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Center for Computer Research in Music and Acoustics (CCRMA)
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RESEARCH INTERESTS

Artful design; computer music; programming languages and interactive software design; human-computer interaction; virtual reality design (VR, AR, XR); laptop orchestra; computer-mediated performance; sound synthesis and analysis; toy and game design; audiovisual design; mobile music; human-in-the-loop artificial intelligence, philosophy of design and aesthetics of technology; education at intersection of engineering, art, the humanities, and social sciences.

EDUCATION

<u>Degree</u>	<u>Institution</u>	<u>Date</u>	<u>Field</u>
Ph.D.	Princeton University Department of Computer Science Thesis: <i>The Chuck Audio Programming Language: A Strongly-timed and On-the-fly Environ/mentality</i> Advisor: Perry R. Cook	2008	Computer Science
M.S.	Princeton University Department of Computer Science Advisor: Perry R. Cook	2003	Computer Science
B.S.	Duke University Department of Computer Science	2000	Computer Science
High School	Shawnee Mission South High School, Overland Park, KS	1996	-

SELECTED WORKS: DESIGN, SOFTWARE, PUBLICATIONS

Book: *Artful Design: Technology in Search of the Sublime*

Wang, G. 2018. *Artful Design: Technology in Search of the Sublime (A MusiComic Manifesto)*. Stanford University Press. (ISBN: 1503600521) <http://artful.design/>
(2016 Guggenheim Fellowship recipient)

Design: ChuckK Music Programming Language

Chief designer and architect. 2003–present | A programming language for real-time sound synthesis and music creation. At the core of ChuckK is a unique way of thinking about time and deterministic concurrency as powerful, precise mechanism for crafting sound and physical interactions (we call this strongly-timed). Designed for digital artists and musicians. <http://chuck.stanford.edu/>

Wang, G., P. R. Cook, and S. Salazar. 2015. “ChuckK: A Strongly-timed Computer Music Language.” *Computer Music Journal*. 39(4):10-29.

Wang, G. 2008. *The ChuckK Audio Programming Language: A Strongly-timed and On-the-fly Environ/mentality*. PhD Thesis, Princeton University.

Kapur, A., P. R. Cook, S. Salazar, G. Wang. 2015. *Programming for Musician and Digital Artists: Making Music with ChuckK*. Manning Press. (ISBN: 1617291706)

Design: Ocarina and Ocarina 2

Inventor and chief designer. Smule 2008 and 2012 | One of the original Apple Hall of Fame apps, Ocarina transformed the iPhone into a flute-like instrument, while offering a social dimension that allows its users to hear one another anonymously around the world. With more than 10 million downloads, Ocarina combines physical interaction design and social experimentation that remains a milestone mobile music application, a window into what might be possible. <http://ccrma.stanford.edu/~ge/ocarina/>

Wang, G. 2014. “Ocarina: Designing the iPhone’s Magic Flute.” *Computer Music Journal*. 38(2):8-21.

Research and Performance: Laptop Orchestra

Founding Director; designer of instruments, works, and curricula; curator of over 30 performances. 2008–present | The Stanford Laptop Orchestra (SLOrk) is a large-scale, computer-mediated ensemble and instrument design laboratory that explores cutting-edge technology in combination with conventional musical contexts – aiming to radically transform both. Founded in 2008 by director Ge Wang and students, faculty, and staff at Stanford, this unique ensemble comprises more than 20 laptops, human performers, controllers, and custom multi-channel speaker arrays designed to provide each computer meta-instrument with its own identity and presence. Overall 100 new instruments and works premiered. <http://slork.stanford.edu/>

Wang, G., D. Trueman, S. Smallwood, and P. R. Cook. 2008. “The Laptop Orchestra as Classroom.” *Computer Music Journal*. 32(1):26-37.

Smallwood, S., D. Trueman, P. R. Cook, and G. Wang. 2008. “Composing for Laptop Orchestra.” *Computer Music Journal*. 32(1):9-25.

Design: Interaction, Audiovisual, Humans-in-the-Loop AI Systems

- Cavdir, D. and G. Wang. 2020. “Felt Sound: A Shared Musical Experience for the Deaf and Hard of Hearing.” *New Interfaces for Musical Expression*.
(winner: 2020 Pamela Z Award for Innovation, Diversity and Inclusion)
- Wang, G. 2019. “Humans in the Loop: The Design of Interactive AI Systems.” *Stanford Human-Centered Artificial Intelligence Blog*.
<http://hai.stanford.edu/blog/humans-loop-design-interactive-ai-systems>
<http://medium.com/artful-design/humans-in-the-loop-b83e3bffa65e>
- Cavdir, D., R. Michon, and G. Wang. 2018. “The BodyHarp: Designing the Intersection Between the Instrument and the Body.” *Sound and Music Computing*.
(winner: 2018 Best Student Paper Award)
- Wang, G. 2017. “On-the-fly Programming: Using Code as an Expressive Musical Instrument.” *The NIME Reader*. Springer. (Peer-selected influential article, revised from 2004 initial publication in *New Interfaces for Musical Expression*)
- Fiebrink, R, G. Wang, P. R. Cook. 2017. “Don’t Forget the Laptop: Using Native Input Capabilities for Expressive Musical Control.” *The NIME Reader*. Springer. (Peer-selected influential article, revised from 2007 initial publication in *New Interfaces for Musical Expression*)
- Meacham, A., S. Kannan, and G. Wang. 2016. “The Laptop Accordion.” *New Interfaces for Musical Expression*. Brisbane, Australia.
- Wang, G. 2016. “Some Principles of Visual Design for Computer Music.” *Leonardo Music Journal*. 26:14-19.
- Bryan, N. J., G. J. Mysore, and G. Wang. 2014. “ISSE: An Interactive Source Separation Editor.” *ACM Human Factors in Computing Systems (CHI)*. Toronto.
- Misra, A., G. Wang, and P. Cook. 2007. “Musical Tapestry: Re-composing Natural Sounds.” *Journal of New Music Research*. 36(4):241-250.
(winner: 2006 ICMA Swets & Zietlinger Distinguished Paper Award)

Extended Reality Research (VR, AR, MR)

Founding Director and PI, Stanford VR Design Lab @ CCRMA
<https://xr.stanford.edu/>

Atherton, J. and G. Wang. 2020. “Doing vs. Being: A Philosophy of Design for Artful VR.” *Journal of New Music Research*. 49(10):35-59.

Public Outreach: TED Talk

Wang, G. 2014. “DIY Orchestra of the Future” TED.
http://www.ted.com/talks/ge_wang_the_diy_orchestra_of_the_future

Public Outreach: Artful Design Television

Host and Co-Producer (2020 during COVID-19 shelter-in-place)
Artful Design TV main site: <http://artful.design/tv>
Artful Design TV Archive of recorded episodes <http://artful.design/tv/archive>

Design: Sndpeek (Real-time Audio Visualizer Software)

Designer. 2005—present.

<http://ccrma.stanford.edu/~ge/software/sndpeek/>

Stanford Mobile Phone Orchestra (MoPhO)

Founding Director. 2008–2012

<http://mopho.stanford.edu/>

Expressive Mobile Music Startup: Smule

Co-founder, 2008; Chief Creative 2008–2013; Chief Technology Officer, 2008–2012. Responsible for interaction, product, and social design of music-making mobile apps; core interaction engine technology; research and development, marketing, PR, and outreach. Reached over 125 million users before stepping down in 2013.

Design: Additional Mobile Music Apps (with Smule)

Magic Piano (2010) • *Magic Fiddle* (2011) • *Magic Guitar* (2012) • *Zephyr* (2008) • *Sonic Lighter* (2008) • *Sing!* (2010, concept) • *Ocarina* (2008) • *Ocarina 2* (2012)

(See various publications, including *Artful Design* and Wang NIME 2016)

Social Music Design: Leaf Trombone: World Stage

Creator and chief designer. Smule 2009 | An experimental social design where users can create musical content, perform using a mobile phone-based instrument, and present that performance to the greater community. As part of a social game, these users are then recruited to serve as juries in online, real-time judging sessions, giving feedback and ratings to the performers. This creates an ecosystem where a participant can take on the role of performer, judge, observer, and/or composer. This experiment was fully implemented and deployed in a mobile application, Smule’s *Leaf Trombone: World Stage*, which has reached more than 800,000 users.

Wang, G., S. Salazar, J. Oh, and R. Hamilton. 2015. “World Stage: Crowdsourcing Paradigm for Expressive Social Mobile Music.” *Journal of New Music Research*. 44(2):112-128.

Capturing and Rendering of Musical Performance on Mobile Devices (U.S. Patent)

Inventor. As a social exchange for user musical performances, the globe visualization pervaded Smule mobile music apps – from *Ocarina* to *Magic Piano* to *Glee Karaoke*, *I Am T-Pain*, and *Sing!* – Allowing users to listen to peer and to participate musically. (see U.S. Patent 8222507)

Teaching at the Intersection of Engineering, Humanities, Art, and Social Sciences

The education of our engineers needs to evolve from training focused on producing disciplinarily competitive individuals to builders who also possess critical tools to take into account historical, social, and cultural contexts in their work. This ethos is captured in the idea of a “Pi-Shaped Person”: <http://artful.design/pi/>. At Stanford, I teach courses that meld critical thinking and the craft of making. (See **Teaching**.)

BOOKS

- Wang, G. 2018. *Artful Design: Technology in Search of the Sublime (A MusiComic Manifesto)*. Stanford University Press. (ISBN: 1503600521) <http://artful.design/>
(2016 Guggenheim Fellowship recipient)
- Kapur, A., P. R. Cook, S. Salazar, G. Wang. 2015. *Programming for Musician and Digital Artists: Making Music with ChuckK*. Manning Press. (ISBN: 1617291706)

PEER-REVIEWED JOURNAL ARTICLES

- Atherton, J. and G. Wang. 2020. “Doing vs. Being: A Philosophy of Design for Artful VR.” *Journal of New Music Research*. 49(10):35-59.
- Michon, R., J. O. Smith, M. Wright, C. Chafe, J. Granzow, and G. Wang. 2017. “Mobile Music, Sensors, Physical Modeling, and Digital Fabrication: Articulating the Augmented Mobile Instrument.” *Applied Science*. 7(12).
(2017 New Interfaces for Musical Expression Best Paper Award)
- Wang, G. 2017. “On-the-fly Programming: Using Code as an Expressive Musical Instrument.” *The NIME Reader*. Springer.
(Peer-selected influential article, revised from 2004 publication in *New Interfaces for Musical Expression*)
- Fiebrink, R, G. Wang, P. R. Cook. 2017. “Don’t Forget the Laptop: Using Native Input Capabilities for Expressive Musical Control.” *The NIME Reader*. Springer.
(Peer-selected influential article, revised from 2007 publication in *New Interfaces for Musical Expression*)
- Wang, G. 2016. “Some Principles of Visual Design for Computer Music.” *Leonardo Music Journal*. 26:14-19.
- Wang, G., P. R. Cook, and S. Salazar. 2015. “ChuckK: A Strongly-timed Computer Music Language.” *Computer Music Journal*. 39(4):10-29.
- Wang, G., S. Salazar, J. Oh, and R. Hamilton. 2015. “World Stage: Crowdsourcing Paradigm for Expressive Social Mobile Music.” *Journal of New Music Research*. 44(2):112-128.
- Wang, G. 2014. “Ocarina: Designing the iPhone’s Magic Flute.” *Computer Music Journal*. 38(2):8-21.
- Bryan, N. J., G. J. Mysore, and G. Wang. 2014. “ISSE: An Interactive Source Separation Editor.” *ACM Human Factors in Computing Systems (CHI)*. Toronto.
- Hamilton, R., J. Smith, and G. Wang. 2011. “Social Composition: Musical Data Systems for Expressive Mobile Music.” *Leonardo Music Journal*. Vol. 21:57-64.
- Oh, J. and G. Wang. 2011. “Converge: An Omni-Biographical Composition.” *Computer Music Journal Emile*. Vol. 9.
- Smallwood, S., D. Trueman, P. R. Cook, and G. Wang. 2008. “Composing for Laptop Orchestra.” *Computer Music Journal*. 32(1):9-25.

