

Gil Weinberg – Curriculum Vitae

Education

- 09/99 –
08/03 **Massachusetts Institute of Technology (MIT), Cambridge, MA**
Ph.D. in Media Arts and Sciences
- PhD Thesis: “Interconnected Musical Networks – Bringing Expression and Thoughtfulness to Collaborative Music Making.” Advisor: Tod Machover
- 09/97 –
08/99 **Massachusetts Institute of Technology (MIT), Cambridge, MA**
M.S. in Media Arts and Sciences
- Masters Thesis: “Expressive Digital Musical Instruments for Children.” Advisor: Tod Machover
- 10/90 –
06/94 **Tel Aviv University, Tel Aviv, Israel**
Bachelor of Arts Magna Cum Laude
- The Interdisciplinary Program for Fostering Excellence majoring in music and computer science. Advisor: Yehuda Elkana

Honors and Awards

- 2011
- Invited Speaker - **World Economic Forum in Davos, Switzerland, 2011**
 - Finalist, Best Application Award (for Mashup Artist) – **MIDEM 2011**
 - Nominee – **The Edison Award (2011)**
- 2010
- Best Cognitive Paper Award – IEEE International Conference on Robotics and Automation Conference (**ICRA 2010**)
 - Best Music Video Award – ACM Computer Human Interaction Conference (**CHI 2010**)
 - Finalist, Best Musical Application Award (for ZOOZbeat) – **Billboard Magazine**
 - Keynote Speaker – **Interdisciplinary Center Communication School, Herzelia, Israel**
- 2009
- Best Gadget Award (for ZOOZbeat) – **Kinnernet USA**
 - 2 mentions at the **Oxford Computer Music** handbook as “Field Defining” research in the areas of Musical Networks and Robotic Musicianship
 - Keynote Speaker – **Prostaware Blue Ties Event, Atlanta, GA (2009)**
 - Keynote Speaker – **Southern College Music Society Conference, Orlando, FL (2009)**
- 2008
- Best Robotic Creativity Award, Keynote Speaker – the Association of the Advancement in Artificial Intelligence (**AAAI 2008**)
 - Keynote Speaker – **International Conference on Human Robot Interaction, Munich, Germany (2008)**
 - Keynote Speaker – **European Conference on Complex Systems, Jerusalem, Israel (2008)**
- 2006, 2007
- The Scott Logan Fund for Music Award. **College of Architecture at Georgia Tech.**
 - Keynote Speaker – **College of Music Society, Salt Lake City, UT (2007)**
- 2005
- Best Paper Award – IEEE International Workshop on Robot and Human Interactive Communication (**Ro-Man 2005**)
- 2004
- Outstanding Researcher and Professor Award. **The United States Citizenship and Immigration Services**

- 2003 • Keynote Speaker – **Australian Computer Music Conference**, Perth Australia (2003)
- 1997 – 2003 • Full Tuition and Living Stipend Award - **MIT Media Lab**
• Performances with the **Deutsches Symphonie-Orchester Berlin**, the **National Symphony Orchestra of Ireland**, and the **BBC Scottish Symphony Orchestra**.
- 1994 • Academic Excellence Award. **Israeli Parliament – Kneset**
- 1990 – 1994 • Full Tuition and Living Stipend Award – **Tel Aviv University Interdisciplinary Program for Fostering Excellence**

Professional Experience

08/03 –
Present

Georgia Institute of Technology, Atlanta, GA
Director of Georgia Tech Center for Music Technology
Associate Professor of Music, Adjunct Professor of Computer Science

- **Founder and Director of Georgia Tech Center for Music Technology** – <http://gtcmt.gatech.edu>. Established the Center's mission and vision, raised over \$3M to support projects, hired research assistants and faculty.
- **Director and curriculum developer of the M.S and PhD programs in Music Technology** – Developed multiple new undergraduate and graduate courses, hired faculty and recruited research assistants.
- **Syllabus development and teaching 2003-2010:**
 - Introduction to Music Technology
 - Project Studio in Music Technology
 - Interactive Music
 - Technology Ensemble
 - Music Technology Research Lab

Average teaching grade 4.2 of 5
- **Founder and Director Georgia Tech's International Program in Music Technology** – a student exchange program between Georgia Tech and Queen Mary University in London England.
- **Founder and curator of Georgia Tech's Artist in Residence Program** – The program brings world-class artists to collaborate with Georgia Tech faculty and students in the creation of technological art works.
- **Co-founder and judge of the International Guthman Musical Instrument Competition** – an annual high visibility competition for the best new musical instrument
- **Founder and Curator of the "Listening Machines" concert series** (2005-2010). The concert series features original interactive music projects by Georgia Tech Center for Music Technology students and faculty.
- **Creator of the Robotic Musicianship project** (2006-2012) – an NSF funded project focused on developing musical robots that can listen to human musicians, analyze musical input and improvise in real-time. The robots developed (named Haile and Shimon) have performed in dozens of concert in Asia, Europe and North America to critical acclaim.
- **Creator of ZOOZbeat** – a gesture based mobile music studio, which had over 1.5 Million downloads, and **ZooZ Control** – an iPhone app that converts that phone into a gestural controller for computer games. The technology was licensed to ZOOZ Mobile.
- **Co-creator the Accessible Aquarium project** (2008-2013) – an NSF funded project focused on the design and development of auditory and musical displays that allow the visually disabled to perceive and enjoy dynamic displays. The project involves computer models of music perception and algorithmic composition.

- **Creator of “iltur”** (2004) – a system for collaborative algorithmic composition based on the Beatbug controller. The compositions iltur 1, 2 and 3 were performed in a number of national and international concerts and festivals.
- **Creator of “BrainWaves”** (2004) and **“BrainLoop”** (2007). The projects utilized pattern recognition techniques, audio and graphics to represent neuronal activity in the brain.
- **Reviewer / Committee Member** for the National Science Foundation, Computer Music Journal, Digital Creativity Journal, Journal of Robotics, SIGRRAPH, Advanced Robotic Journal, ACM Computing Survey Journal, the International Computer Music Conference, the International Conference on New Interfaces for Musical Expression, Society for Electro-Acoustic Music in the United States, ACM Computer Human Interface Conference (2003-2011).

