Conference on Music Perception and Cognition (ICMPC)*, 2021.
- [8] Elia Anzuoni, Sinan Ayhan, Federico Dutto, Andrew McLeod, Fabian C. Moss, and Martin Rohrmeier. A historical analysis of harmonic progressions using chord embeddings. In *Sound and Music Computing Conference (SMC)*, pages 284–291, 2021.
- [9] Sebastian Velez de Villa, Andrew McLeod, and Martin Rohrmeier. Generating musical continuations with repetition. In *Sound and Music Computing Conference (SMC)*, pages 131–138, 2021.
- [10] Andrew McLeod, James Owers, and Kazuyoshi Yoshii. The MIDI degradation toolkit: Symbolic music augmentation and correction. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 846–852, 2020.
- [11] Francesco Foscari, Andrew McLeod, Philippe Rigaux, Florent Jacquemard, and Masahiko Sakai. ASAP: a dataset of aligned scores and performances for piano transcription. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 534–541, 2020.
- [12] Adrien Ycart, Andrew McLeod, Emmanouil Benetos, and Kazuyoshi Yoshii. Blending acoustic and language model predictions for automatic music transcription. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 454–461, 2019.
- [13] Tristan Carsault, Andrew McLeod, Philippe Esling, J  r  me Nika, Eita Nakamura, and Kazuyoshi Yoshii. Multi-step chord sequence prediction based on aggregated multi-scale encoder-decoder networks. In *IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, 2019.
- [14] Andrew McLeod, Eita Nakamura, and Kazuyoshi Yoshii. Improved metrical alignment of MIDI performance based on a repetition-aware online-adapted grammar. In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 186–190, 2019.
- [15] Andrew McLeod and Mark Steedman. Evaluating automatic polyphonic music transcription. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 42–49, 2018.
- [16] Andrew McLeod and Mark Steedman. Meter detection and alignment of MIDI performance. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 113–119, 2018.
- [17] Rodrigo Schramm, Andrew McLeod, Mark Steedman, and Emmanouil Benetos. Multi-pitch detection and voice assignment for a cappella recordings of multiple

singers. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 552–559, 2017.

- [18] Andrew McLeod and Mark Steedman. Meter detection in symbolic music using a lexicalized PCFG. In *Sound and Music Computing Conference (SMC)*, pages 373–379, 2017.

Posters

Musical Meter Detection Using Context-Free Grammars.

- At the 1st UK Music Informatics and Cognition (MIC) 2016 Workshop, University of Edinburgh, (20 July, 2016).

Meter Identification of MIDI Using Pattern Detection.

- At the Late Breaking Demo session at ISMIR 2015, Malaga, Spain, (30 Oct, 2015).

Presentations

A Modular System for Harmonic Structure Analysis of Music.

- Joint work with Martin Rohrmeier
- At DMRN+15: Digital Music Research Network One-day Workshop 2020, Queen Mary University of London, (15 December, 2020).

Meter Detection From Music Data.

- Joint work with Mark Steedman
- At DMRN+11: Digital Music Research Network One-day Workshop 2016, Queen Mary University of London, (20 December, 2016).

Symbolic Music Analysis for Music Transcription.

- At the 1st UK Music Informatics and Cognition (MIC) 2016 Workshop, University of Edinburgh, (20 July, 2016).

Supervision & Mentorship

- 2023 **Master's Thesis**, *TU Ilmenau*, Pitchapa Ngamthipwatthana, "Synthetic Audio Data Generation with Generative Adversarial Networks for Overcoming Data Scarcity in Deep Learning" (co-supervised with Saichand Gourishetti).
- 2023 **Bachelor's Thesis**, *TU Ilmenau*, Jakob Lerch, "Generation of Symbolic Music Based on the MusicVAE".
- Summer 2022 **Summer@EPFL Undergraduate Internship Program**, *EPFL*, Junyoung Lee, Multi-task learning for chord sense embeddings.
- Fall 2021 **Masters Semester Project**, *EPFL*, Selim Fekeh, Multi-task learning for chord prediction.
- Fall 2021 **Machine Learning Master Course Project Supervision**, *EPFL*, 3 groups, Melody-informed chord prediction in Jazz.
Resulted in a conference publication [4].
- 2020-2022 **Internship Project Supervision**, *EPFL*, Xavier Suermondt, New metrics for chord label evaluation (co-supervised with Steffen Herff).
Resulted in a conference publication [5].

