

Ian Hattwick

PhD Researcher
Music Technology Department
Faculty of Music
McGill University
527 Sherbrooke St. W
Montreal, Quebec H3A 1E3 Canada

curriculum vitae, December 1, 2015

EDUCATION

PhD McGill University, Montreal, Quebec, Canada 2011 Present

Marcelo Wanderley, advisor

PhD Researcher in the Interface Design and Musical Interaction Laboratory

Expected Completion May, 2016

Dissertation title: "Creating Novel Digital Interfaces for Professional Artistic Productions in Collaborative Art-Science Projects"

MFA University of California, Irvine, CA 2009 2011

Integrated Composition, Improvisation and Technology

Kojiro Umezaki, advisor

Thesis: "Face to Face, Byte to Byte: Approaches to Human Interaction in a Digital Music Ensemble"

Studied with Chris Dobrian, Simon Penny, Michael Dessen

BM University of Southern California, Los Angeles, CA 1993 1999

Bachelor of Music in Jazz Composition

Studied with Vince Mendoza, Milcho Leviev, Shelly Berg

TEACHING EXPERIENCE

Lecturer, McGill University, Montreal, Quebec, Canada 2012 Present

MUMT202 Fundamentals of New Media (Fall 2012)

Lectured 40 students on audio production techniques

Software taught: Finale, Logic Audio, Audacity

Skills taught: Microphone technique, use of audio effects, mixing, mastering

MUMT303 New Media Production II (Winter 2015)

Final course of a three-course series on creation of new media

Developed Syllabus for 13-week course

Lectures on computer music history, visual music, and network-based music

Taught advanced programming techniques and algorithmic composition

Software used: Max/MSP

Lecturer, University of California, Irvine, CA 2011

MUS 151 Computer Music Composition (Winter 2011)

Lectured 40 students on audio production techniques

Software taught: Pro Tools, Audacity

Lectured on synthesis techniques, recording techniques, and composition

Teaching Assistant, McGill University, Montreal, Quebec, Canada 2011 2014

Teaching assistant for six undergraduate courses:

MUMT - 202 Fundamentals of New Media (Fall 2011)

MUMT - 302 New Media Production 1 (Winter 2012)
MUMT - 203 Introduction to Digital Audio (Fall 2012) - Theoretical course covering acoustics, sampling, filter design, and advanced synthesis techniques
MUAR 211 - The Art of Listening (Winter 2013) Survey Course on Western Music History
MUMT 203 - Introduction to Digital Audio (Winter 2014)
MUMT 203 - Introduction to Digital Audio (Fall 2014)

Teaching Assistant, University of California, Irvine, CA 2009 2011

Teaching assistant for five undergraduate courses:

MUSIC 8 - Beatles and the 60's (Fall 2009) — Led weekly review sessions
MUSIC 16B - Musicianship (Winter 2010) — Led weekly ear training sessions
MUSIC 16C - Musicianship (Spring 2011) — Led weekly ear training sessions
MUSIC 8 - Beatles and the 60's (Fall 2010) — Led weekly review sessions
MUSIC 40D - 20th Century Composers (Spring 2011) — 20th Century Music History Course

RESEARCH POSITIONS

Research Assistant, McGill University, Montreal, Quebec, Canada 2011 Present

Marcelo Wanderley, advisor

Researched, specified, and worked with McGill purchasing for a \$290,000 grant funding the creation of a Fabrication Laboratory. Equipment purchased: Stratasys Fortus 400 3D Printer, ULS VLS-3.5 Lasercutter, Tormach Deluxe PCNC 770 CNC

Researched equipment requests for the \$500,000 Canadian Foundation for Innovation VII equipment grant
Primary grant writer for two successful NSERC Engage industry collaboration grants

Eric Lewis, Professor of Philosophy, advisor

Adaptive Use Musical Instrument: Added functionality to software used with disabled children at Mackay School for Disabled Children in Montreal (Fall 2011-Spring 2012)

Developed custom digital musical instruments for disabled children at Mackay School for Disabled Children in Montreal (Fall 2014-Spring 2015)

Rosemary Mountain, Professor of Music (Concordia), advisor

IMP/NESTAR: Prototyped an interactive version of the Interactive Multimedia Playroom. Created specifications for the creation of a full-version.