06/07 –
present

ZOOZ Mobile, Atlanta, GA
Founder, Chairman and CTO (Formerly CEO)

- **Author and recipient of the NSF Small Business Innovation Research Award (SBIR)**
- **Raised over \$500,000** from private and governmental sources.
- **Hired technical and executive staff**
- **Manages successful public relation and marketing efforts.**
- **Invented and oversaw the development** of “Mashup Artist”, a music creation application based on NSF supported research in Music Information Retrieval.
- **Development and technology transfer from Georgia Tech** of ZOOZ Mobile’s first product line including “ZOOZbeat and “ZOOZ Control”, based on an exclusive licensing of research conducted at Georgia Tech Center for Music Technology.
- Coverage includes NPR, CNN, Wired, Tech Crunch among others
- **Created partnerships** with companies such as the Coca Cola Company, Warner Music, Universal Music, EMI.
- Oversaw over **1.6 million downloads** of products worldwide.

09/97 –
07/03

Massachusetts Institute of Technology, Cambridge, MA
Research Assistant

- **Developed and Composed “Nerve”** (2002-2003) – a music performance and education system using a network of musical controllers called **Beatbugs**. The project was presented at the **Cooper Hewitt National Design Museum**. Concerts and workshops with the Beatbugs were held with the **Boston Modern Orchestra Project, Deutsches Symphonie-Orchester Berlin, the National Symphony Orchestra of Ireland, and the BBC Scottish Symphony Orchestra.**
- **Developed the “Squeezables”** – a multiplayer musical instrument. Cover featured in **Computer Music Journal 2001**. Featured at the **Ars Electronica Festival Linz Austria 2000**.
- **Developed the “Musical Playpen”** – an educational musical installation. Installed at the **Boston Children’s Museum 1999**.

05/94 –
06/97

Music Notes, Tel Aviv, Israel
Director of Product Design

- **Founded MusicNotes’ Multimedia Division.** Supervised a team of software engineers, musicians and graphic designers.
- **Concept and design for “Play-a-Piece”** – an educational music application. Distributed in the United States by **Passport Designs**.
- **Designed “Master Piece”** – a digital music score library. Distributed in Europe by **Schott Press**.

10/94 –
06/95

Tel Aviv University, Israel
Lecturer

- **Founded** the Musicology Department's **Electronic Music Laboratory**.
- Developed and taught the electronic music course.

07/91 –
04/94

Sense Multimedia. Tel Aviv, Israel
Co-Founder and Director

Selected Products:

- **"KaraokeNet"** – an on-line karaoke application.
- **"Atlas Carta"** – Israel maps on CD-Rom (Hebrew).
- **"3rd-Ear" Web site** – an Internet magazine on cinema (Hebrew).

Journal Papers

- 2011 Weinberg. G., Hoffman G., Nikolaidis, R., Mallikarjuna, T. " A Survey of Recent Interactive Compositions for Shimon – The Perceptual and Improvisational Robotic Marimba Player (**in review**)
- Hoffman, G., Weinberg G. "Interactive Improvisation with a Robotic Marimba Player" (**In Review**)
- Nikolaidis, R., Weinberg G. "Generative Musical Tension Modeling and its Application in Dynamic Sonification" (**In Review**)
- 2009-1010 No papers submitted due to the foundation of a company and the submission of patent applications rather than scholarly papers
- 2008 Weinberg G. (2008) "The Beatbug – Evolution of a Musical Controller", **Digital Creativity**, Taylor and Francis Press, pp. 3-18
- 2007 Weinberg G., Godfrey, M., Rea, A., Rhodes, J. (2007) "A Real-Time Genetic Algorithm in Human-Robot Musical Improvisation", **Lecture Notes in Computer Science**, Springer Press, pp. 351-359
- 2006 Weinberg G., Driscoll, S. (2006) "Towards Robotic Musicianship", **Computer Music Journal**, MIT Press. Vol. 30:4, pp. 28-45,
- Weinberg G., Thatcher T. (2006) "Interactive Sonification: Aesthetics, Functionality and Performance", **Leonardo Music Journal**, MIT Press: Vol.16, pp. 9-12,
- 2005 Weinberg G. (2005) "Local Performance Networks – Musical Interdependency through Gestures and Controllers" **Organized Sound**, Cambridge University Press 10:3, pp. 255-267.
- Weinberg G. (2005) "Voice Networks – Exploring the Human Voice as a Creative Medium for Musical Collaboration" **Leonardo Music Journal**, MIT Press: Vol. 15. pp .23-26.
- Weinberg G. (2005) "Interconnected Musical Networks – Towards a Theoretical Framework" **Computer Music Journal**, MIT Press. 29:2, pp. 23-39.
- 2003 Weinberg G. (2003) "Playpens, Fireflies, and Squeezables – New Musical Instruments for Bridging the Thoughtful and the Joyful" **Leonardo Music Journal**, MIT Press: Vol. 12, pp. 43-51.

- 2001 Weinberg G., and Gan S. (2001) "The Squeezables: Toward an Expressive and Interdependent Multi-player Musical Instrument" **Computer Music Journal**, MIT Press: Vol. 25:2, pp.37-45.
- 1999 Weinberg G. (1999) "The Musical Playpen: An Immersive Digital Musical Instrument" **Personal Technologies Journal**, London: Springer-Verlag Publication: Vol.3:3 pp.132-136.

Refereed Conference Papers

- 2011 Albin, A., Senturk, S. Van Troyer, A., Blosser, B., Jan. O, Weinberg. G. (2011) "Beatscape, a mixed virtual-physical environment for musical ensembles" submitted to **Proceedings of International Conference on New Instruments for Music Expression (NIME 11)**
- 2010 Weinberg, G., Nikolaidis, R., and Mallikurjuna, T. (2010) "A Survey of Recent Interactive Compositions for Shimon – The Perceptual and Improvisational Robotic Marimba Player" **The International Conference on Intelligent Robots and Systems (IROS 2010)**, Taipei, Taiwan
- Nikolaidis, R., and Weinberg G. (2010) "Playing with the Masters: A Model for Interaction between Robots and Music Novices", The 19th **International Symposium on Robotics in Music and Art (RO-MAN 10)**, Viareggio, Italy.
- Hoffman, G., and Weinberg G. (2010) "Synchronization in Human-Robot Musicianship", The 19th **International Symposium on Robot and Human Interactive Communication (RO-MAN 10)**, Viareggio, Italy.
- Hoffman, G. and Weinberg, G. (2010) "Gesture-based Human-Robot Jazz Improvisation", to appear in Proceedings of the **IEEE International Conference on Robotics and Automation (ICRA 10)**, Anchorage, AK.
- Huang, K., Starner, T., Do, E., Weinberg, G., Kohlsdorf, D, Ahlrichs, C. and Leibrandt, R. "Mobile Music Touch: Mobile Tactile Stimulation For Passive Learning," Proceedings of **International ACM Computer Human Interaction Conference (CHI 10)**, Atlanta, GA.
- Weinberg, G., Godfrey, M., Beck, A. (2010) "ZOOZbeat – Mobile Music Recreation," Extended Abstracts Proceedings of **International ACM Computer Human Interaction Conference (CHI 10)**, Atlanta, GA.
- Hoffman, G., Weinberg, G. (2010) "Shimon: An Interactive Improvisational Robotic Marimba Player," **Extended Abstracts Proceedings of International ACM Computer Human Interaction Conference (CHI 10)**, Atlanta, GA.
- 2009 Weinberg, G., Blosser B., Mallikarjuna, T., Ramen (2009) "Human-Robot Interactive Music in the Context of a Live Jam Session," in the **Proceedings of International Conference on New Instruments for Music Expression (NIME 09)**, Pittsburgh, PA, pp. 70-73.
- Weinberg, G., Beck, A., Godfrey M. (2009) "ZooZBeat: a Gesture-based Mobile Music Studio" in the Proceedings of **International Conference on New Instruments for Music Expression (NIME 09)**, Pittsburgh, PA.
- Weinberg, G., Blosser B. (2009) "A Leader-Follower Turn-taking Model Incorporating Beat Detection in Musical Human-Robot Interaction" in the **Proceedings of the ACM/IEEE International Conference on Human Robot Interaction**, (HRI 2009) San Diego, CA.