- Fall 2020 **Machine Learning Master Course Project Supervision**, *EPFL*, 3 groups, Large-scale analysis of chord embeddings.
Resulted in a conference publication [8].
- Fall 2020 **Bachelor Semester Project Supervision**, *EPFL*, Sebastian Velez de Villa, "Musical patterns for prediction".
Resulted in a conference publication [9].
- Fall 2020 **Bachelor Semester Project Supervision**, *EPFL*, Mohamed Dhraief, "Implementing Transfer Learning in Onset Detection: Impact and Consequences".
- 2018 **MSc Supervision**, *University of Edinburgh*, Anna Greer, "Understanding Music Representation in Neural Networks for Key Identification", Music recommendation using harmonic intervals (co-supervised with Mark Steedman).
- 2017 **MInf Supervision**, *University of Edinburgh*, Finlay McAfee, "Automatic Harmonic Analysis of Jazz Solos" (co-supervised with Mark Steedman).
- 2015 **MSc Supervision**, *University of Edinburgh*, Catherine Sweetman, "Parsing of Polyphonic Rhythm" (co-supervised with Mark Steedman).

Service

- 2020–2023 **Meta-reviewer**, *International Society for Music Information Retrieval Conference*.
- 2020–2021 **Reviewer**, *Transactions of International Society for Music Information Retrieval*.
- 2020 **Reviewer**, *Journal of Mathematics and Music*.
- 2020 **Reviewer**, *Empirical Musicology Review*.
- 2017–2019 **Reviewer**, *International Society for Music Information Retrieval Conference*.
- 2015–Present **Member**, *International Society for Music Information Retrieval*.
- 20 July, 2016 **Organizer: 1st UK Music Informatics and Cognition (MIC) 2016 Workshop**, *University of Edinburgh*.
 - Brought together music researchers from around the UK.
 - See <http://homepages.inf.ed.ac.uk/amcleod8/mic2016.html>
- 2015–2016 **Reviewer**, *Journal of New Music Research*.

Outreach

- 2015–2016 **Crew Member: CompuCast, the computer science podcast**, *University of Edinburgh*.
 - Bi-monthly podcast featuring computer science news and interviews with researchers.
 - See <http://compucast.io/>
- 2016 **Demonstrator: Primary school age classes, teaching basic programming**, *University of Edinburgh*.
 - INSPIRE Summer School 2016
 - Sutton Trust Summer School 2016
 - Edinburgh Science Festival 2016

Industry Experience

- 2013–2014 **Technical Assistant**, *Math/CS Department*, Emory University, Atlanta, GA, USA.
- Developed programs and tools in PHP to assist admin and IT staff members.
 - Developed a M68000 emulator in C and a backend to allow remote GDB debugging.
- Summer 2012 **Technical Intern**, *Suntrust Banks, Inc.*, Atlanta, GA, USA.
- Designed and implemented strategy for knowledge gathering and knowledge management of testing data.
 - Assisted in the updating of EIS Solutions Framework terms.
 - Coded an excel macro to aid in the tracking of training courses.
- 2010–2012 **Technical Intern**, *Career Center*, Emory University, Atlanta, GA, USA.
- Assisted in redesign of Center website providing insight in user functionality and site aesthetics.
 - Maintain website features including the development of interactive PowerPoint downloads, integration of career development instructional videos, and general content management.

Skills

- Technical Python, pytorch, pandas, numpy, java, latex, git, c.
- Musical Violin, guitar, piano, audio recording/processing, reaper.