Research Assistant, University of California, Irvine, CA 2010 2011

Chris Dobrian, advisor

Managed Publicity and Technical Support for the Gassmann Music Series

Audio Mixing and Mastering: *Cycles, Interrupted* by Chris Dobrian

Design consultation for new electronic music studio

RESEARCH/CREATION PROJECTS

Sensory Entanglements 2015 Present

PIs: Chris Salter (Concordia), David Howes (Concordia), Marcelo Wanderley (McGill), Jennifer Biddle (University of New South Wales)

Description: Interdisciplinary 4-year \$450,000 research project bringing together sensory anthropologists, indigenous artists, and digital arts researchers.

My role: Research in sensory modalities of digital musical instruments; artistic collaborator.

How Max Became Live - 2015 Present

An interdisciplinary research project in collaboration with media theorist Victoria Simon and music theorist Landon Morrison, exploring the cultural assumptions embedded in the music software “Max for Live”.
My Role: creation of software tools in Max for Live; composition of a new work to be presented Spring 2016.

The Pearl - 2014 Present

Designed and created an interactive pearl for a multi-artistic dramatization of John Steinbeck’s novel “The Pearl.” Dramatization by Krystina Marcoux and David Coubes. Initial presentation March 27, 2015 in Lyon, France.
My Role: design of a fully wireless gestural interface with embedded interactive lighting; ongoing research into strategies for visual display of performer gesture using this interface.

Disequilibrium 2013 2014

PIs: Chris Salter (Concordia) and Marcelo Wanderley (McGill)

Description: A 1-year \$200,000 research-creation project culminating in week-long installations of the immersive sensory installation *Ilinx* at in the Hague, Berlin, and Tokyo.

My Role: Technology Direction — Hardware/Software. Led a team consisting of researchers in haptic technology, digital electronics, and e-textiles in the creation of a wireless tactile-enhanced full-body garment. Designed and programmed custom electronics incorporating control of vibrotactile actuators and interactive sensors.

Key Facts: More than 1000 visitors have worn the garments to date.

Additive Manufacturing of Digital Musical Instruments 2014

PI: Marcelo Wanderley (McGill)

Industrial Partner: Cimatrix Solutions, Oshawa Ontario

Description: A six-month industrial partnership with 3D printer distributor Cimatrix Solutions researching the use of 3D printing for the creation of digital musical instruments. Funded by an NSERC Engage grant.

My Role: Grantwriting / Primary Researcher: Designed and tested applications for integrating electronics and 3D printed hardware for the prototyping of digital interfaces.

Heliotubes 2013 2014

Created two versions of a percussion instrument with interactive lighting. Commissioned by Krystina Marcoux (percussion performance). Premiered at McGill University May 2013.

Les Gestes 2011 2013

PIs: Sean Ferguson (McGill), Marcelo Wanderley (McGill) and Isabelle Van Grimde (Van Grimde Corps Secrets)

Description: A 3-year \$300,000 research-creation project culminating in performances in Quebec, the Netherlands, Belgium, and France

My Role: Instrument design / manufacturing — in collaboration with Joseph Malloch designed and manufactured the Prosthetic Instruments, consisting of Spines, Ribs, and Visors.

Key Facts: 18 Prosthetic Instruments went on tour with 12 used in every performance. Over 30 total instruments were created for the project.

Control Strategies for a Human-Conducted Quadcopter Ballet 2014 2015

Collaborators: Professor Luis Rodriguez, Michal El-Jiz, Michael DiPerna (Concordia)

Description: Research project for the creation of strategies for controlling the motions of an autonomous quadcopter in real-time during a musical performance. Culminated in a musical performance/quadcopter ballet in May 2015, performed and composed by Ian Hattwick.

My role: Development of mapping strategies for musical performance to quadcopter trajectory; composition and musical performance.

Unsounding Objects 2012 2014

Collaborators: Preston Beebe (composition) and Zach Hale (percussion performance)

Description: Created a new instrument using audio feature extraction for the control of sound synthesis in a digital percussion instrument. This instrument allows for the use of found objects and extended techniques for the control of computer synthesized audio in real-time.

My role: Instrument creation hardware/software; development of audio feature extraction and mapping algorithms.

Audio Environment for the Emotional Imaging Composer 2012

PI: Marcelo Wanderley (McGill)

Industrial Partner: Emotional Imaging, Inc.

Description: A six-month industrial partnership with Emotional Imaging Inc. to create multimedia applications utilizing their technology for detecting emotional states using biometric data in real-time.

Funded by an NSERC Engage grant.

My Role: Grantwriting / Researcher: Created an audio environment for live performance based on Emotional Imaging Inc.'s technology.

