Jordie Shier

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Education

Queen Mary University of London   *09/2022 – 09/2026*
Ph.D. Student: Artificial Intelligence and Music
- **Topic**: *Real-time timbral mapping for synthesized percussive performance*
- **Supervisors**: Prof. Andrew McPherson and Dr. Charalampos Saitis
- **Industry Partner:** Dr. Andrew Robertson (Ableton)

University of Victoria   *09/2019 – 12/2021*
M.Sc. Interdisciplinary Computer Science & Music
- **Thesis**: *The Synthesizer Programming Problem: Improving the Usability of Sound Synthesizers*
- **Supervisors**: Dr. George Tzanetakis and Kirk McNally

University of Victoria   *09/2012 – 04/2017*
B.Sc. Co-op with Distinction, Combined Computer Science & Music
- **Undergraduate research**: *Insights into the Nature of Drum Machine Sounds*

Visiting Researcher

Imperial College London   *03/2023 – 09/2026*
- **Supervisor:** Prof. Andrew McPherson

Academic Work Experience

University of Victoria   *09/2020 – 12/2020*
Sessional Lecturer
- Course instructor for Music Retrieval Techniques (CSC 475/SENG 480B)
- Developed course content with supporting materials, led twice weekly lectures/tutorials for 79 students and managed two TAs

University of Victoria   *05/2017 – 04/2021*
Research Assistant
- Developed tools for audio analysis of drum samples and musical recordings

Industry Work Experience

Independent Software Developer
Clients include:

- **Warp Academy**   *01/2020 – 05/2022*
    - Audio DSP and audio effect plugin developer
    - Developed using JUCE (C++)

- **Drumeo**   *01/2019 – 09/2019*
    - Lead developer of the Drumeo Kids mobile app (iOS and Android)
    - Developed using React Native (Javascript/Java/Objective-C)

- **Monitor Creative**   *05/2017 – 09/2019*
    - Consultant for multiple custom e-commerce solutions
    - Developed in Shopify/Liquid, WordPress, JavaScript, PHP

One Up Drum Vids   *05/2017 – 09/2019*
Business Partner
- Co-owner of an online drum education start-up
- Partnered with Drumeo in the development of two online courses

Pason Systems Corp.   *05/2014 – 09/2015*
Software Developer Intern
- Developed web-based enterprise application software on an agile team
- Developed and reviewed Python/MySQL/JavaScript code in a Linux environment

Harman International Canada Limited   *05/2014 – 12/2015*
Music Technology Contractor
- Worked with the R&D department and created MIDI drum patterns for the DigiTech TRIO and TRIO+

Publications and Presentations

*joint first authorship

Journal Articles
- Hayes, B., **Shier, J.**, Fazekas, G., McPherson, A., & Saitis, C. (2024). A review of differentiable digital signal processing for music and speech synthesis. *Frontiers in Signal Processing.*
- **Shier, J.**, McNally, K., Tzanetakis, G., & Brooks, K. G. (2021, January). Manifold Learning Methods for Visualization and Browsing of Drum Machine Samples. *Journal of the Audio Engineering Society*, *69*(1/2), 40-53

Refereed Conference/Workshop Papers
- Saitis, C., Del Sette, B. M., **Shier, J.,** Tian, H., Zheng, S., Skach, S., ... & Ford, C. (2024, September). Timbre Tools: Ethnographic Perspectives on Timbre and Sonic Cultures in Hackathon Designs. In *Proceedings of the 19th International Audio Mostly Conference: Explorations in Sonic Cultures.*
- **Shier, J.**, Saitis, C., Robertson, A., & McPherson, A. (2024, September). Real-time timbre remapping with differentiable DSP. In *Proceedings of New Interfaces for Musical Expression (NIME).*
- *S*aitis, C., Tian, H., **Shier, J.**, & Del Sette, B. M. (2023, December). Timbre Tools for the Digital Instrument Maker. In *Proceedings of the CHIME Music and HCI Workshop 2023*
- **Shier, J.***, Caspe, F.*, Robertson, A., Sandler, M., Saitis, C., & McPherson, A. (2023, September). Differentiable Modelling of Percussive Audio with Transient and Spectral Synthesis. In *Proceedings of the 10th Convention of the European Acoustics Association Forum Acusticum.*
- Turian, J., **Shier, J.**, Khan, H. R., Raj, B., Schuller, B. W., Steinmetz, C. J., ... & Bisk, Y. (2022, July). HEAR: Holistic evaluation of audio representations. In *NeurIPS 2021 Competitions and Demonstrations Track (PMLR).*
- Turian, J.*, **Shier, J.***, Tzanetakis, G., McNally, K., & Henry, M. (2021, September). One Billion Audio Sounds from GPU-enabled Modular Synthesis. In *Proceedings of the 24th International Conference on Digital Audio Effects (DAFx20in21)*
- **Shier, J.**, McNally, K., & Tzanetakis, G. (2017, September). Sieve: A plugin for the automatic classification and intelligent browsing of kick and snare samples. In *Proceedings of the 3rd Workshop on Intelligent Music Production*

