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Andrew McLeod
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Research Experience

Oct 2022–Present **Researcher**, *Fraunhofer IDMT*, Ilmenau, Germany.
Semantic Music Technologies group

Feb 2020–Aug 2022 **Researcher**, *EPFL*, Lausanne, Switzerland.
Working with Martin Rohrmeier
Topic: SNF Grant "Distant Listening to Harmony"; tracking harmony over time

Oct 2018–Nov 2019 **Researcher**, *Kyoto University*.
Working with Kazuyoshi Yoshii
Topic: Language modelling for automatic music transcription

July–Sept 2018 **Research Associate**, *University of Edinburgh*.
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, Rodrigo Schramm, Mark Steedman, and Emmanouil Benetos. Automatic transcription of polyphonic vocal music. *Applied Sciences*, 7(12), 2017.

[2] 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] 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.

[2] 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.

[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] Francesco Foscarin, 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.

[8] 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.

[9] Tristan Carsault, Andrew McLeod, Philippe Esling, Jèrôme 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.

[10] 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.

[11] Andrew McLeod and Mark Steedman. Evaluating automatic polyphonic music transcription. In *International Society for Music Information Retrieval Conference (ISMIR)*, pages 42–49, 2018.

[12] 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.

[13] 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.

[14] 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

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 [1].

2020-2022 **Internship Project Supervision**, *EPFL*, Xavier Suermondt, New metrics for chord label evaluation (co-supervised with Steffen Herff).
Resulted in a conference publication [2].

Fall 2020 **Machine Learning Master Course Project Supervision**, *EPFL*, 3 groups, Large-scale analysis of chord embeddings.
Resulted in a conference publication [4].

Fall 2020 **Bachelor Semester Project Supervision**, *EPFL*, Sebastian Velez de Villa, "Musical patterns for prediction".
Resulted in a conference publication [5].

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

2020–2022 **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.