- Weinberg, G., Mallikarjuna, T., Ramen (2009) Interactive Jamming with Shimon: A Social Robotic Musician, ” in the Proceedings of the **ACM/IEEE International Conference on Human Robot Interaction, (HRI 2009)** San Diego, CA, pp. 233-234
- 2008 Weinberg, G. (2008) “Bluetaps – Transforming Cell Phones into Expressive and Gestural Musical Instruments ” the **Proceedings of International Conference on Intelligent Technologies for interactive entertainment (INTERTAIN 08)**, Cancun, Mexico.
- 2007 Weinberg, G., Godfrey, M., Rae, A., and Rhoads, J. (2007) “Real Time Genetic Algorithm In Human-Robot Musical Improvisation”, **Proceedings of International Computer Music Conference (ICMC 2007)**, Copenhagen, Denmark, pp. 192-195.
- Weinberg, G. (2007) “The Design of a Perceptual and Improvisational Robotic Marimba Player”, **Proceedings of IEEE International Workshop on Robot and Human Interactive Communication (RO-MAN 2007)**, Jeju, Korea, pp. 132-137.
- Weinberg, G. (2007) “Introducing Pitch, Melody and Harmony into Robotic Musicianship”, **Proceedings of the International Conference on New Interfaces for Musical Expression (NIME 2007)**, New York City, NY, pp. 228-233.
- Weinberg G., Driscoll, S. (2007) “The Interactive Robotic Percussionist: New Developments In Form, Mechanics, Perception and Interaction”, **Proceeding of the ACM/IEEE international conference on Human-robot interaction (HRI 2007)**, Arlington, VA. pp. 97-104.
- 2006 Weinberg G., Driscoll S. Thatcher T. (2006) “Jam'aa - A Middle Eastern Percussion Ensemble for Human and Robotic Players”, **Proceedings of International Computer Music Conference (ICMC 2006)**, New Orleans, LA, pp. 464-467,
- Weinberg G., Freeman, J., Chordia, P., Clark, F., Moore, C., Driscoll S. Thatcher T. (2006) “The Music Technology Group at Georgia Tech – Studio Report”, **Proceedings of International Computer Music Conference (ICMC 2006)**, New Orleans, LA, pp. 413-416,
- Thatcher T., Jimison D., Goetzinger J., Freeman J., Weinberg G. (2006) “Mobile Networked Music Demonstration: Sequencer404”, **Proceedings of International Computer Music Conference (ICMC 2006)**, New Orleans, LA, p. 544.
- Weinberg G., Thatcher, T. (2006) “Interactive Sonification of Neural Activity”, **Proceedings of the International Conference on New Instruments for Musical Expression (NIME 2006)**, Paris, France, pp. 246-249.
- Weinberg G., Driscoll S. (2006) “Robot-Human Interaction with an Anthropomorphic Percussionist”, **Proceedings of International ACM Computer Human Interaction Conference (CHI 2006)**, Montréal, Canada, pp. 1229-1232.
- 2005 Weinberg G., Driscoll S., Parry M. (2005) “Haile – An Interactive Robotic Percussionist”, **Proceedings of International Computer Music Conference (ICMC 2005)**, Barcelona, Spain, pp. 622-625.
- Weinberg G., Driscoll S., Parry M. (2005) “Musical Interactions with a Perceptual Robotic Percussionist”, **Proceedings of IEEE International Workshop on Robot and Human Interactive Communication (RO-MAN 2005)**, Nashville, TN, pp. 456-461.

- Weinberg G., Driscoll S. (2005) "Iltur – Connecting Novices and Experts Through Collaborative Improvisation", **Proceedings of Conference on New Interfaces for Musical Expression (NIME 2005)**, Vancouver, Canada, pp. 17-22.
- 2004 Weinberg G., Clark F. (2004) "Georgia Tech Music Department – Studio Report", **Proceedings of International Computer Music Conference (ICMC 2004)**, Miami, Florida, pp. 119-122.
- Weinberg G. (2004) "Voice Networks – Exploring the Human Voice as a Creative Medium for Musical Collaboration", **Proceedings of International Computer Music Conference (ICMC 2004)**, Miami, Florida, pp. 623-626.
- 2002 Weinberg G. (2002) "The Aesthetics, History, and Future Challenges of Interconnected Music Networks", **Proceedings of International Computer Music Conference (ICMC 2002)**, Göteborg, Sweden, pp. 349-356.
- Weinberg G., Aimi R., and Jennings, K. (2002) "The Beatbug Network – A Rhythmic System for Interdependent Group Collaboration", **Proceedings of New Instruments for Musical Expression Conference (NIME 2002)**, Dublin, Ireland, pp.107-111.
- 2000 Weinberg G., Lackner T., and Jay J. (2000) "The Musical Fireflies - Learning About Mathematical Patterns in Music Through Expression and Play", Proceedings of XII Colloquium on Musical Informatics (CMI 2000), A'quila, Italy, pp. 146-149.
- Weinberg G., Orth M., and Russo P. (2000) "The Embroidered Musical Ball: A Squeezable Instrument for Expressive Performance", **Proceedings of the International Computer Human Interface Conference (CHI 2000)**, The Hague, Netherlands, pp. 283 – 284.
- 1998 Weinberg G., Fletcher R., and Gan S. (1998) "The BabySense Environment - Enriching and Monitoring Infants' Experiences and Communication", **Proceedings of the International Computer Human Interface Conference (CHI 1998)**, Los Angeles, CA, pp. 325-326.