- Wang, G., D. Trueman, S. Smallwood, and P. R. Cook. 2008. "The Laptop Orchestra as Classroom." *Computer Music Journal*. 32(1):26-37.
- Misra, A., G. Wang, and P. Cook. 2007. "Musical Tapestry: Re-composing Natural Sounds." *Journal of New Music Research*. 36(4):241-250.
(winner: 2006 ICMA Swets & Zietlinger Distinguished Paper Award)
- Kapur, A., G. Wang, P. Davidson, P. Cook. 2005. "Interactive Network Media: A Dream Worth Dreaming?" *Organised Sound*. 10(3):209-219.

CONFERENCE PUBLICATIONS AND BOOK CHAPTERS

- Cavdir, D. and G. Wang. 2020. "Felt Sound: A Shared Musical Experience for the Deaf and Hard of Hearing." *New Interfaces for Musical Expression*.
(Winner: 2020 Pamela Z Award for Innovation, Diversity and Inclusion)
- Atherton, J. and G. Wang. 2020. "Curating Perspectives: Incorporating Virtual Reality into Laptop Orchestra Performance." *New Interfaces for Musical Expression*.
- Wang, G. 2019. "Humans in the Loop: The Design of Interactive AI Systems." Stanford Human-Centered Artificial Intelligence Blog.
<https://hai.stanford.edu/blog/humans-loop-design-interactive-ai-systems>
<https://medium.com/artful-design/humans-in-the-loop-b83e3bffa65e>
- Cavdir, D., J. Sierra, and G. Wang. 2019. "Taptop, Armtop, Blowtop: Evolving the Physical Laptop Instrument." *New Interfaces for Musical Expression*.
- Cavdir, D., R. Michon, and G. Wang. 2018. "The BodyHarp: Designing the Intersection Between the Instrument and the Body." *Sound and Music Computing*.
(Winner: 2018 Best Student Paper Award)
- Atherton, J., G. Wang. 2018. "Chunity: Integrated Audiovisual Programming in Unity." *New Interfaces for Musical Expression*. Virginia, U.S.A.
- Chandran, Deepak. 2018. "InterFACE: New Faces for Musical Expression." *New Interfaces for Musical Expression*. Virginia, U.S.A.
- Wang, G. 2017. "Improvisation of the Masses: Anytime, Anywhere Music." *Oxford Handbook of Improvisation Studies*. G. Lewis and B. Piekut, Eds. Oxford University Press.
- Wang, G. 2017. "The Laptop Orchestra." *The Routledge Companion to Music, Technology, and Education*. A. King, E. Minonides, and A. Ruthmann, Eds. Routledge Publishing.
- Wang, G. 2017. "The ME in NIME." (Keynote) *New Interfaces for Musical Expression*. Copenhagen, Denmark.
- Michon, R., J. O. Smith, M. Wright, C. Chafe, J. Granzow, and G. Wang. 2017. "Passively Augmenting Mobile Devices Towards Hybrid Musical Instrument Design." *New Interfaces for Musical Expression*. Copenhagen, Denmark.
(Winner: 2017 Best Paper Award).

- Wang, G. 2016. "Game Design for Expressive Mobile Music." *New Interfaces for Musical Expression*. Brisbane, Australia.
- Meacham, A., S. Kannan, and G. Wang. 2016. "The Laptop Accordion." *New Interfaces for Musical Expression*. Brisbane, Australia.
- Michon, R., J. O. Smith, C. Chafe, M. Wright, and G. Wang, 2016. "Nuance: Adding Multi-Touch Force Detection to the iPad." *Sound and Music Computing*. Hamburg, Germany.
- Wang, G. and R. Michon, 2016. "FauCK!! Hybridizing the Faust and ChuckK Audio Programming Languages." *Sound and Music Computing*. Hamburg, Germany.
- Wang, G. 2016. "Thoughts on Virtual Reality Design for Musical Expression." *ACM CHI Music and HCI Workshop*. San Jose, U.S.A.
- Wang, G. 2014. "Principles of Visual Design for Computer Music." *International Computer Music Conference*. Athens.
- Salazar, S. and G. Wang. 2014. "miniAudicle for iPad: Touchscreen-based Music Software Programming." *International Computer Music Conference*. Athens.
- Salazar, S. and G. Wang. 2014. "Auraglyph: Handwritten Computer Music Composition and Design." *New Interfaces for Musical Expression*. London.
- Wang, G., G. Essl, and H. Penttinen. 2014. "The Mobile Phone Orchestra." *Oxford Handbook of Mobile Music Studies, Volume 2*. S. Gopinath and J. Stanyek Eds. Oxford University Press, pp. 453-469.
- Wang, G. 2014. "The World Is Your Stage: Making Music on the iPhone." *Oxford Handbook of Mobile Music Studies, Volume 2*. S. Gopinath and J. Stanyek Eds. Oxford University Press, pp. 487-504.
- Bryan, N., G. Mysore, G. Wang. 2013. "Source Separation of Polyphonic Music with Interactive User-Feedback on a Piano-Roll Display." *International Society for Music Information Retrieval Conference*. Curitiba, Brazil.
- Oh, J. and G. Wang. 2013. "Laughter Modulation: from Speech to Speech-Laugh." *In Proceedings of Interspeech, ISCA*. Lyon, France.
- Oh., J. and G. Wang. 2013. "LOLOL: Laugh Out Loud On Laptop." *New Interfaces for Musical Expression*. Seoul.
- Cerqueira, M., S. Salazar, and G. Wang. 2013. "SoundCraft: Transducing Starcraft 2." *New Interfaces for Musical Expression*. Seoul.
- Oh., J. and G. Wang. 2012. "Evaluating Crowd-sourcing through Amazon Mechanical Turk as a Technique for Conducting Music Perception Experiments." *In Proceedings of the International Conference of Music Perception and Cognition*. Thessaloniki, Greece.
- Bryan, N., J. Herrera, and G. Wang. 2012. "User-guided Variable-rate Time-stretching via Stiffness Control." *In Proceedings of the International Conference on Digital Audio Effects*. York, U.K.

- Salazar, S. and G. Wang. 2012. "Chugens, Chubgraphs, and Chugins: 3 Tiers for Extending Chuck." *In Proceedings of the International Computer Music Conference*. Slovenia.
- Wang, G. 2012. "10 Past and Future Lessons of Laptop Orchestra." (Keynote) *1st International Symposium on Laptop Ensembles and Orchestras (SLEO)*. Baton Rouge, U.S.A.
- Bortz, B., S. Salazar, J. Jaivovich, R. B. Knapp, and G. Wang. 2012. "ShEMP: A Mobile Framework for Shared Emotion, Music, and Physiology." *3rd International Workshop on Social Behaviour in Music (SBM2012), in framework of the 14th International Conference on Multimodal Interaction*. Santa Monica, U.S.A.
- Rotondo, M., N. Kruge, and G. Wang. 2012. "Many-Person Instruments for Computer Music Performance." *New Interfaces for Musical Expression*. Ann Arbor, U.S.A.
- Carlson, C. and G. Wang. 2012. "Borderlands: An Audiovisual Interface for Granular Synthesis." *New Interfaces for Musical Expression*. Ann Arbor, U.S.A.
- Wang, G. 2011. "Breaking Barriers with Sound." (Keynote) *ACM Symposium on User Interface Software and Technology (UIST)*. Santa Barbara, U.S.A.
- Wang, G., J. Oh, S. Salazar, and R. Hamilton. 2011. "World Stage: A Crowdsourcing Paradigm for Social Mobile Music." *In Proceedings of the International Computer Music Conference*. Huddersfield, U.K.
- Oh, J. and G. Wang. 2011. "Audience-participation Techniques Based on Social Mobile Computing." *In Proceedings of the International Computer Music Conference*. Huddersfield, U.K.
- Wang, G., J. Oh, and T. Lieber. 2011. "Designing for the iPad: Magic Fiddle." *New Interfaces for Musical Expression*. Oslo.
- Bryan, N. J. and G. Wang. 2011. "Two Turntables and a Mobile Phone." *New Interfaces for Musical Expression*. Oslo.
- Kruge, N. and G. Wang. 2011. "MadPad: A Crowdsourcing System for Audiovisual Sampling." *New Interfaces for Musical Expression*. Oslo.
- Bryan, N. J. and G. Wang. 2011. "Musical Influence Network Analysis and Rank in Sample-Based Music." *In Proceedings of the International Conference on Music Information Retrieval*. Miami.
- Oh, J., J. Herrera, N. J. Bryan, L. Dahl, and G. Wang. 2010. "Evolving the Mobile Phone Orchestra." *New Interfaces for Musical Expression*. Sydney.
- Bryan, N. J., J. Herrera, J. Oh, and G. Wang. 2010. "MoMu: A Mobile Music Toolkit." *New Interfaces for Musical Expression*. Sydney.
- Dahl, L. and G. Wang. 2010. "Sound Bounce: Physical Metaphors in Designing Mobile Music Performance." *New Interfaces for Musical Expression*. Sydney.
- Choi, H. and G. Wang. 2010. "LUSH: An Organic Eco-Musical System." *New Interfaces for Musical Expression*. Sydney.

