

Sang Won Lee

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Areas of specialization

Human Computer Interaction (HCI), Computer Music, Live Coding, Human Computation, Social Computing, Music Information Retrieval

Education

Present	PHD in Computer Science, University of Michigan, Ann Arbor, MI (supervisors : Prof. Walter Lasecki, Prof. Georg Essl)
2014	MASTER in Computer Science, University of Michigan, Ann Arbor, MI
2012	MASTER in Music Technology, Georgia Tech, Atlanta, GA (Thesis Committee : Jason Freeman (supervisor), Gil Weinberg, & Ellen Yi-Luen Do)
2010	MASTER in Management Science and Engineering, Stanford University, Stanford, CA
2007	BACHELOR in Industrial Engineering, Seoul National University, Seoul, South Korea

Grants, honors & awards

May. 2017	Selected as a HCIC-Funded Student in University of Michigan to participate in HCIC 2017 “Design Future”.
Feb. 2017	Received Rackham Predoctoral Fellowship , University of Michigan. Fellowships include a stipend of \$32,640, candidacy tuition and required fees for twelve months.
Dec. 2016	Selected as a finalist of Adobe Research Fellowship (2016).
Nov. 2016	Selected as a finalist of Annual CSE Graduate Honors Competition, Computer Science and Engineering, University of Michigan, Ann Arbor, MI.
Oct. 2016	Received Student Travel Grant for ICLC 2016 (International Conference on Live Coding), Hamilton, Canada
Oct. 2016	Received HCOMP 2016 Doctoral Consortium Travel Grant 2016 (International Conference on Human Computation and Crowd-sourcing), Hamilton, Canada

- Sep. 2016 *Live Writing: Gloomy Streets* Received **ICMA Music Award** (student) at the International Computer Music Conference (over 600 submissions)
- Oct. 2016 Received **ICMA** 2016 Student Travel Grants (International Computer Music Conference), Utrecht, Netherlands
- Apr. 2016 Received **WAC** 2016 Student Travel Grants (Web Audio Conference), Atlanta, Georgia, U.S.A.
- Feb. 2015 *Aural Cavity* selected as a semi-finalist in Guthman Musical Instrument Competition 2015.
- Feb. 2015 Received 2016 Student Travel Grants for the Guthman Musical Instrument Competition, Atlanta, Georgia, U.S.A.
- May 2013 *Improvisation on a live-coded mobile musical instrument using urMus* Received the 3rd prize in Live Programming Demo Contest in International Conference on Software Engineering (**ICSE**) 2013
- Sep. 2012 Received **CSE Fellowship**, University of Michigan. Fellowships include monthly stipend, tuition and required fees for twelve months. (\$71,854)
- Nov. 2011 *LOLC* performance awarded **Best Artwork** in ACM Creativity and Cognition Conference 2011
- Nov. 2011 *Crossole* chosen as a finalist in Georgia Tech Research and Innovation Conference (GTRIC).

Academic Experience

- 2012–Present Graduate Research Assistant, University of Michigan, Ann Arbor
- 2013–Present Graduate Student Instructor, University of Michigan, Ann Arbor
- User Interface Development
 - Fall 2016 with Prof. Walter Lasecki
 - Fall 2015 with Prof. Mark Ackerman
 - Winter 2014 with Prof. Mark Ackerman
 - Intelligent Interactive Systems, Winter 2016 with Prof. Emily Mower Provost.
 - Interactive Computer Graphics, Fall 2014 with Prof. Sugih Jamin.
- 2013–Present Grader, University of Michigan, Ann Arbor
- Acoustics and Psychoacoustics, Winter 2013–Present with Prof. Sile O’Modhrain
- 2010–2012 Graduate Research Assistant, Georgia Institute of Technology
- funded by NSF CreativeIT Grant 0855758
- 2009 Tutor, Office of Accessible Education, Stanford University
- 2005–2007 Research and Teaching Assistant, Human Factors Lab., Seoul National University

Book Chapter

- [B.1] **Lee, S. W.**, Taylor, B., Essl G., “Interactive Music with Web Audio”, *Foundation in Sound Design for Interactive Media* (working).

