

Curriculum Vitae
Steven R. Livingstone, Ph. D.

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Education

- 2008 Doctor of Philosophy, Computer Science, The University of Queensland. Thesis: *Changing musical emotions through score and performance with a computational rule system*. Advisors: Ralf Muhlberger, Andrew R. Brown.
- 2003 Bachelor of Information Technology (honours). The University of Queensland. Thesis: *Service Discovery in Pervasive Systems*. Advisor: Jadwiga Indulska.
- 2000 Bachelor of Science, major in physics. The University of Queensland.

Research Interests

Music cognition, speech and music, facial expressions, computational modelling of music processes, motion capture, origins of music, amusia and speech prosody.

Academic Positions

- 2010 – present Postdoctoral Fellow (Marcelo Wanderley and Caroline Palmer). Sequence production lab, Department of Psychology, McGill University.
- 2008/10 – 2009 Postdoctoral Fellow (Caroline Palmer). Sequence production lab, Department of Psychology, McGill University.
- 2008/01 – 2008/10 Postdoctoral Fellow (William F. Thompson). Music cognition lab (manager), Department of Psychology, Macquarie University.
- 2007/06 – 2008/01 Research Assistant, part-time (William F. Thompson). Music cognition lab, Department of Psychology, Macquarie University.
- 2006/02 – 2006/04 Research Assistant, full-time. Australian CRC for Interaction Design and Queensland University of Technology.

Scholarships and Awards

- 2009 NSERC-CREATE Auditory Cognitive Neuroscience: Postdoctoral Scholarship.
- 2004 – 2007 ITEE Research Scholarship, The University of Queensland.
- 2003 DSTC Industry Award, Outstanding Honours Thesis.
- 2000 – 2003 Dean's Commendation (x4), The University of Queensland.

Grants and Experience

- 2008 Minor Equipments Grant (Author), Thompson W. F. (PI), Department of Psychology, Macquarie University, \$5300.
- 2009 – 2012 ARC Discovery (Editor & co-author) "Vocal Emotional Communication". Thompson W. F. (CI), Palmer, C. (PI). \$379,216.
- 2006 Graduate School Research Travel Grant, Steven R. Livingstone (PI), The University of Queensland, \$3500.

Book Chapters

- Livingstone, S. R.**, & Thompson, W. F. (2009). L'apparition de la musique de la théorie d'esprit. In Marc Richelle & Xavier Seron (Eds.). *Musique et Evolution*. Belgium: Pierre MARDAGA Press. In press.

Peer-Reviewed Journal Papers

- Livingstone, S. R.**, Muhlberger, R., Brown, A. R., & Thompson, W.F. (*in press*). Changing musical emotion through score and performance with a computational rule system. *Computer Music Journal*.
- Livingstone, S.R.**, Thompson, W.F., & Russo, F.A. (2009). Facial expressions and emotional singing: A study of perception and production with motion capture and electromyography. *Music Perception*, 26, 475-488.
- Livingstone, S. R.** & Thompson, W. F. (2009). The emergence of music from the Theory of Mind. *Musicae Scientiae*, Special Issue 2009/10 "Music and Evolution", 83-115.
- Livingstone, S. R.**, Muhlberger, R., Brown, A. R., Loch, A. (2007). Controlling Musical Emotionality: An Affective Computational Architecture for Influencing Musical Emotion. *Digital Creativity*, 18, 43-54.
- Livingstone, S. R.** & Thompson, W. F. (2006). Multi-modal affective interaction: A comment on musical origins. *Music Perception*, 24, 89-94.

Papers Under Review

Thompson, W.F., Russo, F.A., & **Livingstone, S. R.** Facial expressions of pitch structure in music performance. *Psychonomic Bulletin & Review*.

Peer-Reviewed Conference Papers

Livingstone, S. R., Schubert, E., Loehr, J. D., & Palmer, C. (2009). *Emotional arousal and the automatic detection of musical phrase boundaries*. Second International Symposium on Performance Science, Auckland, New Zealand.

Livingstone, S. R., Thompson, W.F., Chan, L., & Russo, F.A. (2009). *Facial expressions in emotional song*. Society for Music Perception and Cognition conference. Indianapolis, IN.

Livingstone, S. R., & Brown, A. R. (2005). *Dynamic response: Real-time adaptation for music emotion*. Proceedings of the second Australasian conference on Interactive entertainment. ACM International Conference Proceeding Series, 123, 105-113.

Livingstone, S. R., Brown, A. R., Muhlberger, R. (2005). *Influencing the Perceived Emotions of Music with Intent*. Proceedings of the Third International Conference on Generative Systems in the Electronic Arts, Innocent, Brown, Mc-Cormack, Mcilwain (eds), 119-128.

Livingstone, S. R., Muhlberger, R., Brown, A. R. (2005). *Playing with Affect: Music Performance with Awareness of Score and Audience*. Proceedings of the Australasian Computer Music Conference, 89-95.

Henricksen, K., **Livingstone, S. R.**, Indulska, J. (2004). *Towards a hybrid approach to context modelling, reasoning and interoperation*. UbiComp 1st International Workshop on Advanced Context Modelling, Reasoning and Management, Nottingham (2004), 54–61.

Workshop Presentations

Livingstone, S. R., Loehr, J. D., Palmer, C., & Schubert, E. (2009). *Emotional arousal corresponds with musical phrase structure*. BRAMS Annual Scientific Day, Montreal, Canada.

Livingstone, S. R. (2009). *Changing musical emotion*. Workshop on Expressive Performance, Montreal, Canada.

