MasonBretan
Ph.D. Candidate, Music Technology

contact

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education

2012–Now	**Ph.D. Candidate** Music Technology	Georgia Institute of Technology
	Minor in Artificial Intelligence	
	Thesis: *Expressive Musical Robots: Methods of Integrating the Cognitive with the Physical for Music Performance*	
2010–2012	**M.S.** Music Technology	Georgia Institute of Technology
2005–2009	**B.A.** Interdisciplinary Computing and the Arts	University of California, San Diego
	Area of focus in Mathematics	

experience

2010–Now	**Georgia Tech**	Atlanta, GA

Graduate Research Assistant
Member of the Robotic Musicianship Group. Research entails development of intelligent music systems based on artificial intelligence, machine learning, and human-robotic interaction.
Research Highlights:
- Led team developing **Robotic Drumming Prosthesis**
- Developed all functionality for the **Shimi** musical companion robot
- Developed interactive improvisation system for marimba playing robot, **Shimon**
- Developed sonification algorithms for **Accessible Aquarium Project**
- Developed sonification algorithms for art installation **Drawn Together**

2009–2010	**Washington University in St Louis, School of Medicine**	St Louis, MO

Software Developer
Worked under Alec N Salt, Ph.D. in the Cochlear Fluids Lab developing software that models fluid movement and distortion products in the inner ear. Software is currently used in Otology labs around the world.

2008	**Calit2-Qualcomm Institute**	La Jolla, CA

Summer Undergraduate Research Scholar
Received a scholarship to investigate music perception through cochlear implants and design new DSP functionality for increased musical interpretation.

teaching

2013	**Interactive Music**	Georgia Tech

As a TA for Gil Weinberg for the graduate level course in interactive music systems I gave each lecture, held office hours, created assignments and graded.

2013	**Music Information Retrieval**	Georgia Tech

As a TA for Alexander Lerch for the graduate level course in music information retrieval I gave lectures on machine learning, created in class assignments for flipped teaching, graded, and held office hours.

2014	**Robotic Musicianship**	Georgia Tech

As a TA for Gil Weinberg for the undergraduate level course in robotic musicianship I advise teams of undergrads doing various projects with our robotic platforms.

awards

2014   **Foley Scholar**   GVU, Georgia Tech
GVU Center is an interdisciplinary computing research center that spans Georgia Tech and is the primary incubator for a dynamic community of research propelling new partnerships with business, national research agencies and other academic experts. The Foley Scholar is the highest honor from GVU and recognizes graduate students for their innovative research and efforts in shaping technology for a broad range of challenges in modern society.

2013   **Foley Scholar Finalist**   GVU, Georgia Tech

2013   **President's Fellowship**   Georgia Tech
Awarded to U.S. citizens pursuing doctoral degrees at Georgia Tech for exemplary levels of scholarship and innovation to the academic departments who host their study and research

2012   **Honorarium**   Google Inc
Commissioned Robotic Musical Performance for Google I/O

2011   **NSF Graduate Research Fellowship Honorable Mention**   Georgia Tech
Recognition to meritous applicants who do not receive Fellowship awards

2009   **ICAM Award for Distinguished Research**   UCSD
Recognition for outstanding undergraduate research in the field of Interdisciplinary Computing and the Arts

2009   **Calit2-Qualcomm Institute Undergraduate Research Scholarship**   La Jolla, CA
Participant in the Summer Scholars research program

'05, '04, '03   **Outstanding Musicianship Award**   Reno Jazz Festival
Recognition for outstanding performance on drum set

2005   **Outstanding Soloist Award**   Santa Cruz Jazz Festival
Recognition for outstanding solo performance on drum set

'05, '04, '03   **Musicianship Award**   Folsom Jazz Festival
Recognition for outstanding performance on drum set

selected performances, installations, and demos

2014   **Geek Picnic**   St Petersburg, Russia
Demo and performance of robotic musicianship (with Gil Weinberg) - Technical duties and performance on guitar

2014   **Atlanta Science Festival**   Kennesaw State University, GA
Demo and performance of robotic musicianship (with Gil Weinberg) - Technical duties and composed robotic dance choreography