- Chang, M. H., G. Wang, T. Moore, and J. Berger. 2010. "Sonification and Visualization of Neural Data." *In Proceedings of the International Conference on Auditory Display*. Washington D.C.
- Wang, G. 2009. "Designing Smule's iPhone Ocarina." *New Interfaces for Musical Expression*. Pittsburgh.
- Wang, G., N. J. Bryan, J. Oh, and R. Hamilton. 2009. "Stanford Laptop Orchestra (SLOrk)." *In Proceedings of the International Computer Music Conference*. Montreal.
- Wang, G., G. Essl, J. Smith, S. Salazar, P. Cook, R. Hamilton, R. Fiebrink, J. Berger, D. Zhu, M. Ljungstrom, A. Berry, J. Wu, T. Kirk, E. Berger, J. Segal. 2009. "Smule = Sonic Media: An Intersection of the Mobile, Musical, and Social." *In Proceedings of the International Computer Music Conference*. Montreal.
- Fiebrink, R., P. Cook, S. Smallwood, D. Trueman, and G. Wang. 2009. "Laptop Orchestras and Machine Learning in Real-time Music Performance." *ACM CHI 2009, Computational Creativity Support Workshop*. Boston.
- Wang, G., G. Essl, and H. Penttinen. 2008. "MoPhO: Do Mobile Phones Dreams of Electric Orchestras?" *In Proceedings of the International Computer Music Conference*. Belfast.
- Essl, G., G. Wang, and M. Rohs. 2008. "Developments and Challenges Turning Mobile Phones into Generic Music Performance Platforms." *In Proceedings of Mobile Music Workshop*. Vienna.
- Caceres, J., R. Hamilton, D. Iyer, C. Chafe, and G. Wang. 2008. "China on the Edge: Explorations in Network-based Performance." *In Proceedings of the International Conference on Digital Arts (ARTECH)*. Porto, Portugal.
- Fiebrink, R., G. Wang, and P. R. Cook. 2008. "Foundations for On-the-fly Learning in the Chuck Programming Language." *In Proceedings of the International Computer Music Conference*. Belfast.
(Winner: 2008 ICMA Best Presentation Award)
- Wang, G. "A History of Programming and Music." 2008. *Cambridge Companion to Electronic Music*. N. Collins and J. D'Esquivan Eds. Cambridge University Press.
- Fiebrink, R., G. Wang, and P. R. Cook. 2008. "Support for MIR Prototyping and Real-time Applications of the Chuck Programming Language." *In Proceedings of the International Conference on Music Information Retrieval*. Philadelphia.
- Wang, G., R., Fiebrink, and P. R. Cook. 2007. "Combining Analysis and Synthesis in the Chuck Programming Language." *In Proceedings of the International Computer Music Conference*. Copenhagen.
- Fiebrink, R., G. Wang, and P. R. Cook. 2007. "Don't Forget the Laptop: Using Native Input Capabilities for Expressive Musical Control." *New Interfaces for Musical Expression*. New York.
- Wang, G., A. Misra, and P. R. Cook. 2006. "Building Collaborative interFaces in the Audicle." *New Interfaces for Musical Expression*. Paris.

- Misra, A., P. R. Cook, and G. Wang. 2006. "TAPESTREA: Sound Scene Modeling by Example" (*Sketch*) *ACM SIGGRAPH*. Boston.
- Misra, A., P. R. Cook, and G. Wang. 2006. "A New Paradigm for Sound Design." In *Proceedings of the International Conference on Digital Audio Effects*. Montreal.
- Salazar, S., G. Wang, and P. R. Cook. 2006. "miniAudicle and ChuckK Shell: New Interfaces for ChuckK Development and Performance." In *Proceedings of the International Computer Music Conference*. New Orleans.
- Trueman, D., P. R. Cook, S. Smallwood, and G. Wang. 2006. "PLOrk: Princeton Laptop Orchestra, Year 1." In *Proceedings of the International Computer Music Conference*. New Orleans.
- Wang, G., P. R. Cook, and A. Misra. 2005. "Designing and Implementing the ChuckK Programming Language." In *Proceedings of the International Computer Music Conference*. Barcelona.
- Wang, G., A. Misra, A. Kapur, and P. R. Cook. 2005. "Yeah ChuckK It! => Dynamic Controllable Interface Mapping." *New Interfaces for Musical Expression*. Vancouver.
- Misra, A., Wang, G., and P. R. Cook. 2005. "SndTools: Real-time Audio DSP and 3D Visualization." In *Proceedings of the International Computer Music Conference*. Barcelona.
- Wang, G., A. Misra, P. Davidson, and P. R. Cook. 2005. "Co-Audicle: A Collaborative Audio Programming Space." In *Proceedings of the International Computer Music Conference*. Barcelona.
- Kapur, A., G. Tzanetakis, N. Virji-Babul, G. Wang, and P. R. Cook. "A Framework for Sonification of Vicon Motion Capture Data" In *Proceedings of the International Conference on Digital Audio Effects*. Madrid.
- Wang, G., P. R. Cook. 2004. "On-the-fly Programming: Using Code as an Expressive Musical Instrument". *New Interfaces for Musical Expression*. Hamamatsu, Japan.
- Wang, G., P. R. Cook. 2004. "ChuckK: A Programming Language for On-the-fly, Real-time Audio Synthesis and Multimedia." *ACM Multimedia*. New York City.
(co-winner: 2004 ACM Multimedia Open Source Software Competition)
- Wang, G., P. R. Cook. 2004. "Audicle: A Context-sensitive, On-the-fly Audio Programming Environ/mentality." In *Proceedings of the International Computer Music Conference*. Miami.
(Winner: 2004 ICMA Best Presentation Award)
- Wang, G., P. R. Cook. 2003. "ChuckK: A Concurrent, On-the-fly Audio Programming Language". In *Proceedings of the International Computer Music Conference*, Singapore.
(Winner: 2003 ICMA Best Presentation Award)

AWARDS AND MILESTONES

Pamela Z Award for Innovation, Diversity and Inclusion, 2020 (with Doga Cavdir)

For the 2020 paper “Felt Sound: A Shared Musical Experience for the Deaf and Hard of Hearing” by Doga Cavdir and Ge Wang. *New Interfaces for Musical Expression*, 2020.
<http://ccrma.stanford.edu/~ge/publish/files/2020-nime-feltsound.pdf>

Independent Publisher Book Awards (IPPY), 2019

For *Artful Design: Technology in Search of the Sublime*
Authored by Ge Wang, published by Stanford University Press
Award Category: Graphic Novel / Drawn Book — General; Silver Medal

The Roberta Bowman Denning Fund for Humanities and Technology, 2017

For projects that promote focused attention on Humanities and Technology and that demonstrates the benefits of cross-disciplinary approaches in research and teaching; To support book project and the design of an “Artful Design” curriculum.

John Simon Guggenheim Foundation Fellowship, 2016

For “prior achievement and exceptional promise in scholarship or creativity in the arts”.
Project: *Artful Design: Technology in Search of the Sublime* — a book and manifesto about technology and its shaping, designed using an unconventional photo comic format.
<http://www.gf.org/fellows/ge-wang/> | <http://artful.design/>

Residency, Stanford Center @ Peking University, 2014

To bring Stanford Laptop Orchestra to China for residency, joint graduate seminar with local University students, and live performance; first laptop orchestra venture into China.

Champion of the Arts, 2013

Annual award recognizes an individual for significant contribution to promotion of music and the arts in Silicon Valley. Presented by Cantabile Youth Singers and City of Palo Alto.

Faculty Fellow, Stanford Center @ Peking University, 2013

Summer residency to promote the arts and technology in outreach to China.

Co-founder of Smule, a mobile music startup, 2008-2013

Built from inception in 2008 to 125 millions users in 2013.

Inventor and chief designer of mobile music apps (iPhone, iPad, Android):

Ocarina, Magic Piano, Leaf Trombone: World Stage, Magic Fiddle
Combined: over 100 million users (since 2008)

Apple Hall of Fame App: Ocarina

Inducted in the inaugural class in 2010 by Apple Inc.

Stanford University “Three Books” Author, 2012

As author of mobile/social music applications for class 2016; curated by Mark Applebaum

Emerging Pioneer Award, 2012

Selected by independent jurors, KAPi at CES 2012

Annenberg Faculty Fellow 2009-2011, Stanford University

“... to recognize outstanding junior faculty in the Humanities and Arts.”

Best Children’s App: Magic Piano, 2011

Selected by 11 independent jurors from over 500 products at KAPi, CES 2011

The 2010 Creativity 50 Award

Awarded annually to 50 individuals worldwide for creative thinking and doing in media, technology, and culture, Creativity Magazine, 2010.

Entrepreneurs We Love 2010, Inc. Magazine

... for “turning app development into an art form.”

National Science Foundation Creative IT Grant (No. IIS-0855758), 2010-2012

Co-PI (with Georgia Tech), exploring improvisation in computer music

App-Nation Pioneer Award 2010

Awarded for achievement impacting development and growth of mobile applications.

The 2009 Creativity 50 Award

Awarded annually to 50 individuals worldwide for creative thinking and doing in media, technology, and culture, Creativity Magazine, 2009.

The Silicon Valley 40 Under 40

Awarded annually to 40 individuals for innovation, San Jose Business Journal, 2009.

2006 ICMA Swets & Zeitlinger Distinguished Paper Award

“TAPESTREA: Re-composing Natural Sounds” (with Ananya Misra and Perry Cook)

Awarded annually to one paper at the International Computer Music Conference.

2004 ICMA Best Presentation Award

For: “The Audicle: A Context-sensitive, On-the-fly Audio Programming Environmentality”

Chosen from 210 research paper presentations, by vote from conferees ICMC 2004

2004 ACM Multimedia Best Open-Source Software Competition (co-winner)

For: “ChucK : Programming Language for Real-time Audio and Multimedia”

Selected from 10 open-source projects, by jury at ACM Multimedia 2004, New York.

2003 ICMA Best Presentation Award

For: “ChucK: A Concurrent, On-the-fly Audio Programming Language”

Chosen from 80 research paper presentations, by vote from conferees at ICMC 2003

Presented more than 350 invited talks and keynotes (2007–present)

Topics: artful design, computer music, programming, music software design, mobile music, social music, laptop orchestra, design, art & entrepreneurship, philosophy of design.

PATENTS (AWARDED AND PENDING)

“*System and Method for Capturing and Rendering of Performance on Synthetic Musical Instrument.*” U.S. Patent **8222507**. With Spencer D. Salazar and Perry R. Cook, assigned to Smule 2012. Description: Capturing multiple gestures on a mobile device (blowing on the microphone, touching various points on a multi-touch screen, tilting the device, etc.), encoding those gestures (effectively compressing the performance), using the gesture codes to control a synthesizer in real time, uploading the gesture codes to a server for later transmittal and resynthesis on another client, using uploaded gestures to render a sound file (.wav, .mp3, etc.) on a server and offering playback of such files on a mobile or non-mobile device (e.g., via a web browser). Geo-coding the location of a performance, transmitting that information to a server, and using it later to display resynthesized performances on a globe or map (either on mobile device or other).

“*World Stage for Pitch-Corrected Vocal Performance.*” Patent Filed 2012, **U.S. Non-provisional 12/876133**. With Spencer D. Salazar, Rebecca A. Fiebrink, Mattias Ljungstrom, Jeffrey C. Smith, and Jeannie Yang. Description: Global Community Singing: retrieval and playing back (with globe display) on a mobile device and mixed (possibly pitch-corrected and/or harmonized), rendered, and geo-coded vocal performance. Collecting and displaying further geo-coded data about performances, such as “likes/loves,” rankings, thumbs-up/down, chat and comments, etc. Mixing multiple asynchronous performances into crowdsourced choirs.

“*System and Method for Capture and Rendering of Performance on Synthetic String Instrument.*” Patent Filed 2011, **U.S. Non-provisional 13/292773**. With Spencer D.

Salazar, Rebecca A. Fiebrink, Mattias Ljungstrom, Jeffrey C. Smith, and Jeannie Yang. Description: Capture of finger gestures on virtual strings, combined with finger gestures indicative of bowing one or more strings, using an encoding of the gesture streams to control a digital string instrument model for sound synthesis. Displaying score-driven markers on the multi-touch display to indicate to the user where and when gestures should be performed in real-time.