Journal and Conference Proceedings

- [P.28] **Lee, S. W.**, Zhang, Y., Wong, I., Yang Y., O’Keefe, S., Lasecki, W.S. “SketchExpress: Remixing Animations For More Effective Crowd-Powered Prototyping Of Interactive Interfaces.”, In Proceedings of the ACM Symposium on User Interface Science and Technology (**UIST**). Quebec City, Canada, 2017.
- [P.27] Essl, G., **Lee, S. W.**, “Mobile Devices as Musical Instruments - State of the Art and Future Prospects.”, In Proceedings of the International Symposium on Computer Music Multidisciplinary Research (**CMMR**), Matosinhos, Porto, Portugal, 2017.
- [P.26] **Lee, S. W.**, Bang, J., Essl, G., “Live Coding YouTube Videos : Organizing Streaming Media for an Audiovisual Performance.”, In Proceedings of the International Conference on New interface for Musical Expression (**NIME**), Copenhagen, Denmark, 2017.
- [P.25] Chen, Y., **Lee, S. W.**, Xie, Y., Yang, Y., Lasecki, W., Oney, S. “Codeon: On-Demand Software Development Assistance” In Proceedings of the ACM Conference on Human Factors in Computing Systems (**CHI**) Denver, CO, 2017.
- [P.24] Essl, G., **Lee, S. W.** “The Design of urMus as a Meta-environment for Mobile Music” Journal of Creative Music Systems (**JCMS**), Vol. 1. Issue 2 , 2017.
- [P.23] **Lee, S. W.**, Scott, J. “Word Level Lyrics-Audio Synchronization Using Separated Vocals”, International Conference on Acoustics, Speech and Signal Processing (**ICASSP**). New Orleans, 2017.
- [P.22] **Lee, S. W.**, Essl, G. “Live Coding the Audience Participation.” In Proceedings of the International Conference on Live Coding (**ICLC**), Hamilton, Canada, 2016.
- [P.21] Blackwell, A. F., Cox, G., **Lee, S. W.** “Live Writing the Live Coding Book.” In Proceedings of the International Conference on Live Coding (**ICLC**), Hamilton, Canada, 2016.
- [P.20] **Lee, S. W.**, Essl, G., Martinez, M., “Live Writing: Writing as a Real-time Audiovisual Performance.” In Proceedings of the International Conference on New interface for Musical Expression (**NIME**), Brisbane, Australia, 2016.
- [P.19] Carvalho, A. D., **Lee, S. W.**, Essl, G. “Understanding Cloud Service in the Audience Participation Music Performance of Crowd in C[loud].” In Proceedings of the International Conference on New interface for Musical Expression (**NIME**), Brisbane, Australia, 2016.
- [P.18] **Lee, S. W.**, Carvalho, A. D., Essl, G. “Crowd in C[loud] : Audience Participation Music with On-line Dating Metaphor using Cloud Service.” In Proceedings of the Web Audio Conference (**WAC**), Atlanta, Georgia, 2016.
- [P.17] **Lee, S. W.**, Essl, G. “Live Writing: Asynchronous Playback of Live Coding and Writing.” In Proceedings of the International Conference on Live Coding (**ICLC**), Leeds, United Kingdom, 2015.
- [P.16] Carvalho, A. D., **Lee, S. W.**, Essl, G. “SuperCopair: Collaborative Live Coding on Supercollider through the cloud.” In Proceedings of the International Conference on Live Coding (**ICLC**), Leeds, United Kingdom, 2015.
- [P.15] **Lee, S. W.**, Essl, G. “Web-Based Temporal Typography for Musical Expression and Performance.” In Proceedings of the New Instruments for Musical Expression (**NIME**), Baton Rouge, United States, 2015.
- [P.14] **Lee, S. W.**, Essl, G. “Models and Opportunities for Networked Live Coding.” In Proceedings of The Live Coding and Collaboration symposium 2014, Birmingham, United Kingdom, 2014.
- [P.13] **Lee, S. W.**, Essl, G. “Communication, Control, and State Sharing in Networked Collaborative Live Coding.” In Proceedings of the New Instruments for Musical Expression (**NIME**), London, United Kingdom, 2014.