2013   **TechCrunch Disrupt**   San Francisco, CA
Invited demonstration of the Shimi robots (with Gil Weinberg and Guy Hoffman)

2013   **TEDx Peachtree**   Atlanta, GA
Performance of the Shimi robot (with Gil Weinberg and Street Lotto) - Technical duties and composed robotic dance choreography

2012   **Google I/O**   San Francisco, CA
Robotic performance showcasing the Shimi robots (with Gil Weinberg) - Technical duties and composed music and robotic dance choreography

2012	**Drawn Together**	Atlanta, GA

2012   **Drawn Together**   Atlanta, GA
Installation at Stubbins Studio Gallery (collaboration between Georgia Tech College of Architecture and OpenEndedGroup)

2006   **Opening for SF Jazz Collective at Mandeville Auditorium**   La Jolla, CA
Performance on drum set (with UCSD Music Faculty)

2006   ***Chance, Discovery, Design***   DVD
Drum set performance on David Borgo's DVD of electroacoustic improvisation

publications

article in peer-reviewed journal

A Robotic Prosthesis for An Amputee Drummer
Mason Bretan, Deepak Gopinath, Philip Mullins, Gil Weinberg
Journal of Human-Robotic Interaction *(in review). Open Journal Systems, in review*

A Survey of Robotic Musicianship: Motivations, Challenges, and Opportunities
Mason Bretan, Gil Weinberg
Communications of the ACM *(in press). ACM, in press*

Emotionally Expressive Dynamic Physical Behaviors in Robots
Mason Bretan, Guy Hoffman, Gil Weinberg
International Journal of Human-Computer Studies *(in press). Elsevier, in press*

Anticipation Based Visual Cues for Human-Robot Percussion Ensemble
Marcelo Cicconet, Mason Bretan, Gil Weinberg
IEEE Robotics and Automation Magazine *(2013). IEEE, 2013*

international peer-reviewed conferences/proceedings

Musical Query by Movement
Jay Clark, Mason Bretan, Gil Weinberg
Proceedings of the 2nd International Conference on Multimedia and Human-Computer Interaction (MHCI '14), 2014, Prague, Czech Republic

Chronicles of a Robotic Musical Companion
Mason Bretan, Gil Weinberg
Proceedings of the 2014 Conference on New Interfaces for Musical Expression (NIME '14), 2014, London, UK

A Reflection of Timing as It Relates to Robotic Musicianship
Mason Bretan, Gil Weinberg
Workshop at 9th ACM/IEEE International Conference on Human-Robot Interaction (HRI '14), 2014, Bielefeld, Germany

Developing and Composing for a Robotic Musician Using Different Modes of Interaction
Mason Bretan, Marcelo Cicconet, Ryan Nikolaidis, Gil Weinberg
Proceedings of the 2012 International Computer Music Conferences (ICMC '12), 2012, Ljubljana, Slovenia

Sonification for the Art Installation Drawn Together
Mason Bretan, Gil Weinberg, Jason Freeman
Proceedings of the 2012 International Conference on Auditory Display (ICAD '12), 2012, Atlanta, GA

Visual cues-based anticipation for percussionist-robot interaction
Marcelo Cicconet, Mason Bretan, Gil Weinberg
7th ACM/IEEE International Conference on Human-Robot Interaction (HRI '12), 2012, Boston, MA

Substances Enter Perilymph Near the Stapes as well as through the Round Window Membrane following Intratympanic Applications in Guinea Pigs
J Hartsock, E Thomas, M Bretan, R Gill, S O'Leary, Salt AN
34th Midwinter Research Meeting of the ARO, 2011, Baltimore, MR

Evaluation of a Ten-Compartment Computer Model of the Inner Ear Fluid Spaces
  AN Salt, J Hartsock, M Bretan, R Gill
  34th Midwinter Research Meeting of the ARO, 2011, Baltimore, MR

technical skills

Java, C++/C, Matlab, Python, Simulink, PHP, MaxMSP, PureData, Android, iOS

interests

interactive music systems, robotics, music information retrieval, natural language processing, statistical machine learning, music performance (jazz and electroacoustic improvisation), composition