“Audiovisual Sampling for Percussive-Type Instrument with Crowd-sourced Content Sourcing and Distribution.” Patent Filed 2012, **U.S. Non-provisional 13/607153**. With Nick Kruge and Perry Cook. Description: Capture of short video / audio clips, triggered by audio events and settings. Converting and pre-caching of clip video frames. Trigger playback of clips by tapping, in a displayed array (palette) of clips, with optional pitch and time transformations. Video playback (dynamic framerate) driven by audio playback. Capturing of taps and gestures, for playback in looping mode.

SELECTED KEYNOTES AND FEATURE PRESENTATIONS

– *Artful Design: Technology in Search of the Sublime!* –

- Twitch. Games, Community, Society Series, 2021 (**Distinguished Lecture**)
- Google. User Experience Engineering Conference, 2021 (**Invited Lecture**)
- ACM Creativity & Cognition, 2019. (**Keynote**)
- The Bookworm, Beijing. 2019. (**Author Presentation**)
- Kepler’s Books. October 2018. (**Author Presentation**)
- Computer History Museum. October 2018. (**Distinguished Lecture**)
- Adobe. October 2018. (**Distinguished Lecture**)
- Artful Design Manifestival. November 2018. (**Symposium**)

TED talk: The DIY Orchestra of the Future –

http://www.ted.com/talks/ge_wang_the_diy_orchestra_of_the_future

- A journey of computer music research that weaves together ChucK, laptop orchestra, mobile music, and global music making. July 2014. (**Featured TED Talk**; over 1 million views)

– *Humans in the Loop: The Design of Interactive AI Systems* –

- Human-Centered AI Conference on AI Ethics, Policy, and Governance, 2019. (**Keynote, with Stephanie Dinkins**)
- Stanford Digital Civil Society. 2019. (**Guest Lecture**)
- MediaX / Facebook HCI and Design Conversations, 2021 (**Faculty Presentation**)

– *Technology, Society, STEAM Education* –

- Stanford PACS Annual China Conference 2020. (**Keynote**)
- STEAM at Stanford (**Faculty Presentation**)
- STEM to SHTeM (**Faculty Presentation**)

- *The Art of Design for Computer Music* –
 - International Conference on Mathematics and Computation in Music. June 2015. London. **(Keynote)**
 - CCTV (China Central Television) “We World”, China’s first TED-like TV program series, 2015. (**Primetime broadcast nationwide**; 80 million viewers).
- *ChucK: 10 Years of Programming for Music* –
 - California Institute of the Arts, Digital Arts Expo & Conference on Computer Science in Music Education. April 2014. **(Keynote)**
- *Breaking Barriers with Sound (A Computer Music Odyssey)* –
 - ACM UIST – Symposium on User Interface and Software and Technology. Santa Barbara, October 2011. **(Keynote)**
 - Duke (2013), CU Boulder (2013), Yale (2012), Dartmouth (2012) (**Distinguished Lecture Series**)
 - The Entertainment Gathering (EG) #4, #5, #6 (2010, 2011, 2012)
 - Web 2.0 Expo. San Francisco, May 2010. **(Keynote)**
 - Billboard Magazine Mobile Entertainment Summit. San Francisco, October 2010. **(Keynote)**
- *Music, Computer, People (Art, Technology, Entrepreneurship)* –
 - Mobile Developer Conference China. Beijing, October 2012. **(Keynote)**
 - Stanford University Entrepreneur’s Corner. 2012.
 - Duke University. Arts and Entrepreneurship Initiative (**Inaugural Speaker**)
- *10 Past and Future Lessons of Laptop Orchestra* –
 - 1st Symposium on Laptop Ensembles & Orchestras (SLEO): International Workshop on Music Performance for Laptops and Mobile Devices. LSU, April 2012. **(Keynote)**
- *The World is Your Stage: Mobile-Social Music* –
 - Stanford University, Computer Forum Annual Meeting, Mobile & Social Workshop. April 2013. **(Keynote)**
 - Contemplum, Temple University. March 2013. **(Keynote)**
 - University of Southern California, Annenberg School for Communication and Journalism, Chinese Internet Research Conference, May 2012. **(Keynote)**
 - St. Lawrence String Quartet Chamber Music Seminar. Stanford University, June 2011. **(Keynote)**
 - CES 2011 Kids at Play Interactive Summit. Las Vegas, January 2011. **(Keynote)**
 - European E-commerce Conference (EEC). Madrid, October 2010. **(Keynote)**
- *The Engineer with a Soul* –
 - TEDxGunnHighSchool. January 2019. **(Presentation)**

- Indiana University, School of Informatics, Computing, and Engineering;
LuddyFest. April 2018. (**Keynote**)

INVITED TALKS & KEYNOTES

Titles & Topics: *Artful Design: Technology in Search of the Sublime; Music, Technology Society: A Story of Design; Humans in the Loop: The Design of Interactive Artificial Intelligence Systems; The Engineer with a Soul; How We Shape Technology and How Technology Shapes Us. The Art of Designing Computer Music; Coding to Make Music; Music, Computer, People; The DIY Orchestra of the Future; Breaking Barriers with Sound; 10 Past and Future Lessons of Laptop Orchestra; Chuck Programming Language; The World is Your Stage: Mobile-Social Music; Mobile Phone Orchestras; Mobile Music for Social Interactions; On-the-fly Programming; Real-time Languages and Environments for Synthesis, Composition, and Performance; Teaching Programming with Music and Laptop Orchestra; New Classrooms in Computer Science + Music; Designing Interfaces for Music; Creating New Expressive Social Mediums on Mobile Phones; At the Intersection of Music and Computer Science; Art and Entrepreneurship; The Philosophy of Design.*

- November 2021. UNESCO Creative Cities Network Forum. (**Invited Lecture**)
- October 2021. Google User Experience Engineering Conference (UXE).
“Artful Design” (**Invited Lecture**)
- September 2021. Twitch: Games, Communities, and Society Speaker Series. “Artful Design” (**Invited Lecture**)
- August 2021. Facebook Reality Labs: Audio Symposium. “Artful Design” (**Keynote**)
- August 2021. Stanford MediaX / Facebook HCI and Design Conversations.
“Humans in the Loop” (Faculty Presentation)
- August 2021. STEM to SHTM 2021 Program. (Faculty Presentation)
- May 2021. Duke Asian Alumni Association (DAAA) 2021 Symposium: Paths to Success (**Keynote**)
- April 2021. Stanford Research Conference. (**Faculty Keynote**)
- March 2021. VMWare Pi-Day. “The Pi-Shaped Person” (**Keynote**)
- February 2021. The SAP Academy for Engineers. “Artful Design” (**Presentation**)
- February 2021. Midwest Regional Conference for the Society of Asian Scientists and Engineers. “Artful Design” (**Keynote**)
- January 2021. Reboot: A Series on Tech, Humanity, and Power. “Artful Design” (**Book Talk and Discussion**)
- November 2020. Stanford PACS Annual China Conference: Design and Technology for Humanity, “Technology, Society, and STEAM Education”, Beijing China (**Virtual Keynote**)
- November 2020. Stanford PACS Annual China Conference: Design and Technology for Humanity, “A Lifelong STEAM Education for Human Flourishing”, Beijing China (**Virtual Fireside Chat**)

October 2020. Stanford Research Park. “Artful Design: How We Shape Technology and How Technology Shapes Us” (Virtual Lunch & Learn)

July 2020. Stanford MediaX. “The Artful Design of Immersion” (Presentation)

July 2020. Stanford Summer Session. “Technology in Search of the Sublime” (Speaker Series)

June 2020. Def Hacks 2020 Virtual Hackathon. “Coding to Make Music: An Artful Design Story” (**Virtual Keynote**)

May 2020. Open Hacks 2020 Virtual Hackathon. “Coding to Make Music: An Artful Design Story” (**Virtual Keynote**)

May 2020. UCSB Media Arts and Technology (**Distinguished Speaker Series**)

March 2020. Stanford Graduate Alumni Weekend. (Presentation)

February 2020. STEAM at Stanford (Presentation)

February 2020. Stanford Family Weekend. (Back-to-school Lecture)

February 2020. Stanford Women in Design / SENSEA Makeathon (Presentation)

January 2020. Conference: Cultivating Awareness for Great Tech (**Keynote**)

January 2020. Bay Coding Club. “Fusing Computer Science-Art-Creativity in Education” (Presentation)

January 2020. Stanford Online High School Family Weekend. “Artful Design” (**Keynote**)

January 2020. Stanford Continuing Studies. “Artful Design” (Lecture)

January 2020. Stanford SystemX. “Artful Design” (Guest lecture)

January 2020. Harker High School. “Why Do We Design?” (Presentation)

November 2019. Future Science Prize Week. Beijing, China. “Artful Design.” (**Keynote**)

November 2019. Stanford Digital Civil Society Conference. “The Ethics of Shaping Technology.” (**Designer Talk; Artist Panel**)

October 2019. Stanford Human-centered AI Conference on Ethics, Policy, and Governance. “What Do We Really Want From AI?” (**Keynote, joint with Stephanie Dinkins**)

October 2019. Stanford Reunion. “Artful Design.” & “Music, Technology, Society: A Story of Design.” (**Micro-Lecture & Classes Without Quizzes**)

October 2019. Public Theologies of Technology and Presence Conference. “Technology in Search of the Sublime.” (Presentation)

October 2019. Gooddler Foundation & UN Social Innovation Youth Summit. “Artful Design.” (**Keynote**)

October 2019. Leland High School, San Jose. “Music, Technology, Society: A Story of Design.” (Presentation)

October 2019. Stanford S.T.E.A.M. Club. “Artful Design.” (Presentation)

October 2019. Hacker Dojo 10th Anniversary. “Music, Technology, Society: A Story of Design.” (Presentation)

September 2019. Digital Civil Society. “Humans in the Loop: The Artful Design of Technology.” (Guest Lecture)

September 2019. Silicon Valley Japan Platform, 2019 Retreat. “Humans in the Loop: The Artful Design of Technology.” (**Closing Keynote**)

September 2019. Stanford New Faculty Orientation — Panel: What I Wished I Knew as a First Year Faculty. “My Tenure Adventure.” (Panelist)

September 2019. The Bookworm Beijing. “Artful Design.” (**Book Talk**)

August 2019. Stanford Center at Peking University. “Designing Your Life and The (Non-)Designability of Life.” (**Guest Lecture**)

July 2019. Denver International Festival of Arts and Technology. University of Denver. “Artful Design.” (**Keynote**)

June 2019. Universal Audio. “Artful Design.” (**Distinguished Lecture Series**)

June 2019. ACM Creativity & Cognition. “Artful Design.” (**Keynote**)

May 2019. Stanford University, CESTA. “The Ethics of Shaping Technology.”