Book Chapters

- 2011 Gouyon, F., Nakadai, K., Sollis, J., Weinberg, G., Okuno, H. (Eds) Music Content Processing by and for Robots, Journal of Audio, Speech and Music Processing, to be published Hindawi Publishing Corporation
- 2010 Hoffman, G., Weinberg, G. (2010) "Interactive Improvisation with a Robotic Marimba Player", to be published in ", Solis, J. and Ng K., (Eds.) **Musical Robots and Interactive Multimodal Systems**, New York: Springer Press.
- 2008 Weinberg, G. (2008) "The Music Box", in Turkle S. (Ed.) **Objects in Mind: Falling for Science, Technology and Design**, Cambridge MA: MIT Press, pp. 118-119.
- Weinberg, G. (2008) "Extending the Musical Experience – From the Digital to the Physical and Back", in Seifert W., Hyun Kim J. and Moore A. (Eds.) **Paradoxes of Interactivity – Perspectives for Media Theory, Human-Computer Interaction, and Artistic Investigations**, Bielefeld, Germany: Transcript Verlag Press, pp 298-325.
- 2007 Weinberg, G. (2007) "Musical Interactions Between Humans and Machines" in Lazinica, A. (Ed.) **Human-Robot Interaction**, Vienna, Austria: Ars Press, pp. 423-444.

2007 Weinberg, G. (2007) "Musical Interactions Between Humans and Machines" in Ladinica, A. (Ed.) **Human-Robot Interaction**, Vienna, Austria: Ars Press, pp. 423-444.

Weinberg, G. (2007) "The Robotic Percussionist - Bringing Interactive Computer Music into the Physical World", in Sick, A. and Lishca C. (Eds.) **Machines as Agency – Artistic perspectives**, Bielefeld, Germany: Transcript Verlag Press, pp. 66-82.

Theses

2003 Weinberg G. (2003) "Interconnected Musical Networks – Bringing Expression and Thoughtfulness to Collaborative Music Making", **PhD Thesis**, MIT Media Laboratory, Cambridge, MA.

1999 Weinberg G. (1999) "Expressive Digital Musical Instruments for Children", **M.S Thesis**, MIT Media Laboratory, Cambridge, MA.

Utility Patent Applications

2008 Gestural generation, sequencing and recording of music on mobile devices. USPTO Application #: 20090027338 (1/29/09) was incorporated into US Patent Application 12/178,496 that was filed on 7/23/2008.

Detection of User Gestures with a Personal Mobile Communication Devices. USPTO Application #: 12178496 (1/29/09) was incorporated into US Patent Application that was filed on 7/23/2008.

Provisional Patent Applications

2010 Nano-Piezo Coating for Musical Instruments, which is the subject of GTRC Invention Disclosure number 5179

2009 Sequencer Cloud: Musical collaboration among multiple mobile devices which is the subject of GTRC Invention Disclosure number 4772.

2008 "BlueMic", which is the subject of GTRC Invention Disclosure number 4368 and U.S. Provisional Patent Application Number 61/013,360

"Embedding the Bluetooth HID Protocol in Mobile Devices, to allow for Gestural Communication with Computers and Video Games", which is the subject of GTRC Invention Disclosure number 4388 and U.S. Provisional Patent Application Number 61/021,181

"Bluetaps-itaps – A method for transforming off-the-shelf cell phones into wireless gestural controllers for music", which is the subject of GTRC Invention Disclosure number 4452 and U.S. Provisional Patent Application Number 61/036,300

2007 "Bluemotion", which is the subject of GTRC Invention Disclosure number 4254 and U.S. Provisional Patent Application Number 60/951,558

"Gesture Blue", which is the subject of GTRC Invention Disclosure number 4325 and U.S. Provisional Patent Application Number 60/982,205

Grants

2010 Title: **Multi Modal Music Intelligence for Robotic Musicianship**, Principal Investigator and sole author, Amount Funded: **\$456,724**. Project Sponsor: **National Science Foundation**, Purpose: Development of a visual and

Title: **Computational system for music analysis and re-synthesis**: Author and recipient (NSF regulations do not allow professor to serve as P.I on SBIR proposals). Amount Funded: **\$175,000** Project Sponsor: **National Science Foundation**, Purpose: Development of music analysis and re-synthesis technology for ZOOZ Mobile's new product line.

Title: **The Robotic Musician Supplemental**, Role: Principal Investigator and sole author, Amount Funded: **\$41,184**. Project Sponsor: **National Science Foundation**, Purpose: Development of a perceptual robotic musician based on music analysis and improvisation models.

Title: **Georgia Tech Center for Music Technology**. Role: Principal Investigator and sole author, Amount Funded: **\$69,100**. Sponsor: **Georgia Tech Provost's Office**.

Title: **Musical Tension: a study of the tonal organization of pitch**. Role: Principal Investigator, Amount Funded: **\$10,000**. Sponsor: **Georgia Tech's Center for Advanced Brain Imaging**

2009 Title: **The Accessible Aquarium**. Role: Co-Principal Investigator, *Amount* Funded: **\$1,200,005**, Project Sponsor: **National Science Foundation**, Purpose: Research and development of a perceptual robotic musician based on music analysis and improvisation models.

2008 *Title: The Accessible Aquarium (SEGR), Role: Co-Principal Investigator, Amount* Funded: **\$87,000**, Project Sponsor: **National Science Foundation**, *Purpose: Research and development of a perceptual robotic musician based on music analysis and improvisation models.*

2007 Title: **Gesture Blue** Role: Principal Investigator and sole author, Amount: **\$50,000**, Project Sponsor: **Georgia Research Alliance**, Purpose: Research and development of musical applications for mobile devices.

Title: **The Robotic Musician**, Role: Principal Investigator and sole author, Amount Funded: **\$449,090**, Project Sponsor: **National Science Foundation**, Purpose: Research and development of a perceptual robotic musician based on music analysis and improvisation models.

Title: **The Center for Musical Instruments Composition and Applications (MICAP)** Role: Principal Investigator and co-author, Amount Funded: **\$150,000** Project Sponsor: **Colleges of Architecture, Computing, Engineering and the Vice Provost of Research Office at Georgia Tech** Purpose: The establishment of a research center.