Abstract/Precis Reviewed Conference Papers
- **Shier, J.**, Tzanetakis, G., & McNally, K. (2020, May). SpiegeLib: An Automatic Synthesizer Programming Library. In *Audio Engineering Society Convention 148*
- **Shier, J.**, McNally, K., & Tzanetakis, G. (2017, October). Analysis of Drum Machine Kick and Snare Sounds. In *Audio Engineering Society Convention 143*

Invited Presentations, Seminars, and Guest Lectures
- **Shier, J.** (2024, August). Creating an AI-Powered 808 Drum Synth with JUCE and PyTorch. Invited talk at the *Audio Programmer Interface (API) London.*
- **Shier, J.** (2024, May). Developing AI for Musicians. Keynote at the *School of Arts and Creative Technologies Student Symposium, University of York.*
- **Shier, J.** (2024, February). Audio-Driven Synthesis with DDSP. Seminar for the *Creative Coding Lab*, *University of Huddersfield*
- **Shier, J.** (2021, November). Automatic Synthesizer Programming. Invited talk at the *AUDIO+ Workshop, University of Victoria*
- **Shier, J.** & Pras, A. (2021, October). Evaluating the Perceptual and Sonic Qualities of Analog and Digital Mixes. Guest lecture, *University of York, Department of Music*
- **Shier, J.**, Brooks, K. G., & Chambers-Morenz, R. (2020, November). How Analog are You? Invited talk at the *Audio Research Workshop, University of Victoria*
- **Shier, J.** (2019, September). Intelligent Music Production Tools. Guest lecture for CSC475 music retrieval techniques, *University of Victoria, Department of Computer Science*

- **Shier, J.** (2019, March). Developing Intelligent Music Production Tools using MIR. Invited guest lecture, *University of Lethbridge, Faculty of Fine Arts*

Tutorials and Workshops
- Hayes, B., **Shier, J.**, Yu, C., Südholt, D., & Diaz, R. (2023, November). Introduction to DDSP for Audio Synthesis. *24th International Society for Music Information Retrieval (ISMIR)*.
- Armitage, J., Shepardson, V., Privato, N., Pelinski, T., Benito Temprano, A. L., Wolstanholme, L., ... & **Shier, J.** (2023, August). Agential Instruments Design Workshop. *4th International Conference on AI and Music Creativity (AIMC)*.

Refereed Presentations and Posters
- **Shier, J.** (2020, September). Programming Synthesizers with Deep Learning Networks. Presented at the *AES Virtual Symposium: Applications of Machine Learning in Audio*
- **Shier, J.** (2019, November). Sieve: A plug-in for the Intelligent Browsing of Drum Samples using Manifold Learning. Poster at *ADC 2019*

Service

Timbre Tools Hackathon   *02/2024*
- Hackathon Organizer
- Managed competition sponsorship

HEAR Benchmark   *01/2021 – present*
- Developed and maintain the HEAR benchmark website
- Review new leaderboard submissions

HEAR 2021 NeurIPS Challenge   *05/2021 – 12/2021*
Full Committee Member & Competition Co-organizer
- Engaged senior Committee Members in planning meetings
- Developed open-source competition evaluation code
- Organized and facilitated a competition breakout session at NeurIPS 2021

Audio Research Workshop   *11/2020*
Facilitated a roundtable conversation on MIR between Kirk McNally and Georg Boenn

UVic Computer Music Course Union   *2013/2014 & 2016/2017*
President
- Organized events including coding hack-nights, music track-days, and other socials
- Oversaw course union financials