April 2019. Princeton University. “Artful Design.” (**Evnin Lecture**)

April 2019. Rensselaer Polytechnic Institute. “Artful Design.” (**Lecture**)

April 2019. Massachusetts Institute of Technology. “Artful Design.” (**Lecture**)

April 2019. Stanford University, Experiments in Learning. “The Pi-Shaped Student”

March 2019. Georgia Tech Guthman Musical Instrument Competition. (**Judge**)

March 2019. CCRMA Open House. (Presentation)

February 2019. Stanford University, AI, Humanities & the Arts Workshop (**Presentation**)

February 2019. San Francisco Designers + Geeks Meetup. “Artful Design”

February 2019. Stanford University Symbolic Systems Forum. (Presentation)

February 2019. Stanford University. “Engineering, Culture, Diversity.” (**Guest Lecture**)

February 2019. Leonardo Art Science Evening Rendezvous (LASER).

February 2019. Silicon Valley Japan Platform. “STEAM Education.”

January 2019. TECH 2025. “Moral Philosophy of Tech Companies” (Presentation)

January 2019. UC San Diego. “Artful Design: Technology in Search of the Sublime!” (**Design @ Large Colloquium**)

January 2019. Stanford Linear Accelerator (SLAC). “The Artful Shaping of Technology.” (**Art Meets Science at SLAC Lecture Series**)

January 2019. TEDxGunnHighSchool. “The Engineer with a Soul.” (Presentation)

December 2018. Mindscape Podcast with Sean Carroll. “Artful Design, Computers, and Music.” (**Podcast**) <https://www.preposterousuniverse.com/podcast/>

November 2018. Netflix. “The Artful Shaping of Technology.” (**Netflix Tema Talk Series**)

November 2018. Stanford Data Science Initiative. (Presentation)

November 1-2, 2018. Stanford University. “Artful Design Manifestival.” (**Book Celebration and Symposium**) <http://artful.design/manifestival/>

October 2018. Kepler’s Books. “Artful Design: Technology in Search of the Sublime.” (**Author Presentation**)

October 2018. Computer History Museum. “Artful Design: Technology in Search of the Sublime.” (**Friday Night @ CHM Talk & Discussion**)

October 2018. Adobe. “Artful Design: Technology in Search of the Sublime.” (**Adobe Distinguished Lecture**)

October 2018. Duke University. Ruby Friday @ Rubenstein Arts Center. (**Presentation and Discussion**)

October 2018. Smule. “Artful Design: Technology in Search of the Sublime.” (**Workshop**)

September, 2018. DARIAH @ Stanford University. “The Philosophy of Design: Art, Humanities, Engineering” (**Keynote**)

July 2018. KQED & Stanford Live @ Bing Concert Hall. “The Future of Music” (**Featured Guest and Panelist**)

June 2018. Stanford Bing Concert Hall. “SLOrk @ 10: History and Medium of the Laptop Orchestra”

May 2018. CCRMA. “The Making of *Artful Design, A MusiComic Manifesto*”

April 2018. Indiana University, School of Informatics, Computing, and Engineer. LuddyFest. “The Humanist Engineer” (**Keynote**)

April 2018. Indiana University, Jacobs School of Music. “Artful Design of Computer Music” and “New Interfaces for Musical Expression”.

May 2017. International Conference on New Interfaces for Musical Expression (NIME), Copenhagen. “The ME in NIME” (**Keynote**)

November 2016. Stanford Chinese Students and Scholars Symposium (**Keynote**)

November 2016. Stanford University HCI Meeting: “Music, Computing, Design”

October 2016. Stanford University HCI “People, Computing, Design Seminar”: *An Ocarina Retrospective*.

September 2016. Stanford New Student Orientation: Engaging with Faculty

August 2016. World Lab Summer Institute Exhibition @ Stanford Center in Peking University, also @ Stanford d.school.

March 2016. Stanford University Parents’ Weekend: Back to School Class for Parents: “The Art of Design and Computer Music.”

March 2016. Waffles.js community meetup.

March 2016. Oculus Rift Headquarters: “Artful Design of Computer Music”

February 2016. RedBull’s “Hack the Hits Music Tech Hackathon” (**Keynote**)

January 2016. Stanford-Silicon Valley Innovation Study (from Tsinghua).

October 2015. China Entrepreneur Club: “Art and Innovation of Silicon Valley”

Summer 2015. We World. *Ge Wang: Computer Music Researcher*. China’s first TED-like nationwide TV program, produced by China Central Television (CCTV). (**Broadcast in primetime**, viewed by more 80 million people)

June 2015. International Conference on Mathematics and Computation in Music, London 2015. *The Art of Designing Computer Music*. (**Keynote**)

April 2015. MIT Museum. *The Art of Designing Computer Music*. (with Eran Egozy).

March 2015. Escondido Elementary School Family Science Night. *The Science of Sound and Computer Music*.

February 2015. Mathematical Sciences Research Institute and Berkeley City College. *Making Music Socially: A Story of People and Technology in the 21st Century* (with Madeline Huberth).

July 2014. TED. *The DIY Orchestra of the Future*. (**featured TED talk**)
http://www.ted.com/talks/ge_wang_the_diy_orchestra_of_the_future

May 2014. Digital Arts Expo & Conference on Computer Science in Music Education, featuring *Processing* and *ChucK*. CalArts. (**Keynote**)

May 2014. TEDxStanford. *THIS Is Computer Music*.

March 2014. KCPB Product Works Design Panel, hosted by John Maeda.

March 2014. Stanford University Parents' Weekend

February 2014. Mathematical Sciences Research Institute / Berkeley City College (**Distinguished Lecture Series**)

November 2013. Adobe (**Distinguished Lecture Series**)

November 2013. UIC Innovation Center, Mobile Processing (**Keynote**)

October 2013. United States Library of Congress (**Special Presentation on Music and Technology**)

October 2013. IHS Interactive Technology Summit (**Keynote**)

October 2013. Los Altos High School, Science and Technology Week.

September 2013. Stanford d.school, ReDesigning Theater: Live and Digital Performance.

September 2013. Stanford University, Residential Program combining the Arts (ITALIC) and Science (SIMILE).

September 2013. Duke University, Arts and Entrepreneurship (**Inaugural Speaker**)

September 2013. Duke University, Pratt School of Engineering (**Distinguished Lecture Series**)

September 2013. Duke University, Technology, Society, and Culture.

July 2013. Stanford Center at Peking University.

May 2013. Fujitsu Technology Symposium. Computer History Museum.

April 2013. Stanford University, Computer Forum Annual Meeting, Mobile & Social Workshop. (**Keynote**)

March 2013. Contemplum, Temple University. (**Keynote**)

March 2013. University of Colorado, Boulder. (**ATLAS Speaker Series**)

November 2012. TECH+: Technology, Economy, Culture, Humanity. Seoul.

October 2012. Mobile Developer Conference China. Beijing. (**Keynote**)

October 2012. Mobile Developer Conference China. Beijing. (**Master Class on design**)

October 2012. Stanford University Entrepreneur's Corner. (with Jeff Smith)

October 2012. Dartmouth College, Neukom Institute for Computational Science (**Donoho Colloquium Series**)

September 2012. Stanford University's *Three Books*. As author of social mobile music apps *Ocarina*, *MadPad*, and *I Am T-Pain*. Curated by Mark Applebaum.

May 2012. University of Southern California, Annenberg School for Communication and Journalism, Chinese Internet Research Conference **(Keynote)**

April 2012. 1st Symposium on Laptop Ensembles & Orchestras (SLEO): International Workshop on Music Performance for Laptops and Mobile Devices. **(Keynote)**

April 2012. The Entertainment Gathering (EG 6) Monterey, CA.

April 2012. Yale University, Computer Science Department. **(Distinguished Lecture Series)**

March 2012. Game Developer's Conference (GDC), San Francisco, CA.

November 2011. TECH+: Technology, Economy, Culture, Humanity. Seoul, Korea.

October 2011. ACM UIST: Symposium on User Interface and Software and Technology. **(Keynote)**

September 2011. Duke University: Technical and Social Foundations of the Internet (presentation via Skype, hosted by Owen Astrachan)

June 2011. St. Lawrence String Quartet Chamber Music Seminar. **(Keynote)**

April 2011. USC Music Computation and Cognition Laboratory.

April 2011. The Entertainment Gathering (EG5) Monterey, CA. (with Jieun Oh)

March 2011. South by Southwest 2011.

January 2011. CES 2011; Kids at Play Interactive Summit. **(Keynote)**

December 2010. SF Music Technology Summit. Panel on mobile music creation.

October 2010. European E-commerce Conference (EEC) 2010. Madrid. **(Keynote)**

October 2010. Billboard Magazine Mobile Entertainment Summit. **(Keynote)**

September 2010. Duke University: Technical and Social Foundations of the Internet (presentation via Skype, hosted by Owen Astrachan)

July 2010. Stanford University Science Outreach Program; presentation on Music, Science, and Technology to high school students.

June 2010. Foo Camp (presentation and performance, with Jieun Oh)

May 2010. Maker Faire **(Featured Presentation)**

May 2010. SF Music Technology Summit. Panel presentation with Max Mathews, John Chowning, Roger Linn, and David Wessel.

May 2010. San Francisco Music Hack Day.

May 2010. Mathematical Sciences Research Institute, with Jieun Oh.

May 2010. Web 2.0 Expo. San Francisco. **(Keynote)**

April 2010. Stanford Computer Science Annual Forums.

April 2010. Apple. "Bring Your Kids to Work Day"

April 2010. Emerging Communications Conference. **(Keynote)**

April 2010. Art Center Nabi, Seoul (remote via Skype)

March 2010. Open MAKE @ Exploratorium: Making Music.

February 2010. MacWorld 2010, San Francisco.

January 2010. Carnegie Mellon University, Silicon Valley.

January 2010. The Entertainment Gathering (EG4), Monterey, CA.

November 2009. CCRMA Colloquium.
November 2009. Los Altos High School, Science + Technology Week.
October 2009. Duke University (remote via Skype, hosted by Owen Astrachan).
October 2009. Stony Brook University, New York.
August 2009. Foo Camp '09.
June 2009. Stanford University Science Outreach Program; Presentation on Music Technology for high school science educators.
June 2009. Apple Worldwide Developer Conference, San Francisco.
(Featured Presentation)
June 2009. Frost and Sullivan Conference, San Francisco (**Keynote**)
May 2009. Mobile Music Symposium, University of Minnesota.
April 2009. Louisiana State University.
April 2009. Harvard University Systems Seminar.
March 2009. Apple iPhone OS 3.0 Announcement Event.
March 2009. iGames Summit 2009, San Francisco.
March 2009. Emerging Communications Conference. (**Keynote**)
March 2009. California College of the Arts.
November 2008. Stanford University Symbolic Systems Forum.
November 2008. International Symposium on Culture Technology, Seoul.
April 2008. Alberta College of Art and Design. Calgary, Canada.
(with Rebecca Fiebrink)
March 2008. California Institute of the Arts.
March 2008. *Rencontres Musicales Pluridisciplinaires*; theme: "Digital Arts and Programming" Lyon, France.
January 2008. Duke University Visualization Seminar; ISIS Seminar.
January 2008. Ex'pression College for Digital Arts, Insider's Day.
December 2007. Bay Area Music Technology Group, San Francisco.
December 2007. Living the Knowledge Society workshop, Santa Clara University.
November 2007. Stanford University HCI Seminar - People, Computer, and Design.
September 2007. Bay Area Music Technology Group, San Francisco.
June 2007. Electro-music 2007 Festival, Philadelphia. (with Rebecca Fiebrink)
April 2006. School of the Art Institute of Chicago (1-week residency/workshop).
October 2005. University of Beijing, China.
October 2005. Central Conservatory of China / MusicAcoustica 2005.
September 2005. University of Rome (La Sapienza), Rome, Italy.
May 2005. University of Victoria, Department of Computer Science. BC, Canada.
February 2005. Transmediale 2005 Festival. Berlin, Germany.