2006 Title: **The Master of Science in Music Technology**, Role: Principal Investigator and co-author Amount Funded: **\$100,000** Project Sponsor: **Georgia Tech Foundation** Purpose: The establishment of the MSMT program and the Music Technology Research Lab.

2004 Title: **Robotic Musicianship** Role: Principal Investigator, Amount Funded: **\$35,400**, Project Sponsor: **The Gvu Center at Georgia Tech**, Purpose: Graduate student's tuition and stipend for 9 month.

Title: **Interactive Musical Systems**, Role: Principal Investigator and sole author, Amount Funded: **\$9,140** Project Sponsor: **Georgia Tech Foundation**, Purpose: The development of an interactive music system for Jazz improvisation.

Invited Presentations

- 2011
- “Mashup Artist and the Robotic Musician” - **Google IO** (invited for the May 10 2011 event)
 - “The Rise of the Robo Sapiens” – **The World Economic Forum, Davos, Switzerland, Jan 29, 2011**
 - “Robotic Musicianship” – **Telfair Museum Art and Technology Festival, Savannah, GA, Jan 21, 2011**
- 2010
- “Playing with the Masters” – **Super Computing Conference 10, New Orleans, LA, Nov 13-19 2010**
 - “Enriching the Musical Experience” – **Israel Consulate, Atlanta, Sep 30, 2010.**
 - “Music Technology Panel” – Panel Organizer and presenter. **Future Media Fest, Atlanta, GA Oct 5, 2010.**
 - “Enriching the Musical Experience” – **Georgia Tech Business School, Atlanta, GA, Sep 30, 2010.**
 - “Reinventing the Musical Experience” – **Queen Mary University, Center for Digital Music, London, England, June 30 2010**
 - “Reinventing the Musical Experience” – **The Interdisciplinary Center (IDC) Communication School, Herzelia, Israel, June 23, 2010 (Keynote)**
 - “Robotic Musicianship” – **Musenet 2010** , Petach Tikva, Israel, June 18, 2010
 - “Expanding the Musical Experience – from the Digital to the Physical and back,” **Cape Town University School of Music, Cape Town, South Africa, June 2, 2010**
 - “Enriching Human and Robotic Musicianship” – **The 2nd Guthman Musical Instrument Competition, Atlanta GA, Feb 17, 2010**
 - “New Avenues of Music Expression” – **The Walker School, Atlanta GA Feb 18, 2010. Guest Lecture Series**
 - “Music Technology Research at Georgia Tech” – **The Reinsch Pierce Auditorium, Atlanta GA Jan 29 2010. Grand Opening Event**
- 2009
- “Robotic Musicianship” – **SIGGRAPH Asia, Yokohama Japan December 18, 2009. Invited Presentation**
 - “Expanding the Musical Experience – from the Digital to the Physical and back” – **MIT Media Lab, Cambridge, MA, November 11, 2009.**
 - “Mobile and Robotic Music” – **Georgia Tech Homecoming Alumni event, Atlanta GA., October 14, 2009.**
 - “New Avenues for Musical Expression” **Prostaware Blue Ties Event, The Ritz Carlton, Atlanta, GA , September 14 2009. Keynote Address**
 - “Perceptual and Improvisatory Musical Robots” – **Kinnernet USA, Washington DC, May 09, 2009.**
 - “Expanding the Musical Experience” – **Southern College Music Society Conference, Orlando, FL, February 27, 2009. Keynote Address**
 - “From Musical Robots to Musical Cell Phones” - **FOO CAMP, Cambridge MA, March 28, 2009.**

- 2008
- “Towards Robotic Musicianship” **Association of the Advancement in Artificial Intelligence (AAAI)**, Chicago IL, July 14, 2008. *Keynote Address*.
- “Expanding the Musical Experience – from the Digital to the Physical and back,” **Microsoft Research**, Seattle, WA, July 21, 2008.
- “Robotic Musicianship,” **The international Conference on Human Robot Interaction**, Munich Germany, August 2, 2008. *Keynote Address*
- “Expanding the Musical Experience,” **European Conference on Complex Systems** Jerusalem Israel, September 18, 2008. *Keynote Address*
- “Metrics of Revulsion,” **College Music Society Conference**, Atlanta GA, September 27, 2008. Panelist
- “Human Robot Interaction in a Musical Context,” **Academy of Science - Chinese-American Kavli Frontiers of Science Conference**, Irvine CA, October 2, 2008. Presenter
- 2007
- “Perceptual Musical Robots”, Center of Automation and Autonomous Systems, **Technical University of Munich**, Munich, Germany, November 20, 2007.
- “Extending the Musical Experience - from the Physical to the Digital and back”, **College of Music Society and the Association for Technology in Music Instruction Annual Conference, Salt Lake City, UT**, November 16, 2007, *Keynote Address*.
- “New Instruments for Musical Expression” **Music Technology Mesh-up Symposium, Shfayim, Israel**, June 29, 2007.
- “Extending the Musical Experience - from the Acoustic to the Electronic and back”, **The University of Pompeu Fabra, Barcelona, Spain**, June 14, 2007.
- “Expanding Music Performance” College of Architecture Dean Symposium, **Georgia Tech, Atlanta, GA**, March 3, 2007.
- “Enhancing Musical Expression through technology” **Digital Life Design Conference, Munich, Germany**, January 22, 2007.
- 2006
- “Interactive Musical Robots” **Robots at Play Festival, Odense, Denmark**, September 14-16, 2006.
- “Jam’aa – an Interactive Drum Circle with a Robotic Percussionist” **ACM SIGGRAPH 2006, Boston, MA**, August 2, 2006.
- “Listening Machines” **MIT Media Lab, Cambridge, MA**, August 1, 2006.
- “Towards Robotic Musicianship”, the **International Symposium for Music, Art, and Robotics (SMART), Bremen, Germany**, June 14, 2006.
- “Music Technology – the Art and the Science” **Hamaabada New Art Center, Jerusalem, Israel**, March 18, 2006.
- 2004 – 2005
- “The Music Technology Program at Georgia Tech” **The Institute for Interdisciplinary Applications of Computer Science, University of Haifa, Haifa, Israel**, June 26, 2005.
- “Interconnected Musical Networks” **Computer Science Department Hebrew University, Jerusalem, Israel**, July 12, 2004.
- 2003
- “Interconnected Musical Networks” **Australian Computer Music Conference, Perth, Australia**, July 6, 2003. *Keynote Address*.