Professional Development
- *Project Management*, Mitacs Workshop (2021, February)
- *Fostering a culture of reconciliation, equity, diversity, and inclusion,* Mitacs Online Course (2022, January)

Awards and Funding

- AIM CDT Research Studentship (2022-2026)
- British Columbia Graduate Scholarship (2020/2021)
- UVic President's Research Scholarship (2019/2020)
- NSERC Canada Graduate Scholarship Master's (2019/2020)
- Echo Award (2017)
- Jamie Cassels Undergraduate Research Award (2016/2017)
- President's Scholarship (2016/2017)
- Joan Backus Scholarship in Music (2014/2015 & 2016/2017)
- Taylor Scholarship in Music (2013/2014)

Technical Skills

Programming Languages

- Python, C++, Javascript, Matlab, PHP, Arduino C, Max/MSP, MySQL

Software Frameworks

- PyTorch, PyTorch Lightning, TensorFlow, scikit-learn, Librosa, Essentia, Marsyas, JUCE

Software Development Tools

- Git, Docker, Amazon Web Services, Google Compute Platform, Unix Shell

Audio

- Recording, Mixing, Editing, Pro Tools, Ableton Live, Modular Synthesis

Music Projects, Performances, and Compositions

Kolawale Ganikale   *2023 – Current*
Technological collaborator (Max/MSP)

- Co-design of a voice-driven Max/MSP performance system for Jùjú music
- Performance of *Jùjú Music at York* (2024, October)*,* York University

Napoleon Skywalker   *2010 – Current*
Music producer and performer (Ableton, Synthesizer)

- Live electronic music performance and production with drummer Carson Gant
- Performance highlights include Big Winter Classic 2024 (support for Battles and DJ Premier), Circle the Wagons Festival, and the Calgary Stampede Coke Stage

Garden City Disco   *2016 – 2022*
Music producer and performer (DJ, Live Electronics)
- Electronic music performance and production with James Gray
- Garden City Disco EP, released June 2017

Bekah Simms (2017), *Everything is… distorted*   *10/2019*
Performer (Max/MSP)
- Performed with the Aventa Ensemble at the University of Victoria

Jordie Shier (2016), *One Over F*   *04/2017*
Composer and performer (Ableton / Max4Live)
- New music piece written for double bass, cello, and Ableton / Max4Live.
- Performed at the University of Victoria

Natalie Dzbik (2016), *::Flowers::*   *04/2017*
Performer (Modular Synthesizer)
- New music composition for violin, piano, and modular synthesizer
- Performed at the University of Victoria

Jonathon Harvey (1994), *Advaya*   *03/2017*
Performer (Max/MSP)
- Performed at the University of Victoria

Julio Lopezhiler (2016), *Char*   *11/2016*
Performer (Electronics)
- Performed at the University of Victoria

Jordie Shier (2014), *Forest for the Trees*   *04/2014*
Composer
- New music composition written for violin, flute, trombone, contrabass clarinet, two percussionists, and quadraphonic tape audio.
- Performed at the University of Victoria

Night Market   *2013 – 2014*
Co-writer and producer
- Realize EP, released April 2014

Jordie Shier (2013), *Particle Collider*   *12/2013 & 01/2014*
Composer
- New music composition written for the EROSS 'Hyper Trumpet', Piano, and Max/MSP/Max4Live
- Performed at the University of Victoria and at the West Coast Student Composer Symposium in Vancouver, BC

Audio Engineering

SALT New Music Festival and Symposium   *09/2017*
Live Audio Engineer and Electronics

University of Victoria School of Music   *03/2017 – 04/2017*
Recording Technician
- Seán Maynard and Natalie Dzbik, *Degree Recital* (2017, April)
- Thomas Nicolson, *Degree Recital* (2017, March)
- *String Chamber Concert* (2017, March)

Music Teaching

- Modular Synthesis: Buchla (2022, February), University of Victoria, Victoria BC
- Electronic Music Workshop (2015, July), *Midsummers Festival,* Smithers, BC
- Ableton Live Workshop (2014, March), *Computer Music Course Union,* Victoria, BC
- Online Video Tutorials for Music Production:
  https://www.youtube.com/user/neonfiltermusic