TEACHING

2017—Present | Associate Professor | Stanford University

CCRMA | Music Department | Computer Science Department | Thinking Matters

- **Music 256a / CS 476a:** *Music, Computing, and Design: The Art of Design* <http://ccrma.stanford.edu/courses/256a/> (2010-present)
- **Music 128 / CS 170:** *Stanford Laptop Orchestra: Composing, Coding, Performance* <http://ccrma.stanford.edu/courses/128/> (2008-present)
- **Music 220b:** *Compositional Algorithms, Psychoacoustics, Computational Music* <http://ccrma.stanford.edu/courses/220b/> (2008-present)
- **Music 220a:** *Fundamentals of Computer-Generated Sound* <http://ccrma.stanford.edu/courses/220a-spring-2021/> (Spring 2021)
- **THINK 66:** *Design that Understands Us* <http://artful.design/think66/> (2019-present)

Stanford Continuing Studies

- **DSN100:** *Artful Design: How We Shape Technology and How Technology Shapes Us* <http://artful.design/dsn100/> (2020-present)

2007—2017 | Assistant Professor | Stanford University

CCRMA | Music Department | Computer Science

- *Mobile Music Design* (2010-2015) <http://ccrma.stanford.edu/courses/256b-winter-2015/>
- *Virtual and Augmented Reality Design for Music* (2016) <http://ccrma.stanford.edu/courses/256b-winter-2016/>
- *Fundamentals of Computer-Generated Sound* (2008, with Chris Chafe 2007) <http://ccrma.stanford.edu/courses/220a-fall-2008/>
- *ITALIC: Artful Design of Technology* (2017)
- *Soundwire Ensemble* (with Chris Chafe 2007)

Stanford Center at Peking University

- *Designing Solutions for Global Grand Challenges* (with James Landay, 2016)
- Stanford Laptop Orchestra in China (Summer 2014)

MOOC (Kadenze, Coursera)

- *Programming for Musicians and Digital Artists with the ChucK Programming Language* (with Ajay Kapur, Perry Cook, and Spencer Salazar, 2013)

Fall 2006 | Princeton University

Instructor + Co-Director (with Perry Cook): *Princeton Laptop Orchestra*.

Graduate + Undergraduate Seminar: *Composing for Laptop Orchestra*

Designed core curriculum (lectures, projects, performances).

Delivered weekly lectures, rehearsals, and discussions on issues ranging from software design, composition, musical performance design, interface design and mapping, networking, instruction building, sound synthesis.

Co-directed major performances (*NYC Debut*, *PLOrktastic Chambers Music*, *Final Concert*), premiering 15+ all-new pieces for the laptop orchestra.

Fall 2006 | Dartmouth College (*commuted weekly between Dartmouth & Princeton*)

Instructor, Graduate Seminar: *In the Service of Electro-Acoustic Music:*

Digital Signal Processing + Software Design/Implementation Techniques

Designed curriculum teaching DSP theory and applications together with software design and implementation techniques, topics, and “best practices”.

Delivered weekly lectures and discussions on issues ranging from signal processing (theory and applications, Fourier analysis, filter analysis, classic synthesis techniques, physical modeling, speech modeling, etc.) and computer science (interactive system design, object-oriented principals, design patterns, real-time audio, data structures for sound synthesis, optimization, C++/Java)

Fall & Spring 2005 | Princeton University

Teaching assistant: *PLOrk: Princeton Laptop Orchestra*

(Perry Cook, Dan Trueman, Scott Smallwood, Ge Wang)

designed half of core curriculum based on ChuckK programming language

delivered weekly class lectures on ChuckK/Audicle and programming

helped to build PLOrk networking infrastructure in Max/ChuckK

2004 | Stanford CCRMA Summer Workshop (Banff Centre, Canada).

Teaching assistant: *Digital Signal Processing for Audio: Spectral and Physical Models*—for Perry Cook and Xavier Serra

2003 | Princeton University

Teaching assistant: *Advanced Programming Techniques*

—for Brian Kernighan, with Limin Jia

mentored of 7 groups over 2 months in designing 3-tiered system

2002 | Princeton University

Teaching assistant: *Human Computer Interaction*—for Perry Cook

2000 | Duke University

Teaching assistant: *Introduction to Computer Graphics*

—for Pankaj Agarwal

designed and held precepts and OpenGL samples

designed and implemented public scene file format and parser for student use

1999—2000 | Duke University

Teaching assistant: *Advanced Object-oriented Programming*—for Owen Astrachan and Robert Duvall

(winner: 2000 Undergraduate Teaching Assistant Award)

1997—1999 | Duke University

Teaching assistant: *Data Structures II*—for Owen Astrachan and Robert Duvall

Ph.D. STUDENTS (GRADUATED)

- Spencer Salazar, Stanford CCRMA Ph.D. (graduated 2017)

Thesis: *Sketching Sound: Gestural Interactions for Expressive Music Programming*

- Jieun Oh, Stanford CCRMA Ph.D. (graduate 2014)
Thesis: *Affective Analysis and Synthesis of Laughter*
- Nicholas J. Bryan, Stanford CCRMA Ph.D. (graduated 2014)
Thesis: *Interactive Sound Source Separation*

Ph.D. STUDENTS (CURRENT)

- Jack Atherton, Stanford CCRMA Ph.D. (6th year)
- Doga Cavdir, Stanford CCRMA Ph.D. (5th year)
- Kunwoo Kim, Stanford CCRMA Ph.D. (3rd year)
- Mike Mulshine, Stanford CCRMA Ph.D. (2nd year)
- Jorge Herrera, Stanford CCRMA Ph.D. (nth year)

RESEARCH INITIATIVES AND LABORATORIES

Music, Computing, Design (Research Group, Director & PI)

<http://mcd.stanford.edu/>

Stanford VR Design Lab @ CCRMA (Research Lab, Director & PI)

<http://xr.stanford.edu/>

Chuck Music Programming Language (Chief Architect and Project Lead)

<http://chuck.stanford.edu/>

Stanford Laptop Orchestra (SLOrk) (Ensemble and Research Lab, Director & PI)

<http://slork.stanford.edu/>

Stanford SideLOBe (Veteran Laptop Performance Ensemble, Director)

<http://sidelobe.org/>

Artful Design (Research Lead & PI, Author, Teacher)

<http://artful.design/>

PUBLIC OUTREACH AND ONLINE COURSES

Artful Design Television (2020-Present), hosted by Ge Wang, co-produced with Kunwoo Kim. *Artful Design TV* is a multi-format series (initiated during COVID-19 shelter-in-place; online on YouTube and over Zoom) encompassing artful design, music, coding, and critical making with helpings of history and philosophy, and life check-ins for participants. No experience is needed; all are welcome.

Artful Design TV main site:

<http://artful.design/tv>

Artful Design TV Archive of recorded episodes

<http://artful.design/tv/archive>

Artful Design TV Games, Gaming, and Game Design

<http://artful.design/tv/games>

Artful Design TV Coding Tutorials

<http://artful.design/tv/tutorials>

MOOC: Introduction to Real-time Audio Programming in Chuck (2013-Present)

instructed by Ajay Kapur, with Perry R. Cook, Spencer Salazar, and Ge Wang.

The course, lecture, and examples build on each other to teach the fundamentals of programming in general (logic, loops, functions, objects, classes) and also deal with advanced topics including multi-threading, events and signals. Throughout the course, students create meaningful and rewarding expressive digital “instruments” that make sound and music in direct response to program logic. The Chuck language provides precise high-level control over time, audio computation, and user interface elements (track pad, joysticks, etc.). Chuck is used (unknowingly in many cases in mobile apps) by millions of users throughout the world, and is a primary tool of dozens of academic programs and laptop orchestras. Learning to program using Chuck, through the musical examples provided in this course, will prepare students to program in C++, Java, and other languages. There will be special guest lectures from creators of the Chuck language, Dr. Ge Wang (Stanford University) and Dr. Perry R. Cook (Princeton University).

- Class Central: <https://www.classcentral.com/course/kadenze-introduction-to-real-time-audio-programming-in-chuck-3749>
- Kadenze: <https://www.kadenze.com/courses/introduction-to-programming-for-musicians-and-digital-artists/>

SELECTED MUSICAL WORKS AND PERFORMANCES

The Furies: A Laptopera (2019; collaboration between composer Anne Hege, Ge Wang, and the Stanford Laptop Orchestra). *The Furies: A Laptopera* is a retelling of the Greek tragedy *Electra*. Blending a number of versions of the Electra story including works by Aeschylus, Sophocles, Euripides, and Jean Paul Sartre, this large-scale collaborative work explores central questions regarding how communities escape from cycles of violence, the role of guilt and shame in community identity, personal responsibility, how justice interfaces with cycles of violence, and redemption. The artistic medium of the laptop orchestra both serves to recast the traditional instrumental role in a new kind of operatic medium (the “laptopera”) that reimagines the potential of instrument building to support dramatic elements and character relationships—while simultaneously posing critical questions about technology in our lives today, both in its promise to help us flourish and in its perils to perpetuate and amplify the existing cycles of violence in our world. <http://laptopera.org/>

“**Giography**” (2015, 2019). “Giography” is based on an instrument called Intervalia—created in 2014 by Gio Jacuzzi in the course Music 220b. Here it has been reworked as a networked instrument for laptop orchestra. Musical gestures originate from a single performer typing on the computer keyboard, and emanate throughout the ensemble. This work is named in honor of the creator of the original instrument—and for the spaces it explores. <http://slork.stanford.edu/works/giography>

“**Turenas: VR Visualization**” (2016, with John Chowning, Matt Wright, and Wisam Reid). Full spherical visualization of John Chowning’s *Turenas*, for the AlloSphere at University of California, Santa Barbara. Premiered in February, 2016.

“**Beijing**” (2014, with Madeline Huberth) for laptop orchestra. Stanford Laptop Orchestra Live in Beijing Concert at the Stanford Center @ Peking University in July 2014. Sounds recorded on location in Beijing; live processing via gestures.

“**Contium**” (2014, with Madeline Huberth) for laptop orchestra and live visuals.

Forward motion is.

A study in dynamics and balance;
cyclic tendrils ebbing and flowing, swelling and retreating;
timbres varying over pseudo-life-cycles;
voices echoing in space and through windows into processes set in motion
long before we are, and will continue long after;
like ocean waves, unrelenting, not looking back.

Forward motion is.