- [P.12] **Lee, S. W.**, Essl, G., Mao, Z. M. “Distributing Mobile Music Applications for Audience Participation Using Mobile Ad-hoc Network (MANET).” In Proceedings of the New Instruments for Musical Expression (**NIME**), London, United Kingdom, 2014.
- [P.11] **Lee, S. W.**, Freeman, J. “Real-time Music Notation in Mixed Laptop-Acoustic Ensembles.” Computer Music Journal (**CMJ**) 37:4, Winter, MIT Press, 2013.
- [P.10] **Lee, S. W.**, Essl, G. “Live Coding The Mobile Music Instrument.” In Proceedings of the International Conference on New Instruments for Musical Expression (**NIME**), Daejon-Seoul, South Korea, 2013.
- [P.9] **Lee, S. W.**, Freeman, J. “echobo : a Mobile Music Instrument Designed for Audience To Play.” In Proceedings of the International Conference on New Instruments for Musical Expression (**NIME**), Daejon-Seoul, South Korea, 2013.
- [P.8] **Lee, S. W.** “Audience Participation Using Mobile Phones as Musical Instruments.” Master’s Thesis, Georgia Tech. Available at <http://hdl.handle.net/1853/44749>, 2012.
- [P.7] **Lee, S. W.**, Freeman, J., Collela, A. . “Real-Time Music Notation, Collaborative Improvisation, and Laptop Ensembles.” In Proceedings of the International Conference on New Instruments for Musical Expression (**NIME**), Ann Arbor, MI. 2012.
- [P.6] **Lee, S. W.**, Srinivasamurthy, A., Tronel, G., Shen, W., Freeman, J. “Tok! : A Collaborative Acoustic Instrument using Mobile Phones.”, In Proceedings of the International Conference on New Instruments for Musical Expression (**NIME**), Ann Arbor, MI. 2012.
- [P.5] S. Şentürk, **Lee, S. W.**, A. Sastry, Daruwalla, A., Weinberg, G. “Crossole: a Gestural Interface for Composition, Improvisation and Performance using Kinect.”, In Proceedings of the International Conference on New Instruments for Musical Expression (**NIME**), Ann Arbor, MI. 2012.
- [P.4] **Lee, S. W.**, Freeman, J., Collela, A., Troyer, A. and Yao, S. “Evaluating Collaborative Laptop Improvisation with LOLC.” (Presentation) In Proceedings of the Symposium on Laptop Ensembles and Orchestras 2012, Louisiana State University, LA, 2012.
- [P.3] **Lee, S. W.**, Freeman, J., Collela, A. , Yao, S., Troyer, A. “Collaborative Musical Improvisation in a Laptop Ensemble with LOLC.”, In Proceedings of the ACM Creativity & Cognition (**CC**), Atlanta, GA, 2011.
- [P.2] Kim, Y., **Lee, S. W.**, Lee, D. H., Kim, J. and Lee, M. W. “Sound Detection as an Aid to Increase Detectability of CCTV in Surveillance System.” Lecture Notes in Computer Science Volume 4560/2007 Springer Berlin / Heidelberg, 2007.
- [P.1] Park, W., Kim, D., Kim, K., **Lee, S. W.**, Lee, M.W., “A method for forecasting demand of High Touch product using matrix analysis of target populations and product functions.” Journal of the ESK (Ergonomics Society of Korea) Vol. 26, No. 1. ESK., 2007.

Posters, Demo, Consortium Paper, and Refereed Presentation

- [S.8] **Lee, S. W.**, Chen, Y., Klugman, N., Gouravajhala, S. R., Chen, A., Lasecki, W.S., “Exploring Coordination Models for Ad Hoc Programming Teams”, the ACM Conference on Human Factors in Computing Systems (**CHI**) 2017. Denver, CO ,2017.
- [S.7] **Lee, S. W.**, Carvalho, A. D., Essl, G. “Crowd in C[loud] : Audience Participation Music with Online Dating Metaphor using Cloud Service.”, Invited as an Encore Track Paper at the AAAI Conference on Human Computation and Crowdsourcing (**HCOMP** 2016), Austin, TX, 2016.
- [S.6] **Lee, S. W.**, Yang Y., Yan, S., Zhang, Y., Wong, I., Tan, Z., McGruder, M., Homan, C., Lasecki, W.S.

“Creating Interactive Behaviors in Early Sketch by Recording and Remixing Crowd Demonstrations.”, In AAAI Conference on Human Computation and Crowdsourcing (**HCOMP** 2016), Austin, TX, 2016.

- [S.5] **Lee, S. W.** “Integrating Asynchronous Interaction into Real-time Collaboration for Crowdsourced Creation.” Doctoral Consortium, In AAAI Conference on Human Computation and Crowdsourcing (**HCOMP** 2016), Austin, TX, 2016.
- [S.4] **Lee, S. W.**, Essl, G., *Hooking up Web Audio to WebGL Typography* in Web Audio Conference (**WAC**). Atlanta, GA, 2016.
- [S.3] **Lee, S. W.**, Hejazi, C., Yoshioka, B., “Improvisation on a live-coded mobile musical instrument using urMus.”, Demo Presented. In the First International Workshop on Live Programming in conjunction with ICSE, San Francisco, CA , 2013.
- [S.2] Freeman, J., **Lee, S. W.**, Yao, S., Albin, A. “LOLC for Laptop Music Ensemble.” Panel Discussion in “Creativity and Improvisation” session at ACM Creativity & Cognition(**CC**), Atlanta, GA, 2011.
- [S.1] Albin, A., **Lee, S. W.**, Chordia, P. “Visual Anticipation Aids in Synchronization Tasks.”, the Society for Music Perception and Cognition 2011 University of Rochester, NY, 2011.