Physical Computing Ensemble 2010 2011

Description: An ensemble created for the presentation of my MFA thesis research.

Consisted of six performers from art, dance, and music backgrounds.

My role: Founder, director

SKILLS

Computer Programming

Software Proficiency: Max/MSP, Arduino, Processing, Eclipse IDE, etc.

Computer-Aided Design

Software Proficiency: AutoCAD, Autodesk Inventor, Solidworks.

Digital Manufacturing Experience: Stratasys FDM 3D Printing, Lasercutting.

Electronics Design

Software Proficiency: EAGLE, PSoC Creator

Hardware platforms: Atmel AVR series, Cypress PSoC.

Experience: Design and manufacturing of custom circuit boards utilizing analog and digital circuitry.

Hardware Intelligence

Fabrication in metal, wood, and plastics.

Mold-making and resin casting.

Music Production/ Audio Engineering

Software Proficiency: Digital Performer, Pro Tools, Logic Audio, Finale, Reason, Etc.

Skills: Audio recording, Mixing, Mastering.

Music Performance

22 years of professional experience on electric and acoustic guitars.

Styles: Jazz, electronic, classical, hip-hop, rock, gospel.

AWARDS

- 2015-16 Centre for Interdisciplinary Research in Music Media and Technology Student Award — “How Max Became Live”
- 2014-15 Centre for Interdisciplinary Research in Music Media and Technology Inter-Centre Research Exchange Award — for an extended research trip to Princeton University
- 2014-15 Centre for Interdisciplinary Research in Music Media and Technology Student Award — “Control Strategies for a Human-Conducted Quadcopter Ballet”
- 2012-14 Centre for Interdisciplinary Research in Music Media and Technology Student Award — “Unsounding Objects”
- 2012-13 Centre for Interdisciplinary Research in Music Media and Technology Director’s Interdisciplinary Prize — “Unsounding Objects”
- 2011-14 Graduate Excellence Fellowship — McGill University
- 2012 Centre for Interdisciplinary Research in Music Media and Technology Student Travel Award
- 2012 GREAT Student Travel Award — McGill University
- 2011 Graduate Student Research Grant— University of California, Irvine
- 2010 Graduate Student Research Grant— University of California, Irvine

PUBLICATIONS

Ian Hattwick and Marcelo M. Wanderley. "Interactive Lighting in the Pearl: Considerations and Implementation". In Proceedings of the International Conference on New Interfaces for Musical Expression, 2015, Baton Rouge, USA.

Valerie Lamontagne, Ian Hattwick, Marcello Giordano, Ivan Franco, Deborah Egloff, Maurizio Martinucci, Christopher Salter, Marcello Giordano, and Marcelo M. Wanderley. "The Ilinx Garments: Whole-body tactile experience in a multisensorial art installation." In Proceedings of the International Symposium on Electronic Art, 2015, Vancouver, Canada.

Marcello Giordano, Ian Hattwick, Ivan Franco, Deborah Egloff, Emma Frid, Valerie Lamontagne, Maurizio Martinucci, Christopher Salter, and Marcelo M. Wanderley. “Design and Implementation of a Whole-Body Haptic Suit for ‘Ilinx’, a Multisensory Art Installation.” In Proceedings of the Sound and Music Computing Conference (SMC), 2015.

Ian Hattwick, Ivan Franco, Marcello Giordano, Deborah Egloff, Valerie Lamontagne, Ian Arawjo, Maurizio Martinucci, Chris Salter, and Marcelo M. Wanderley. "Compositional Approaches to the Design and Use of A Vibrotactile Garment." In Proceedings of the International Computer Music Conference, 2015, Denton, USA. (accepted)

Ian Hattwick, Seth Woods, and Marcelo M. Wanderley. “Almost Human: Moving Expressive Gesture from Cello to Spine.” In Proceedings of the Workshop on Practice-Based Research in New Interfaces for Musical Expression, NIME2014, London, UK.

Ian Hattwick, Ian, Joseph Malloch and Marcelo M. Wanderley. “Forming Shapes to Bodies: Design for Manufacturing in the Prosthetic Instruments.” In Proceedings of the International Conference on New Interfaces for Musical Expression, pp. 443-448, London, UK.

Ian Hattwick, Preston Beebe, Zachary Hale, Marcelo M. Wanderley, Philippe Leroux, and Fabrice Marendola. “Unsounding Objects: Audio Feature Extraction for the Control of Sound Synthesis.” In Proceedings of the International Conference on New Interfaces for Musical Expression, pp. 597-600, London, UK.