“**Twilight**” (2013) for laptop orchestra. Inspired by the classic science-fiction short story “Twilight” by John W. Campbell (published in 1934, under the pseudonym “Don A. Stuart”), this piece ruminates not of the dawn, ascension, nor triumph of the human race, but of one possible demise set seven million years in the future. This end is not one of annihilation through war, nor decimation from famine or disease, but a golden decrescendo of defeat brought on by the gradual, peaceful, but unstoppable usurping of technology and machines—and the loss of humankind’s curiosity and sense of wonder. <http://slork.stanford.edu/works/twilight>

From the original text:

“Twilight – the sun has set. The desert out beyond, in its mystic, changing colors. The great, metal city rising straight-walled to the human city above, broken by spires and towers and great trees with scented blossoms. The silvery-rose glow in the paradise of gardens above.”

i. The Dead City

“And all the great city-structure throbbing and humming to the steady gentle beat of perfect, deathless machines built more than three million years before – and never touched since that time by human hands. And they go on. The dead city. The men that have lived, and hoped, and built – and died to leave behind them those little men who can only wonder and look and long for a forgotten kind of companionship. They wander through the vast cities their ancestors built, knowing less of them than the machines themselves.”

ii. A Song of Longings

“And the songs. Those tell the story best, I think. Little, hopeless, wondering men amid vast unknowing, blind machines that started three million years before – and just never knew how to stop. They are dead – and can't die and be still.”

This is the first installment in the Twilight series for various and mixed media. The cycle explores the psychology, longing, beauty and sadness of the twilight of humanity—ending not in a bang, but an irreversible power-down, basked in the golden, lingering, dying glow of man’s dusk.

- “**GG Music**” (2013, with Mark Cerqueira and Spencer Salazar) for live 8-channel and Starcraft 2. This piece examines the possibilities of using a popular real-time strategy computer game as the interface to a rich musical environment. Two players go head-to-head in a competitive match of StarCraft 2, observed by a third performer. As they develop economies and wage battles against each other, SoundCraft (a custom software created with the Starcraft 2 Editor, Ruby, and the Chuck audio programming language) collects gameplay data, which is extensively sonified in real-time. The sonification rises and falls with the development of the ongoing match, exploring the relationship between StarCraft’s gameplay mechanics and musical performance. *New Interfaces for Musical Expression 2013*.
- “**Converge**” (2010, with Jieun Oh) for the Stanford Laptop Orchestra (SLOrk) and Stanford Mobile Phone Orchestra (MoPhO). Images, sounds, and sentiments from Jieun’s and Ge’s everyday lives are captured, time- and geo-tagged, and collected via iPhones and cloud-based servers; they converge during the performance in an audio-visual journey of memory, time, and space.
- “**TBA**” (2007) for the Princeton Laptop Orchestra (PLOrk) and Stanford Laptop Orchestra (SLOrk). *Orchestral Live Coding for 15 laptops using Chuck!* Premiered in Princeton.
- “**Joy of Chant**” (2007) for the Princeton Laptop Orchestra (PLOrk). (with Rebecca Fiebrink and Perry Cook). A scored and improvisatory work for laptop ensemble, using joystick- and keyboard-controlled real-time singing synthesis.
- “**PLork Beat Science**” (2007, with Rebecca Fiebrink). *An Adventure for Flute and HyPLOrkussion!* Performances include: National Academy of Science Museum Washington DC, Electro-music 2007 Festival in Philadelphia, Princeton 2007, *New Interfaces for Music Expression 2009*, Pittsburgh.
<http://plork.cs.princeton.edu/beatscience/>
- “**Crystalis**” (2006) for the Princeton Laptop Orchestra (PLOrk) and Stanford Laptop Orchestra (SLOrk). This is a sonic rumination of crystal caves in the clouds, where the only sounds are those of the wind and the resonances of the crystals. It uses two simple instruments called the *crystalis* and *wind-o-lin*. These instruments make use of the laptop keyboard (which controls pitch and resonance) and the trackpad (which the players “bow” in various patterns to generate sound).
<http://plork.cs.princeton.edu/listen/NYC/>
- “**Loom (*Etude II pour un enfant seul*)**” (2006) for 8-channel tape using musical tapestry + sound scene re-composition, with Ananya Misra and Perry Cook.
– *juried* – International Computer Music Conference.
<http://taps.cs.princeton.edu/>
- “**Chuck Chuck Rocket**” (2006) (with Scott Smallwood, special thanks to Ananya Misra) for the Princeton Laptop Orchestra (PLOrk). Human players perform via a

networked game-board for virtual mouse-like critters, creating patterns at various scales via patterns and sound objects.

“**CliX**” (2006) for the Princeton Laptop Orchestra (PLOrk) and Stanford Laptop Orchestra (SLOrk). Human operators type to make sounds, while their machines synthesize, synchronize, and spatialize the audio. Every key on the computer keyboard (upper/lower-case letters, numbers, symbols) is mapped to a distinct pitch (using the key's ASCII representation) and when pressed, emits a clicking sound that is synchronized in time to a common pulse. A (human) conductor coordinates frequency range, texture, movement, and timing.

<http://plork.cs.princeton.edu/listen/green/>

“**Non-Specific Gamelan Taiko Fusion**” (2005) for the Princeton Laptop Orchestra (PLOrk) and Stanford Laptop Orchestra (SLOrk). (with Perry Cook) This piece is an experiment in human controlled, but machine synchronized percussion ensemble performance, for 15 laptops, each with 6 channel hemispherical speakers.

<http://plork.cs.princeton.edu/listen/debut/>

“**Gigapop Ritual**” (2003) Montreal/Princeton Internet2/CA2Net concert, for Sitar and EDholak (Ajay Kapur, Montreal), DigitalDoo (Perry Cook, Montreal), Electronic Spoon / Networking (Ge Wang, Montreal), Graphics (Philip Davidson, Montreal), Tabla and EDholak (Manjul Bhargava, Princeton), Electric Violin and RBow (Dan Trueman, Princeton), and Bass (Tae Hong Park, Princeton). 2003 International Conference on New Interfaces for Musical Expression, Montreal.

<http://gigapop.cs.princeton.edu/>

“**On-the-fly Counterpoint**” (2003, with Perry Cook) duo live coding for laptops and projectors | <http://on-the-fly.cs.princeton.edu/>

(with Perry Cook) 2003 Listening in the Sound Kitchen Festival, Princeton, NJ.

(with Perry Cook) 2004 International Conference of New Interfaces for Musical Expression, Hamamatsu, Japan. – *juried* –

(10-person TOPLAP jam) 2005 Transmediale Festival, Club Maria, Berlin, Germany

(with Nick Collins) 2005 Off-ICMC, Barcelona, Spain.

(solo) 2005 MusicAcoustic Festival, Central Conservatory of China, Beijing, China

(with Perry Cook) 2006 SIGGRAPH Art Gallery – Electronically Mediated Performance. – *juried* –

CONCERTS & EVENTS DIRECTED AND CURATED

2019: A SLOrk Odyssey — A Concert of New Frontiers June 2019. Ge Wang, Director; Matt Wright, Trijeet Mukhopadhyay, Jack Atherton Co-directors. “The Stanford Laptop Orchestra (SLOrk) will present new works for the full ensemble in Bing Concert Hall on Saturday, June 8th. You are warmly invited to an evening of music made at the intersection of humans, computers, hemispherical speaker arrays, new instruments, and novel musical spaces. This year, SLOrk will explore a number of new frontiers, including computer-mediated paper puppetry, SLOrk musical lanterns (slanterns), a computer music assimilation of Star Trek, a musical journey in VR, a sonic contemplation of plastic in our world, soundscapes in feedback, the very

first laptop opera (laptopera), and more. There will be a pre-concert talk by director Ge Wang on the topic of designing instruments for laptop orchestra, starting at 6:45pm. The concert will begin at 7:30pm.” Bing Concert Hall, Stanford University. <http://slork.stanford.edu/events/2019/spring/>

SLOrktastic Chamber Music 2019. May 2019. Ge Wang, Director; Matt Wright, Trijeet Mukhopadhyay, Jack Atherton, Co-directors. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar. As part of this year’s performance, we will be premiering a scene from the first-ever laptop opera (or, laptopera), created by Anne Hege with Elena Georgieva and Camille Noufi. Come one, come all!” CCRMA Stanford University. <http://slork.stanford.edu/events/2019/slorktastic/>

Artful Design Manifestival. November 1-2, 2018. Ge Wang, organizer and host. “A two-day gathering on the themes of technology, ethics, and aesthetics — an artful contemplation on the intersections of engineering, art, the humanities, and social sciences.” <http://artful.design/manifestival/>

SLOrk @ 10 in the Bing! June 2018. Ge Wang, Director; Matt Wright, Christopher Jette, Trijeet Mukhopadhyay, Co-directors. “The Stanford Laptop Orchestra (SLOrk) will present its 2018 Spring Concert in Bing Concert Hall on Saturday, June 9th. You are warmly invited to an evening of music for the full ensemble of humans, computers, hemispherical speaker arrays, new instruments, and novel musical spaces. This is the 10th anniversary of SLOrk, and there will be a pre-concert talk about the history and medium of the laptop orchestra.” Bing Concert Hall, Stanford University. *Wired Magazine* coverage: <https://www.wired.com/story/stanford-laptop-orchestra-tenth-anniversary-concert/>

SLOrktastic Chamber Music 2018. April 2018. Ge Wang, Director; Matt Wright, Christopher Jette, Trijeet Mukhopadhyay, Co-directors. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” CCRMA Stanford University.

SLOrk in the Bing! May 2016. Ge Wang, Director; Matt Wright and Tim O’Brien Co-directors. “The Stanford Laptop Orchestra (SLOrk) presents it’s a full-scale performance at Stanford University’s Bing Concert Hall. All are cordially invited to an evening of all news works for humans, laptops, hemispherical speaker arrays, and new instruments.” Bing Concert Hall, Stanford University.

SLOrktastic Chamber Music 2016. April 2016. Ge Wang, Director; Matt Wright and Tim O’Brien, Co-directors. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” CCRMA Stanford University.

SLOrk in the Bing! May 2015. Ge Wang and Madeline Huberth, Directors; “The Stanford Laptop Orchestra (SLOrk) presents it’s a full-scale performance at Stanford University’s Bing Concert Hall. All are cordially invited to an evening of works for the full ensemble of humans, laptops, hemispherical speaker arrays, and new instruments.” Bing Concert Hall, Stanford University.

SLOrktastic Chamber Music 2015. April 2015. Ge Wang and Madeline Huberth, Directors. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” CCRMA Stanford University.

SideLObe @ Cantor. February 2015. Ge Wang, Director. “SideLObe — the premier performance ensemble of the Stanford Laptop Orchestra — in collaboration with the Cantor Arts Center, presents a special performance event featuring electronic chamber music curated for Cantor’s Modern and Contemporary Gallery.” Stanford University Cantor Arts Center, Modern and Contemporary Gallery.

Stanford Laptop Orchestra: Live in Beijing. July 2014. Ge Wang, Director. The Stanford Laptop Orchestra (SLOrk) travels to China as part of a unique journey and joint graduate seminar with students from Stanford and Peking University. This marks the first time a laptop orchestra has traveled to and performed in the Far East. Stanford Center @ Peking University.

SLOrk in the Bing! May 2014. Ge Wang, Director; Spencer Salazar Co-director. “The Stanford Laptop Orchestra (SLOrk) presents it’s a full-scale performance at Stanford University’s Bing Concert Hall. All are cordially invited to an evening of works for the full ensemble of humans, laptops, hemispherical speaker arrays, and new instruments.” Bing Concert Hall, Stanford University.