“Collaborative Creation Tools – the Case of Interconnected Musical Networks”
IBM Research Laboratory, Haifa, Israel, June 22, 2003.

“Musical Networks” **Mitsubishi Electric Research Lab, Cambridge, MA**,
March 14, 2003.

“Interconnected Musical Networks – Bringing Expression and Thoughtfulness
to Collaborative Music Making” **Music Department, McGill University,**
Montréal, Canada, January 12, 2003.

“The Toy Symphony” **The annual conference of the Public Broadcast
Service (PBS), Miami, Florida**, January 8, 2003.

“Hyperinstruments – New Approaches for Music Technology” **Canadian
Undergraduate Technology Conference, Toronto, Canada**, January 17,
2003.

Compositions and Performances

- 2011
- “**Bafana**” (for a robotic and a human marimba players)
- Will be premiered at the Sonic Generator Concert, Woodruff Art Center, Atlanta GA, March 16, 2011
- “**Playing with the Masters**”
Performed at the Pulse Art and Technology Festival, **Telfair Museum**, Savannah, GA, Jan 21, 2011
- 2010
- “**Playing with the Masters**” (for a human iPhone / Piano player and a robotic marimba player)
- Performed at the **USA Science & Engineering Festival**, Washington D.C. October 23-24, 2010.
 - Performed at the **MIT Media Lab 25 year Celebration**, Boston, MA. October 16 2010.
 - Performed at the **Bumbershoot Festival**, Seattle, WA. September 4-6, 2010.
- “**Jordu / Paper Moon**” (with Guy Hoffman and Ryan Nikolaidis, for a pianist and a robotic marimba player)
- Performed at **ACM CHI Media Showcase Concert**, Atlanta, GA. April 15, 2010.
 - Performed at the **Gala Event for the Digital Design Life Conference (DLD)**, Munich, Germany, January 24, 2008.
- “**ZOOZbeat**” (Featuring Cato’s “Do it Like Your Bday”)
- Featured at the **ACM CHI Video Showcase**, Atlanta, GA. April 14, 2010.
- 2009
- “**Shimon and ZOOZbeat: Improvising Robotic Musician you can Jam with**” (with Guy Hoffman and Ryan Nikolaidis)
- Performed at **ACM SIGGRAPH Asia Emerging Technology**, Yokoham, Japan, December 16-19.
- “**Function Forming Fashion**” (With Ryan Nikolaidis and Sriram Visnawathan)
- Musical Interaction for Tristan El Hadad’s Installation for the **Centennial Celebration for the Georgia Tech College of Architecture**, Atlanta GA, April 25, 2009.
- 2008
- “**Jam’aa**” – for two Darbuka drums and a robotic drum player.
- Performed at the International Artificial Intelligence Conference, Chicago, IL, July 14 2008

- 2007
- “**Svobod**” – for saxophone, piano and a robotic xylophone player.
- Juried performance at International Conference of Computer Music (**ICMC 2007**), **Copenhagen, Denmark**, August 31, 2007.
 - Performed at Georgia Tech **Guest Artist Concert Series, Atlanta GA**, March 8, 2007.
- “**iltur for Haile**” – for a Jazz Quartet and a robotic xylophone player.
- Performed at the **Listening Machines Concert, Atlanta, GA**, April 6, 2007.
- “**Brain Loop**” – for piano, guitar and interactive video.
- Performed at the **Listening Machines Concert, Atlanta, GA**, April 6, 2007.
- 2006
- “**Jam’aa**” – for two Darbuka drums and a robotic drum player
- Performed at the “**Robots at Play festival**”, **Odense, Denmark**, September 14-16, 2006. (4 concerts).
 - Performed at the **Sonic Generator Concert, Atlanta, GA**, November 14, 2006.
 - Juried performance at the International Conference and Exhibition on Computer Graphics and Interactive Techniques (**ACM SIGGRAPH 2006**), **Boston, MA**, August 1-3, 2006 – two performances.
 - Juried performance at the International Conference on New Interfaces for Musical Controllers (**NIME 2006**), **Paris, France**, June 4, 2006.
 - Performed at the International **SMART Symposium, Bremen, Germany**, June 8, 2006.
 - Commissioned by and performed at **Hamaabada New Art Center, Jerusalem, Israel**, March 25, 2006.
- 2005
- “**Pow**” – for a perceptual robotic percussionist and a human player.
- Performed at the **Listening Machine Concert, Atlanta, GA**. January 22, 2005.
 - Juried interactive installation at the International Conference of Computer Music (**ICMC 2005**), **Barcelona, Spain**, September 2005.
 - Demonstrated at the IEEE International Workshop on Robot and Human Interactive Communication (**Ro-Man 2005**) **Nashville, TN**, August 14, 2005.
- “**Brain Waves**” – an interactive performance based on the sonification of neural activity.
- Performed at the **Listening Machine Concert, Atlanta, GA**, January 22, 2005.
- 2004 – 2005
- “**iltur**” – three compositions for a jazz ensemble and Beatbug controllers.
- Performed at the Mega Beat festival **Hamaabada New Art Center, Jerusalem, Israel**, March 25, 2006.
 - Demonstration at the International Conference on New Interfaces for Musical Expression (**NIME 2005**) **Vancouver, Canada**. May 27, 2005.
 - Performed at and the **Listening Machine Concert Atlanta, GA**. January 22, 2005.
 - Juried Performance at the International Conference of Computer Music (**ICMC 2004**) **Miami, FL**. November 3, 2004.
 - Performed at the **NWEAMO Festival San Diego, CA**. October 27, 2004.
- 2002 – 2006
- “**Nerve**” – A composition for an interconnected musical network using the Beatbug controllers.

