Jessica **Thompson**
PhD Candidate in Cognitive Science and Neuropsychology

Contact

International Laboratory
for Research on Brain,
Music and Sound
1420 Boul. Mont-Royal
Université de Montréal
Montréal, Québec
H2V 4P3, Canada

Montreal Institute for
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2929 chemin de la Tour
Université de Montréal
Montréal, Québec
H3T 1J4, Canada

+31 6-26887536
j.thompson@umontreal.ca
http://jessthompson.ca

Languages
English and French

Programming
Python, MATLAB, Java,
shell scripting, LaTeX
Facility with C/C++, SML,
LISP, Presentation,
SPSS Syntax, Max/MSP

Web Programming
Database management
and web application
development using
django, CouchDB,
ElasticSearch, and
PostgreSQL

Software Skills
BrainVoyager, AFNI

Operating Systems
Windows
Linux
OS X

Education

PhD Cognitive Science and Neuropsychology — Université de Montréal **2013–Now**
Supervised by Marc Schönwiesner and Yoshua Bengio

MA Digital Musics — Dartmouth College **2011–2013**
Supervised by Michael Casey

BA Psychology (Hons.), Computer Science, Music Technology — McGill University **2006–2011**
Supervised by Stephen McAdams, Evan Balaban and Robert Zatorre

Research Experience

Department of Cognitive Neuroscience, Maastricht University — Maastricht, The Netherlands **2015–Now**
Visiting Researcher
Use computational modelling and ultra high-field neuroimaging to study the computational mechanisms underlying human auditory perception

International Laboratory for Research on Brain, Music & Sound — Montréal, Canada **2013–Now**
Graduate Researcher
Employ multivariate pattern recognition techniques and fMRI to characterize the representation of spectro-temporal receptive fields in the human auditory cortex

Bregman Media Labs, Dartmouth College — Hanover, USA **2011–2013**
Graduate Researcher
Conducted fMRI and EEG experiments about neural decoding of various acoustic features

Distributed Digital Music Archives and Libraries Lab, McGill University — Montréal, Canada **2008–2011**
Programmer
Developed software in Java and Python for large-scale machine learning and information retrieval services

Auditory Cognitive Neuroscience Lab, Montreal Neurological Institute — Montréal, Canada **2010–2011**
Student Researcher
Assessed the effect of non-independence in region-of-interest (ROI) analysis

MEG Lab, Rotman Research Institute — Toronto, Canada **2010**
Student Researcher
Conducted MEG and behavioural experiments on auditory beating

Department of Psychology, McGill University — Montréal, Canada **2010**
Student Researcher
Explored multivariate statistical data analysis techniques for classification of biosignals

Music Perception and Cognition Lab, McGill University — Montréal, Canada **2008–2009**
Data Analyst
Employed several continuous data analysis techniques to analyse psychophsyiological signals

Other Experience

Faculty of Psychology and Neuroscience, Maastricht University — Maastricht, The Netherlands **2015–Now**
Tutor for PSY2027: Research: How to do it?
Supervise a group of 2nd year undergraduate students while they carry out all aspects of a research project about auditory perception

Women in Machine Learning — Montréal, Canada **2014–2015**
Events and Logistics Chair for the 9th annual workshop
Coordinated sponsorship and made all local arrangements

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Distributed Digital Music Archives and Libraries Lab, McGill University   Montréal, Canada **2010–2011**
Administrative Assistant
Assisted with preparing large-scale grant applications

McGill Psycology Undergraduate Research Journal   Montréal, Canada **2010–2011**
Editor
Reviewed research article submissions

Publications

Journal articles

Human cortical responses to slow and fast binaural beats reveal multiple mechanisms of binaural hearing
Bernhard Ross, Takahiro Miyazaki, Jessica Thompson, Shahab Jamali, Takako Fujioka
Journal of Neurophysiology *112.8 (Oct. 2014) pp. 1871–1884. 2014*

Sound envelope encoding in the auditory cortex revealed by neuromagnetic responses in the theta to gamma frequency bands
Takahiro Miyazaki, Jessica Thompson, Takako Fujioka, Bernhard Ross
Brain Research *1506 (2013) pp. 64–75. 2013*

Population codes representing musical timbre for high-level fMRI categorization of music genres
Michael Casey, Jessica Thompson, Olivia Kang, Thalia Wheatley
Springer Lecture Notes on Artificial Intelligence (LNAI) - Survey of the State of The Art Series *7263 (2012) pp. 34–41. Springer, 2012*

Peer-reviewed conference proceedings

Audio stimulus reconstruction using multi-source semantic embedding
Jessica Thompson, Michael Casey, Lorenzo Torresani
Neural Information Processing Systems (NIPS) workshop on Machine Learning and Interpretation in Neuroimaging (MLINI), 2013, Lake Tahoe, USA

Musical neurosemantic decoding using online weighted approximate-rank pairwise loss optimization in a joint semantic space
Jessica Thompson, Michael Casey, Lorenzo Torresani
Neural Information Processing Systems (NIPS) workshop on Machine Learning and Interpretation in Neuroimaging (MLINI), 2012

Digital document image retrieval using optical music recognition
Andrew Hankinson, John Ashley Burgoyne, Gabriel Vigliensoni, Alastair Porter, Jessica Thompson, Wendy Liu, Remi Chiu, Ichiro Fujinaga
Proceedings of the 13th International Society for Music Information Retrieval Conference (ISMIR), 2012, Porto, Portugal