Livingstone, S. R. (2009). *Changing musical emotion through score and performance with a computational rule system*. Second Music Perception and Cognition Student Colloquium, Montreal, Canada.

Livingstone, S. R., Thompson, W.F., & Russo, F.A. (2009). *Facial expressions in emotional singing*. Workshop on Music, Motion and Emotion, Montreal, Canada.

Thompson, W. F., **Livingstone, S. R.**, Palmer, C. (2008). *Using motion capture to investigate vocal emotional communication*, Leipzig, Germany.

Livingstone, S. R., Muhlberger, R., Brown, A. R. (2006). *Influencing perceived musical emotions: The importance of performative and structural aspects in a rule system.* Music as Human Communication: An HCSNet Workshop on the Science of Music Perception, Performance and Cognition.

Livingstone, S. R., Muhlberger, R., Brown, A. R. (2006). *Music, speech and a Theory of Mind: Investigations with a computational model of musical emotions.* HCSNet Workshop on Human and Machine Speech.

Livingstone, S. R., Muhlberger, R., Brown, A. R. (2006). *The music-emotion lifecycle.* HCSNet Workshop on Perception and Action.

Poster Presentations

Livingstone, S. R. (2008, November). *Changing musical emotion with a computational rule system.* Poster session presented at Workshop on Music and Machine Learning, Montreal, QC.

Invited Talks and Presentations

Livingstone, S. R. (2009). Changing musical emotion with a computational rule system. *CIRMMT, McGill University, Montreal, Canada, May.*

Livingstone, S. R. (2009). Functional data analysis in music cognition. *McGill University, Montreal, Canada, March.*

Livingstone, S. R. & Thompson, W. F. (2008). Amusia and Emotional prosody: Evidence of a shared deficit. *University of Würzburg, Würzburg, Germany, May.*

Thompson, W. F., **Livingstone, S. R.,** & Palmer, C. (2008). Using motion capture to investigate vocal emotional communication. *Max Planck Institute, Leipzig, Germany, May.*

Livingstone, S. R. (2008). Emotions to Amusia. *University of Music and Drama, Hannover, Germany, May.*

Livingstone, S. R. (2007). Influencing the emotions of music with a computational rule system. *University of Jyväskylä, Jyväskylä, Finland, February.*

Livingstone, S. R. (2007). Influencing perceived musical emotions. *Royal Institute of Technology, Stockholm, Sweden, February.*

Livingstone, S. R. (2007). The origins of music from a Theory of Mind. *Royal Institute of Technology, Stockholm, Sweden, February.*

Editorial Activity

2008 Assistant Editor, Empirical Musicology Review.

Research and Computer Skills

Research

Motion Capture (Vicon and NDI), Functional Data Analysis, Experimental Design

Languages and Databases

Matlab, Scheme (LISP), Java, C++/C, MySQL, Oracle

Music

MIDI, Impromptu, Steinberg Wavelab, Audacity, Mackie Tracktion, Praat.

Web Technologies

PHP, JSP, XML, Javascript, HTML

Operating Systems

Windows (Vista to 3.11), Mac OS X, Linux, BSD, DOS.

Research Experience

Post-Doctoral (McGill)

Research in Facial expression in emotional speech and song. Northern Digital Inc. 2-tracker system (Optotrak), Vicon 8 camera system. Analysis of continuous response data, and AI algorithm development. Grant writing, student supervision.

Post-Doctoral (Macquarie)

Manager of Macquarie's Music Cognition Lab. Duties included: installation, management, operation, and data analysis of motion capture installation (Vicon, 8-camera, passive marker system). Coordination of the cross-disciplinary Macquarie Motion Research Group (13 members). Management and coordination of lab personnel (10 members), research projects, and finances. Coordination of regular lab meetings. Creation and maintenance of research mailing lists (2 lists, 24 members). Collaboration and network building with cross-disciplinary researchers in music, imaging, and patient populations. Developed a strong rapport with technical, service and administration personnel.

Doctoral

Development of a computational rule system for changing the emotion of musical works and expressive performance. Heavy research focus on music cognition and emotion. Development of a sophisticated rule system involving MIDI and audio technologies, AI, and high-level procedural programming, hierarchical analysis of music structure. 4 experiments (60 participants), statistical analyses (ANOVA, multinomial logistic regression), and custom-built testing software program and movie tutorials.

Research Assistant

Produced research report on Content Management Systems suitable for large-scale university deployment for the management and assessment music and media resources. Produced research report on status and capabilities of media annotation software for integration with CMS packages.

Undergraduate

B.Inf.Tech.: Extensive experience in software development, with a major in computer networks and distributed systems (honours thesis), minors in complex systems, data structures and algorithms, and concurrent systems. Good experience in multi-tier web development (multiple website development).

B.Sc.: Extensive experience and knowledge of physical systems and modelling, experimental design and analysis.

Teaching Experience

- 2009 Invited lecture: Functional Data Analysis in Music Cognition. *McGill University*, Montreal, Canada.
- 2009 Invited lecture: Evolutionary origins of music. *McGill University*, Montreal, Canada.
- 2004 Introduction to Programming/Software Engineering (tutor)
- 2004 Computer Networks I (tutor). Evaluation: "High Distinction"

Supervision of Student Theses

- 2009 Honours, B.Psych. Amy Price (Secondary Advisor). *An Investigation of the Differences in Perceived and Felt Emotion in Music*.

Academic Affiliations

Society for Music Perception and Cognition