- Performed at **Casa da Musica Porto, Portugal**, March 18, 2006.
 - Performed with the **Boston Modern Orchestra Project, New York, NY**, May 17, 2003.
 - Performed with the **Boston Modern Orchestra Project, Boston, MA**, April 26, 2003.
 - Performed with the **BBC Scottish Symphony Orchestra Glasgow, Scotland**, June 2, 2002.
 - Performed with the **National Symphony Orchestra of Ireland Dublin, Ireland**, April 9, 2002.
 - Premiered with the **Deutsches Symphonie-Orchester Berlin, Germany**, February 24, 2002.
- 2001 **“Fish and Chips”** – Interactive electro acoustic composition.
- Commissioned by Ars Electronica, 2001. With the SymbioticA group. Linz Austria. September 7-12, 2001.
- 2000 **“Digital Concrete”** – Electronic composition.
- Featured in the TC&A project - Ars Electronica, 2000. Linz Austria. September 2-7, 2000.
- “Squeezable Music”** – Electronic composition.
- Featured in the TC&A project - Ars Electronica, 2000. Linz Austria, September 2-7, 2000.
- “Embroidered Musical Ball”** – Interactive electronic composition.
- Tokyo Toy Fair, Japan, May 2000.
- 1997 **“Landscape Chamber”** – World/electronic music project and album. With Boaz Bareket, Guy Michael and Oded Shechter, Tel Aviv, Israel.
- 1996 **Musical Clips** – Music for Israeli television, Channel 2. Tel Aviv, Israel.
- 1995 **“Shalom Columbus”** – Music for a theatre play. Bet Zvi Theatre Company. Tel Aviv, Israel.
- 1994 **“Yo 42”** – A symphonic composition for the Jerusalem Broadcast Service Symphonic Orchestra. Jerusalem, Israel.

Museum and Gallery Exhibitions

- 2009 **“ZOOZbeat”** – Exhibited as part of “On the flip side,” **Spruill Gallery**, Atlanta GA, September 25 - November 7, 2009
- “Video Retrospective of Interactive Music Projects”** – Exhibited as part of “Breaking New Ground,” **Spruill Gallery**, Atlanta GA - May 8 - June 28, 2009.
- 2006 Consultant to **“Soundscapes”**, a computer-controlled musical instruments exhibition at the **King David Tower Museum, Jerusalem, Israel**, September-December 2006.
- 2004 **“The Beatbugs”** – Exhibited as part of the “National Design Triennial: Inside Design Now.” **Cooper Hewitt National Design Museum, New York, NY**. April 22, 2003 through January 25, 2004.
- 2002 **“The Beatbugs”** – Exhibited as part of “Invention at Play”– a traveling exhibit originated by the **Smithsonian National Museum of American History and the Science Museum of Minnesota**, July 15, 2002.
- 1999 **“The Musical Playpen”** – An interactive musical environment for children. **Boston Children’s Museum**, April 1999.

Curatorship / Competitions / Workshops

- 2011 Founder and curator – **Artist in Residence Program**, Georgia Tech. Inaugural artists – The Open Ended Group, Feb 2011-Feb 2012
- 2010 Concert Curator, **Future Media Fest**, Atlanta, GA, Oct 5, 2010
- Co-chair the Robotic Musicianship Session. The 19th **International Symposium on Robotics in Music and Art (RO-MAN 10)**, Viareggio, Italy. Sep 14, 2010
- Workshop organizer and Concert Curator at Music Tech – collaboration between Georgia, **Atlanta Public School System and Woodruff Art Center**. Atlanta, GA, July 6-15, Concert July 16 2010
- Curator and Judge at the **2nd Guthman Musical Instrument Competition**, Georgia Tech Center for Music Technology, Atlanta, GA, February 26-27, 2010.
- 2009 Co-organizer / Curator at the **1st Guthman Musical Instrument Competition**, Georgia Tech Center for Music Technology, Atlanta, GA, February 26-27, 2010.
- Curator of “Listening Machines 2009” – An artistic-musical collaboration between the Music Technology and the Digital Media Programs at Georgia Tech. The **Eyedrum Gallery, Atlanta, GA**, April 17, 2009.
- 2008 Curator of “Listening Machines 2008” – An artistic-musical collaboration between the Music Technology and the Digital Media Programs at Georgia Tech. The **Eyedrum Gallery, Atlanta, GA**, April 24, 2008.
- 2007 Curator of “Listening Machines 2007” – An artistic-musical collaboration between the Music Technology and the Digital Media Programs at Georgia Tech. The **Eyedrum Gallery, Atlanta, GA**, April 6, 2007.
- 2006 Curator of “Listening Machines 2006” – A concert featuring interactive compositions from Georgia Tech students and faculty that explore the manners in which machines can improvise and collaborate with humans. **Hamaabada Art Center, Jerusalem, Israel**, March 18, 2006.
- 2005 Curator of “Listening Machines 2005” – A concert featuring interactive compositions from Georgia Tech Music Technology Group that investigate how machines can be responsive, surprising, and sensitive musicians. **The Eyedrum Gallery, Atlanta, GA**, January 22, 2005.

Products

- 2011 Concept design and development for “**Mashup Artist**” – an application allows users to experience their musical library in a whole new way by easily creating new original songs out of samples of songs you own
- 2010 Concept design and development for “**Zoozbeat Jackson 5**” – a remix application for iPhone and iPod Touch featuring 5 of hits from the Jackson 5
- 2009 Concept design and development for “**ZOOZbeat Sprite**” – a partnership between the Coca Cola Company and ZOOZ Mobile to feature emerging urban artists on the ZOOZbeat platform

- 2008 Concept design and development for “**ZOOZbeat**” – A gesture-based mobile music studio for Nokia phones, iPhone an iPod Touch. 100,000 downloads from Apple App Store.
- Concept design and development for “**ZOOZbeat lite**” – A free version of ZOOZbeat, the gesture based mobile music Studio. 1,500,000 Million downloads from Apple App Store
- Concept design and development “**ZOOZ Control**” – An iPhone application that transforms your phone into a gesture-based wireless PC game controller
- 1995 Concept design and development for “**Master Piece**” – a digital music score library. Distributed in Europe by **Schott Press**.
- 1994 Concept design and development for “**Play-a-Piece**” – an educational music application. Distributed in the United States by **Passport Designs**
- 1993 Concept design and development for “**KaraokeNet**” – an on-line karaoke application.
- 1992 Concept design and development for “**Atlas Carta**” – Israel maps on CD-Rom