Music Performances, Artwork, & Composition

- Aug. 2017 Upcoming Performance: *Live Coding YouTube* accepted at the Web Audio Conference (**WAC**) 2017. London, United Kingdom. 2017
- Aug. 2017 Upcoming Performance: *Live Writing: Gloomy Streets* accepted at the Toronto International Electroacoustic Symposium (**TIES**) 2017. Toronto, ON, Canada. 2017
- May. 2017 Performed: *Live Coding YouTube* accepted at in International Conference on New Interface for Musical Expression(**NIME**) 2017. Copenhagen, Denmark. 2017
- May. 2017 Presented *DISAPPEARING : Live Writing*, collaborated with D. Andrew STEWART, accepted at in International Conference on New Interface for Musical Expression(**NIME**) 2017. Copenhagen, Denmark. 2017
- May. 2017 Performed Performance: *Live Writing: Gloomy Streets* accepted at CHI Art Program, the ACM Conference on Human Factors in Computing Systems (**CHI**) 2017. Denver, CO. 2017
- Mar. 2017 Performed *Live Coding YouTube* in Performing Arts Technology Showcase 2017. McIntosh Theatre, University of Michigan.
- Oct. 2016 Performed *Crowd in C[loud]* in International Conference on Live Coding(**ICLC**) 2016. Hamilton, Canada.
- Sep. 2016 Performed *Live Writing: Gloomy Streets* in International Conference on Computer Music(**ICMC**) 2016. Utrecht, Netherlands. - **Won ICMA 2016 Music Award (Student)**
- July. 2016 Performed *Live Writing: Gloomy Streets* in the International Conference on New Interface for Musical Expression(**NIME**) 2016. Brisbane, Australia.
- Apr. 2016 Performed *Crowd in C[loud]* in Web Audio Conference (**WAC**) 2016. Atlanta, Georgia.
- Apr. 2016 Composed and Presented *Live Writing: Shatter*, Written and Performed by HoneyLess in Web Audio Conference (**WAC**) 2016. Atlanta, Georgia.
- Aug. 2015 Performed *Aural Cavity* in International Conference on Computer Music(**ICMC**) 2015. Denton, Texas.

- Apr. 2015 Composed and Presented *Live Writing: Reflection*, Performed by HoneyLess in Michigan Mobile Phone Ensemble: Final Class Concert 2015, Stamps Auditorium
- Apr. 2015 Performed *Crowd in C[loud]* in Michigan Mobile Phone Ensemble: Final Class Concert 2015, Stamps Auditorium
- Mar. 2015 Performed *Live Writing: Gloomy Streets* in Performing Arts Technology Showcase 2015. Britton Recital Hall, University of Michigan.
- Feb. 2015 Performed *Aural Cavity* in Guthman Musical Instrument Competition, Georgia Tech.
- Mar. 2014 Performed *Aural Cavity* in Performing Arts Technology Showcase 2014. Britton Recital hall, University of Michigan.
- Mar. 2014 Performed *Aural Cavity* in Final Concert of Interactive Media Design. Design Lab 1, University of Michigan.
- Apr. 2013 Performed *Improvisation on a live-coded mobile music instrument* in Michigan Mobile Phone Ensemble: Final Class Concert 2013, Stamps Auditorium
- Apr. 2013 Performed *T'ai Chi Theremin* in Michigan Mobile Phone Ensemble: Final Class Concert 2013, Stamps Auditorium
- May 2012 Performed *Where Are You Standing?* by Bongjun Kim, Woon Seung Yeo in the International Conference on New Interface for Musical Expression (**NIME**) 2012 at University of Michigan
- Apr. 2012 Performed *Music Slave (Mobile Choir)* in Listening Machines 2012, Georgia Tech., Atlanta, GA.
- Apr. 2012 Performed *echobo* in Listening Machines 2012, Georgia Tech., Atlanta, GA.
- Feb. 2012 Performed *SGLC* by Jason Freeman in Sonic Generator Concert (Video), Woodruff Art Center, Atlanta, GA
- Nov. 2011 Performed *LOLC* in ACM Creativity and Cognition Conference 2011, Atlanta. - **Won Best Art-work Award**
- May 2011 Performed *LOLC* in the International Conference on New Interface for Musical Expression (**NIME**) 2011 at University of Oslo, Norway.
- Apr. 2011 Performed *Crossole* in Listening Machines 2011 at Stubbins Gallery, Georgia Tech., Atlanta, GA.
- Mar. 2011 Exhibited *Stickies Music* in Sonic Generator Concert at Woodruff Art Center, Atlanta, GA.
- Oct. 2010 Performed *LOLC* in FutureMedia Fest 2010 at Georgia Tech, Atlanta, GA.
- Oct. 2010 Performed *BeatScape* in FutureMedia Fest 2010 at Georgia Tech, Atlanta, GA.