R. Michael Winters, Ian Hattwick, and Marcelo M. Wanderley. "Emotional Data in Music Performance: Two AudioEnvironments for the Emotional Imaging Composer." In Proceedings of the 3rd International Conference on Music & Emotion (ICME2013).

Ian Hattwick and Kojiro Umezaki. "Approaches to Interaction in a Digital Music Ensemble." In Proceedings of the 2012 Conference on New Interfaces for Musical Expression, Ann Arbor, Michigan.

Ian Hattwick and Marcelo M. Wanderley. "A Dimension Space for Evaluating Collaborative Musical Performance Systems." In Proceedings of the 2012 Conference on New Interfaces for Musical Expression, Ann Arbor, Michigan.

Approaches to Interactivity in a Digital Music Ensemble – University of California, Irvine MFA Thesis (2011).

SELECTED COMPOSITIONS

Ian Hattwick and Seth Woods. "Almost Human" for cello and prosthetic spine. Premiered by Seth Woods at NIME 2014, London UK.

"Heliotubes" for tuned pipes, metal sheet, and interactive lighting - Premiered by the Architek Percussion Quartet, February 2014, Center for Interdisciplinary Research in Music Media and Technology, Montreal, Quebec.

"Finding Maximum Grip" for contrabass and dancer with prosthetic instrument – November, 2013, Cacoyannis Institute, Athens, Greece.

"Herbario Fantastico" for two dancers with prosthetic instruments, live electronics, four musicians, and two visual projection artists – November, 2013, Cacoyannis Institute, Athens, Greece.

"A Rift in the Lute" for solo flute and computer – Premiered by Rachel Bittner June, 2011, BM Recital.

"Just Continue to Move" for the Physical Computing Ensemble – April 2011 Mano a Mano: Ian Hattwick's MFA Recital.

"How Quickly Infinite Becomes Eight" for eight piece chamber ensemble and electric guitar – April 2011 Mano a Mano: Ian Hattwick's MFA Recital.

"Architexture" solo laptop dance accompaniment – December 2-4 2010, New Slate graduate dance performance, Randall Smith, choreographer.

"Digital Studies" for flute, oboe, clarinet, and bassoon – April 2010 New Music Festival, University of Central Missouri – March 2010, University of California, Irvine.

"Dance for Nikola" for violin and piano – May 2010, University of California, Irvine.

"decay:ruin" for solo electric guitar - May 2010, University of California, Irvine.

"Hidden Isthmus" for 11 piece Jazz Ensemble – May 1999 University of Southern California, Los Angeles.

DISCOGRAPHY

2011 *Cycles, Interrupted*, Chris Dobrian. Mixed and Mastered.

2011 Promotional Video, UC Irvine. Producer, Audio Engineer.

2010 Trust the Sky, Paula McMath. Producer, Audio Engineer, Guitarist

2007 Christmas Snowfall, Grono Productions. Producer, Audio Engineer, Composer

2007 IH2, Ian Hattwick. Producer, Audio Engineer, Composer, Guitarist

2006 retrofunk instrumentals, Ian Hattwick. Producer, Audio Engineer, Composer

2006 Handwritten, Ian Hattwick. Producer, Composer, Audio Engineer, Guitar

2005 Exit Terra, Insidium. Producer, Audio Engineer, Composer, Synth, Bass & electronics

2004 Organic Mechanic, Insidium. Producer, Audio Engineer, Composer, Synth & Electronics

2003 Stellar, Ian Hattwick. Producer, Audio Engineer, Composer, Guitar

2001 Action / Reaction, Tanj. Producer, Audio Engineer, Guitar

MUSICAL DIRECTION

2010-11 Physical Computing Ensemble, Irvine, CA.

Founded and directed six-person digital music ensemble.

2008-2011 Elan Artists, Los Angeles, CA.

Music contractor and bandleader for corporate events and weddings.

2006 New Electric Jazz Music Series, Culver City, CA.

Co-produced a New Music concert series at Club Tropical.

2004-2005 Covenant Presbyterian Church, Long Beach, CA.

Contemporary Worship Service Music Director.

Planned weekly worship service, including transcribing and arranging contemporary music, preparing visual presentations, rehearsing and leading four piece ensemble, and directing the youth choir.

2005 Progress Music Series, Los Feliz CA.

Co-produced a six-concert performance series at The Overlook.