Selected Reviews

- 2011 “Shimon is a real, center stage, jazz-playing musician, What makes Shimon exciting is not only that it can provide new levels of entertainment and expression, but that it is reaching new heights of human-robot interaction and artificial intelligence.
*Thomas Marsh “Georgia Tech’s Shimon Can Jam” **Robot Magazine**, January 2011*
- 2010 “Zooz Mobile makes a suite of music-creation apps for the iPhone that have impressed us with their precision and versatility, but what makes (ZOOZbeat Jackson 5 app) special is that it includes fully licensed stems for five songs from the band’s heyday.”
*Eliot Van Buskirk, “The Jackson 5 appear at SXSW...as an iPhone APP” **Wired.com** March 19 2010*
- 2009 “The good people at NPR All Things Considered asked readers, and me in particular, to comment if Shimon "can jam like a jazz great, or if he has the musical ability of a soulless machine." The answer, of course, is both. This robot certainly knows its John Coltrane and Thelonious Monk well enough. We call Coltrane and Monk inimitable, but their idiosyncrasies don't transcend the laws of physics. A sufficiently precise computer program could study the salient parts of their various approaches and create models to replicate them -- in fact, one just did.”
*Patrick Jarenwattananon, **NPR Jazz Blog**, December, 22, 2009*
- “ZOOZbeat, helps anyone – regardless of musical talent or lack thereof – create songs by selecting instruments from a list and then waving his or her phone around.”
*John D. Sutter, **CNN.com**, October 19 2009*
- “We've seen an orchestra's worth of robotic musicians, but we've yet to see one that integrates this perfectly into a piece without any human intervention. Shimon... recently made its stage debut by sensing the music from a piano and reacting accordingly in order to provide complementary percussion. What you're left with a robot musician that goes beyond call-and-response and actually meshes with the Earthling's playing throughout.”
*Darren Murph, “Robotic marimba player grooves autonomously with jazz pianist” **Engadget**, April 26, 2009*

- 2008
- “Zooz Mobile, a small, commercial venture consisting of professor Gil Weinberg of Georgia Tech and graduate students from its Center for Music Technology, has built a powerful, entertaining application for the iPhone and iPod Touch that lets anyone make loops of music of varying complexity.”
*Eliot Van Buskirk, “Robots Pass Musical Turing Test” **Wired.com**
December 15 2008*
- “Awesomeness: ZOOZ Mobile has just released a Nokia N95-compatible version of its flagship application ZOOZBeat, which turns your phone into a gesture-based mobile musical studio. I tested the iPhone version, which is as addictive as it is entertaining.”
*Robin Wauters “ZOOZBeat Turns Your Phone Into A Music Studio”
Tech Crunch / Washington Post, November 14 2008*
- “The Robotic Musicianship Group at Georgia Tech Center for Music Technology just blew our minds with some videos depicting robots playing music with real people.”
*Eliot Van Birs Kirk, “Robots Pass Musical Turing Test” **Wired.com**
November 21 2008.*
- 2007
- “(The Robotic Percussionist) sounded just great and the drummer droid went down a storm at the 2006 Computer Human Interaction Conference in Montreal, Canada. Gil Weinberg and his team have done it again.”
*Paul Marks, “Drummer Droid” **The New Scientist** May 08 2007.*
- “Gil Weinberg has been jamming at concerts all over the world with his invention, Haile the drum-playing robot. The robot has done so well he has taken up a new instrument — the xylophone.”
*Kirsten Tagami, “Georgia Tech Robot Grabs Attention of Federal Agency”, **Atlanta Journal-Constitution**, August 23 2007.*
- 2006
- “It was great fun to watch and hear the two-armed robotic drummer, Haile, jam with two humans, each had a drum, each listened, reacted, improvised. Here the electronics were inside Haile's brain and her drumming was made in acoustic space... the future is now.”
*Pierre Ruhe, “Sonic Generator Concert”, **Atlanta Journal Constitution**, November 11, 15, 2006.*
- “Gil Weinberg and Scott Driscoll of the Georgia Institute of Technology recently unveiled Haile, an anthropomorphic percussionist that can listen to beats, analyze them, and jam along. Haile is already a revolution in interactivity and continued proof that man and machine really can make beautiful music together.”
*Daniel Becker, “FFW ETC” **Resonance Magazine**, April 2006.*
- “The implementation and motivation of (iltur) is consistent with Mr. Weinberg's fine reputation. As an artist and scholar, he seems fittingly concerned with issues of accessibility and the transmission of ideas.”
*Jamie Allen, Margaret Schedel, and John P. Young “NIME Concert Review” **Computer Music Journal** Vol. 30 Issue 2, MIT press
January 2006.*

"Haile is cool. It doesn't have a face but it has listening skills and it will happily join and improvise with live players. For demonstration, one of Weinberg's students played the darbuka. The robot pulled out its arms and gave its own version to the sound of the drum. Real improvisation."

Yossi Harsonsky "Music Critic" Maariv Newspaper, March 22 2006.

"One of the more well-known musical controllers is the Beatbug, a hand-held gadget with piezo sensors that respond to tapping. The Beatbugs work best in packs, as Israeli-born Gil Weinberg, who is an MIT graduate and now director of a new music-technology program at Georgia Tech, demonstrated in a new system called 'iltur'."

Paul Lehrman "Tomorrow's Musicians and What They Will be playing" Sound On Sound Magazine January 2006.

2005

"(Created by) Gil Weinberg Assistant Professor and Director of Music Technology at the Georgia Institute of Technology (Haile's) real magic happens in the improvisatory algorithm through which the robot responds to your playing."

Peter Kirn "Robot Drummer Responds to Human Playing; How They Did It" Creating Digital Music December 14, 2005.

"Gil Weinberg's iltur 1 consisted of a jazz trio and two "beatbug" players who smacked hand-held plastic objects to capture and transform the music being played by a pianist. This was fundamentally a demonstration of an interesting collaborative technique...."

Dan Hosken "ICMC Concert Review" Computer Music Journal Vol. 29 Issue 2, MIT press July 2005.

2004

"(The Beatbug workshop is an) overwhelmingly positive experience either from the musical, social and personal standpoint... the experience provided a good foundation on which to build one's musicianship, social skills, self-confidence, and general learning dispositions focusing, listening, and practicing."

Svetlana Nikitina, "Toy Symphony Report" Harvard University, School of Education Report January 2004.

2003

"Perhaps, if children's hands are speaking to their brains during violin practice, they are shouting: "Help! Get me out of here!." I don't know what they're saying when they play with Beatbugs and Music Shapers, but I'll bet they're laughing with pleasure."

James Gorman "Playing Music as a Toy, and a Toy as Music" in the New York Times June 3, 2003.

"Nerve, by Gil Weinberg, in which six older children tossed rhythms back and forth among networked Beatbugs, was engaging and interactive."

Heidi Waleson "With Gadgets and Fun, Toy Symphony Lures Kids" the Wall Street Journal May 21, 2003.

"Gil Weinberg's Nerve, created for rhythm computers called "beatbugs," had verve and propulsive energy."

Keith Powers "Toy Symphony Review" the Boston Herald, April 28, 2003.

"Gil Weinberg's Nerve for six children, two adult percussionists, and eight networked beatbugs brought down the house with sheer rhythmic exhilaration."

Richard Dyer "Toy Brings Joy Of Music To Life" in the Boston Globe, April 28, 2003.