Workshop, Exhibition, & Misc.

- June 2017 Led "POSSE Workshop: Making Music in Programming using EarSketch." (Workshop) @ POSSE Foundation, 2017, Ann Arbor, MI, United States.
- May 2017 Ran Workshop "Setting up and running a Mobile Phone Orchestra" @ the International Conference on New interface for Musical Expression (**NIME**) 2017, Copenhagen, Denmark
- July 2016 Led "POSSE Workshop: Making Music in Programming using EarSketch." (Workshop) @ POSSE Foundation, 2016, Ann Arbor, MI, United States.
- Sep. 2011 Exhibited *Crossole* in Atlanta Maker Faire.
- June 2011 Led *LOLC* workshop with local gifted high school students in Hands On Tech (H.O.T.) Camp

May 2011 Exhibited *Stickies Music* in GT Salon Exhibition at Hinman Building, Georgia Tech.

Professional Experiences

- 2015 Research Intern, Media Technology Lab., Gracenote Inc.
• Developed a lyric-audio alignment system using voice synthesis and vocal separation.
- 2014 Web Programmer/Designer, Massachusetts General Hospital
• Developed an interactive website that enables researchers to manage contents. (<http://cfsib.com>)
- 2010-2011 Web Programmer/Designer, Stanford University
• Developed an interactive website that enable researchers to retrieve genome-wide expression data of patients. (<http://gluegrant1.stanford.edu/DIC>)
- 2010 Database Engineer, TrimTabs Investment Research.
• Developed of a system and database for crawling, storing, and reporting on data of insider transactions.
- 2009-2010 Independent Contractor, DamnTheRadio Inc.
• Implemented a web crawler to collect live performance data from an online ticketing site.
- 2009-2010 Tech. Desk Consultant, Stanford University
• Provided technical support for students in multimedia studio of Meyer library.
- 2009 Financial Technology Intern, TrimTabs Investment Research
• Created and tested scripts for automating Exchange Traded Fund (ETF) report production.

Service to the profession

- 2017-2018 Michigan Interactive and Social Computing Research Group (MISC) student coordinator.
- 2017-2018 Tool Curating Administrator in CROMALab
- 2017 Paper Reviewer (**CSCW** 2018)
- 2017 Paper Reviewer (**Leonardo Music Journal**)
- 2017 Paper & Note Reviewer (**CHI** 2017)
- 2017 Student Volunteer (**CHI** 2017)
- 2017 Run Research and Development tutorials in CROMALab
- 2016-2017 MTurk/Upwork/hiring-platform support in CROMALab
- 2016-Present Paper Reviewer, the International Society for Music Information Retrieval Conference (**ISMIR**)
- 2016-Present Program Committee (paper reviewer), Web Audio Conference (**WAC**), Atlanta, GA
- 2016-Present Paper Reviewer (**UIST** 2016)
- 2015-Present Program Committee (paper reviewer), International Conference on New Interfaces for Musical Expression (**NIME**)
- 2015-Present Program Committee (paper reviewer), International Conference on Live Coding (**ICLC**)
- 2016 Program Committee member of Works-in-progress & Demonstration Papers, AAAI Conference on Human Computation and Crowdsourcing (**HCOMP** 2016)
- 2016 Paper Reviewer for the International Journal of Performance Arts and Digital Media
- 2014 Reviewer, EAI Endorsed Transactions on Creative Technologies.

2013 Music Jury, International Conference on Computer Music (ICMC), Perth, Australia
2012 Reviewer, International Conference on Auditory Display (ICAD), Atlanta GA

Advisees

Jungho Bang (Master, University of Michigan)
Roshan Narayan (Undergraduate, University of Michigan)
Zhengxi Tan (Undergraduate, University of Michigan)
Isabelle Wong (Undergraduate, University of Michigan)
Yin Xie (Master, University of Michigan)
Yiwei Yang (Undergraduate, University of Michigan)
Yujin Zhang (Undergraduate, University of Michigan / Master, University of Illinois Urbana-Champaign)

References

Walter Lasecki

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