Additions and improvements to the ACE 2.0 music classifier
Jessica Thompson, Cory McKay, John Ashley Burgoyne, Ichiro Fujinaga
Proceedings of the 10th International Conference on Music Information Retrieval (ISMIR), 2009, Kobe, Japan

Using the ACE XML 2.0 file formats to store and share music classification data
Cory McKay, John Ashley Burgoyne, Jessica Thompson, Ichiro Fujinaga
Proceedings of the 10th International Conference on Music Information Retrieval (ISMIR), 2009, Kobe, Japan

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Posters and abstracts

Reconstructing musical audio features from continuous single-trial EEG
Jessica Thompson, Michael Casey
Annual Meeting of the Organization for Human Brain Mapping (OHBM), 2014, Hamburg, Germany

Music imagery information retrieval: Bringing the song on your mind back to your ears
Sebastian Stober, Jessica Thompson
Proceedings of the 13th International Conference on Music Information Retrieval (ISMIR), 2012, Porto, Portugal

Predicting crowdsourced musical tags from brain activity
Jessica Thompson, Michael Casey, Lorenzo Torresani
Cognitively Based Music Information Retrieval (CogMIR), 2012, Toronto, Canada

Timbre population codes for high-level categorization of music
Michael Casey, Jessica Thompson, Olivia Kang, Thalia Wheatley
Neural Information Processing Systems (NIPS) workshop on Machine Learning and Interpretation in NeuroImaging (MLINI), 2011, Sierra Nevada, Spain

Searching the *Liber Usualis*: Using CouchDB and ElasticSearch to Query Graphical Music Documents
Jessica Thompson, Andrew Hankinson, Ichiro Fujinaga
Proceedings of the 12th International Conference on Music Information Retrieval (ISMIR), 2011, Miami, USA

Transition from Transient to Steady-State Gamma-Band Responses: An MEG Study on Acoustic Beats
Takahiro Miyazaki, Jessica Thompson, Bernhard Ross
Annual Meeting of the Organization for Human Brain Mapping (OHBM), 2011, Québec, Canada

Left and right auditory cortices contribute differently to perception of slow and fast binaural beats
Takahiro Miyazaki, Jessica Thompson, Bernhard Ross
Annual Meeting of the Cognitive Neuroscience Society (CNS), 2011, San Francisco, USA

Behavioural and Neuromagnetic Responses to Peripheral and Central Auditory Beats
Jessica Thompson, Takahiro Miyazaki, Bernhard Ross
NSERC Auditory Cognitive Neuroscience summer workshop, 2010, Hamilton, Canada

Oral Presentations

Reconstructing musical audio features from continuous single-trial EEG
Jessica Thompson
Cognitively-Based Music Information Retrieval (CogMIR) workshop, 2013, Toronto, Canada

Music information retrieval from neurological signals: Towards neural population codes for music
Jessica Thompson
Conference of the Society for Music Perception and Cognition (SMPC), 2013, Toronto, Canada

Experience, perception, and physicality in experimental music: An argument for the role of neuroscience in music phenomenology
Jessica Thompson
Cognitio - Creative Minds: Cognitive Sources of Art and Discovery, 2013, Montreal, Canada

Data analysis of psychophysiological signals
Jessica Thompson, Finn Upham
Centre for Interdisciplinary Research on Music Media and Technology (CIRMMT) Workshop on psychophysiological measurements, 2010, Montreal, Canada

Psychophysiological and behavioural responses to violoations of musical tuning schemas
Jessica Thompson
NSERC-CREATE Auditory Cognitive Neuroscience summer workshop, 2009, Montreal, Canada

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Research theses

Neural decoding of subjective music listening experiences
  Jessica Thompson
  Masters thesis, Dartmouth College, Hanover, USA, 2013, supervised by Prof. Michael Casey

Validating Vul's Voodoo: A Case Study of Bias and Non-independence in Region of Interest Analysis
  Jessica Thompson
  Senior honours thesis, McGill University, Montreal, Canada, 2011, supervised by Prof. Robert Zatorre

Analysis of the Physiological Component of Emotional Responses to Music
  Jessica Thompson
  Junior honours thesis II, McGill University, Montreal, Canada, 2010, supervised by Prof. Evan Balaban

Psychophysiological and Behavioural Responses to Violations of Musical Tuning Schemas
  Jessica Thompson
  Junior honours thesis I, McGill University, Montreal, Canada, 2009, supervised by Prof. Stephen McAdams

Certifications

Scannexus   Maastricht, The Netherlands **May 2015**
Certified User for 7T MRI

Scannexus   Maastricht, The Netherlands **March 2015**
Certified User for 3T MRI

Faculty of Psychology and Neuroscience, Maastricht University   Maastricht, The Netherlands **March 2015**
Problem Based Learning tutor training

Associations

Organization for Human Brain Mapping (OHBM)   **2014–Now**
Student member

Institute of Electrical and Electronic Engineers (IEEE)   **2014–Now**
Student member

Society for Music Perception and Cognition (SMPC)   **2014–Now**
Student member

International Society for Music Information Retrieval (ISMIR)   **2009–2011**
Student member