SLOrktastic Chamber Music 2014. May 2014. Director. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” CCRMA Stanford University.

SLOrk in the Bing! June 2013. Jieun Oh and Ge Wang, Directors. “The Stanford Laptop Orchestra (SLOrk) presents its first full-scale performance at Stanford University’s new Bing Concert Hall. All are cordially invited to an evening of works for the full ensemble of humans, laptops, hemispherical speaker arrays, and new instruments.” Bing Concert Hall, Stanford University.

SLOrk 2012 Spring Concert. June 2012. Director. “The Stanford Laptop Orchestra (SLOrk) and Stanford Mobile Phone Orchestra (MoPhO) celebrates the conclusion of a wonderful 2012 season with a full-scale laptop orchestra concert featuring all new works by students and instructors in the SLOrk seminar.” Stanford University.

SLOrktastic Chamber Music 2012. April 2012. Director. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” Stanford University.

SLOrk 2011 Spring Concert. June 2011. Director. “The Stanford Laptop Orchestra (SLOrk) and Stanford Mobile Phone Orchestra (MoPhO) celebrates the conclusion of a wonderful 2011 season with a full-scale laptop orchestra concert featuring all new works by students and instructors in the SLOrk seminar.” Stanford University.

SLOrktastic Chamber Music 2011. April 2011. Director. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” Stanford University.

- SLOrk 2010 Spring Concert.** June 2010. Director. “The Stanford Laptop Orchestra (SLOrk) and Stanford Mobile Phone Orchestra (MoPhO) celebrates the conclusion of a wonderful 2010 season with a full-scale laptop orchestra concert featuring works by guest composers Chris Chafe, Bruno Ruviano, and Marisol Jimenez as well as students and instructors in the SLOrk seminar.” Stanford University.
- SLOrktastic Chamber Music 2010, featuring Jordan Rudess.** April 2010. Director. “The Stanford Laptop Orchestra presents an evening of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” Stanford University.
- Stanford Mobile Phone Orchestra: “i, MoPhO: Music for iPhones”.** December 2009. Director. “The Stanford Mobile Phone Orchestra presents a concert of new music for iPhone.” Stanford University, CCRMA Stage. *Covered by December 5th 2009 New York Times front page article.*
- SLOrk 2009 Spring Concert.** June 2009. Director. “The Stanford Laptop Orchestra (SLOrk) celebrates the conclusion of a wonderful 2009 season with a full-scale laptop orchestra concert.” Stanford University.
- SLOrktastic Chamber Music I + II.** May 2009. Director. “The Stanford Laptop Orchestra (SLOrk) presents two evenings of all new works for laptop chamber music, by members of the SLOrk ensemble and seminar.” Stanford University.
- Stanford Laptop Orchestra @ Distinctive Voices, Beckman Center.** March 2009. Director. Presented by the Beckman Center and the National Academy of Science, the Stanford Laptop Orchestra presents a concert and discussion. Irvine, CA.
- Stanford Laptop Orchestra @ MacWorld.** January 2009. Director. “The Stanford Laptop Orchestra presents a selection of works for a wide audience at MacWorld 2009.” San Francisco, CA.
- MoPhO @ ICMC.** August 2008. Co-director – with Georg Essl and Henri Penttinen. “The Stanford Mobile Phone Orchestra (MoPhO) presents works for mobile smart phones at the International Computer Music Conference.” Belfast, Ireland.
- SLOrktastic Chamber Music.** May 2008. Director. “The Stanford Laptop Orchestra presents an evening of all new works for electronic chamber music, by members of the SLOrk ensemble and seminar. The public is cordially invited to join us in exploring intimate sonic and musical spaces with performances crafted for up to six laptop stations.” Stanford University.
- Pacific Rim of Wire: An Online Concert with Chinain the Premiere of the Stanford Laptop Orchestra.** April 2008. Co-curator and director – with Chris Chafe and Jindong Cai. “In this first-of-its-kind concert, musicians from Stanford University’s renowned Center for Computer Research in Music and Acoustics (CCRMA) connects with musicians 6000 miles away in Beijing to perform – in real-time via the internet – a program that celebrates music, technology, and international collaboration, and marks the stage premiere of the Stanford Laptop Orchestra.”
- Sonic SLOrk Sculptures.** April 2008. Director. “Stanford Laptop Orchestra presents an afternoon of music and sonic installation performances, among the statues and

under the canopy of the New Guinea Sculpture Garden at Stanford University, in a first-ever outdoor laptop orchestra concert.”

Mobile Phone Orchestra Debut. January 2008. Director. “CCRMA’s Mobile Phone Orchestra presents an experimental concert featuring music performed on mobile electronic devices. Far beyond ring-tones, these interactive musical works take advantage of the unique technological capabilities of today's hardware, turning computer keypads, touch-screens and built-in accelerometers into powerful and mobile musical control systems.”

Princeton Laptop Orchestra: Winter Concert. January 2007. Co-directed, with Perry Cook. “The Princeton Laptop Orchestra presents an evening of new music, composed and performed by members of the Fall 2006 PLOrk seminar and ensemble.” Princeton University.

PLOrk in New York: Ear to the Earth Festival. New York City, October 2006. Co-directed, with Perry Cook. “For the Ear to the Earth Festival, the Princeton Laptop Orchestra has prepared a special set of sounds and musical works that explore our environments – both real and imagined, human and natural. These pieces do not aim to convey a single idea or message, but simply to evoke and to immerse the listener in familiar as well as alternate sonic surroundings.”

Princeton Laptop Orchestra Debut. Princeton University, Fall 2005. Co-directed and instructed, with Dan Trueman, Perry Cook, and Scott Smallwood. “The debut concert of the Princeton Laptop Orchestra features works by instructors and students in inaugural PLOrk ensemble.”

ADDITIONAL PERFORMANCES

“Under Construction: Bing Concert Hall.” June 2012, Stanford University Bing Concert Hall. This “hard hat” required performances marked the first musical performance in Bing’s main hall (while it was still under construction).

Beijing Modern Music Festival. May 2011, Central Conservatory of China. Performance of “Converge” and “Laugh” with Jieun Oh.

EG 2011. April 2011, curated by Michael Hawley. Performance of “Converge” with Jieun Oh.

Music and Brain Symposium. March 2011, curated by Jonathan Berger. Performance of “Converge” with Jieun Oh.

Music, Memory, and Aging Symposium. September 2010, curated by Jonathan Berger. Performed “Converge” with Jieun Oh.

NIME 2010 Mobile Music Concert. June 2010. Stanford Mobile Phone Orchestra performs as part of concert mediated via mobile phones (with Georg Essl and Greg Schiemer).

Stanford University Bing Concert Hall Groundbreaking. March 2010. Stanford Mobile Phone Orchestra, director and performer.

Stanford University Prospective Student Weekend. March 2009, 2010, 2011. Part of the final concert at Memorial Church, curated by Steve Sano. Stanford Mobile Phone Orchestra, Stanford Laptop Orchestra, director and performer.

Oakland Museum of California Grand Reopening. March 2010. Stanford Mobile Phone Orchestra, director and performer.

Stanford University Prospective Student Weekend. March 2009. Part of the final concert at Memorial Church, curated by Steve Sano. Stanford Laptop Orchestra, director and performer.

SELECTED PRESS FEATURES

“Stanford Polymath Blazes a New Trail with His Design Manifesto.” By Robin Wander. *Stanford News*. December 2018.

<https://news.stanford.edu/2018/12/19/stanford-polymath-blazes-new-trail-design-manifesto/>

“The Aural Magic of Stanford’s Laptop Orchestra.” By Arielle Pardes. *Wired Magazine*. June 2018. <https://www.wired.com/story/stanford-laptop-orchestra-tenth-anniversary-concert/>

“The Machine That Makes You Musical.” (also “YouTunes.”) *The New York Times Magazine*. November 2011.

<https://www.nytimes.com/2011/11/27/magazine/smule.html>

“Episode 26: Artful Design, Computers, and Music.” By Sean Carroll. *Mindscape Podcast*. December 2018.

<https://www.preposterousuniverse.com/podcast/2018/12/10/episode-26-ge-wang-on-artful-design-computers-and-music/>

“Ge Wang *08 on Computers, Music, and Artful Design.” By Allie Wenner. *Princeton PAWcast, Princeton Alumni Weekly*. February 2019.

<https://paw.princeton.edu/podcast/pawcast-ge-wang-08-computers-music-and-artful-design>

“Stanford Professor’s Music Apps Turns iPhone and iPad into Musical Instruments.” NBC’s *Rock Center with Brian Williams*. March 2012.

“Digital Giants: Ge Wang” *BBC*. March 2010. (profile and feature)

“Ge Wang: the iPhone’s Music Man.” *IEEE Spectrum*. September 2009.

<https://spectrum.ieee.org/geek-life/profiles/ge-wang-the-iphones-music-man>

“From Pocket to Stage, Music in the Key of iPhone.” *The New York Times*. December 4th, 2009. (print: front page feature story)

<https://www.nytimes.com/2009/12/05/technology/05orchestra.html>

“Blow It Out Your iPhone: Ge Wang Invites You to Reinvent Music.” *Inventors Magazine Digest*. September 2009. (cover story and feature)

<https://www.inventorsdigest.com/articles/blow-it-out-your-iphone/>

“Virtual Maestro.” *Duke Magazine*. July / August 2011. (feature and profile)

<http://dukemagazine.duke.edu/article/virtual-maestro>

- “So Many Apps, So Little Time.”** By David Pogue. *The New York Times: Pogue’s Posts*. March 2009. <https://pogue.blogs.nytimes.com/2009/02/05/so-many-iphone-apps-so-little-time/>
- “Mobile Phone Orchestra: Music on the Move.”** *NPR*. May 2009.
- “Hi-Tech Tunes: Stanford Taps Into Music’s Future.”** *MSNBC*. April 2009.
- “Leading a Big Parade of iPhone Apps.”** *USA Today*. April 2009. (cover story and profile)
- “Stanford Researcher Uses Cell Phone to Make Music.”** *Stanford Report*. March 2009.
- “Play It Again, HAL: The Stanford Laptop Orchestra Puts the Code in Coda.”** *Stanford Magazine*. March/April 2009.
- “Laptop Maestro Makes Music Apt for the iPhone.”** *The Age*. February 2009.
- “Is That Ocarina Music Coming from Your iPhone?”** *Scientific American*. December 2008.
- “There’s Gold in Them iPhones.”** *Newsweek*. December 2008.
- “Stanford Laptop Orchestra: Musical Macs.”** *Apple Pro*. November 2008.

WORK EXPERIENCE

- 2017—present. *Associate Professor*. Stanford University. Center for Computer Research in Music and Acoustics (CCRMA) | Department of Music (also Computer Science, by Courtesy). Full-time research and teaching.
- 2007—2017. *Assistant Professor*. Stanford University. Center for Computer Research in Music and Acoustics (CCRMA) | Department of Music (also Computer Science, by Courtesy). Full-time research and teaching.
- 2008—2013. *Co-founder and Chief Creative*. Smule (formerly also SonicMule). Startup company exploring interactive social music leveraging mobile technology; a research platform to bring the visions of social computer music to a wide population.
- 2001—2007. *Ph.D. Student and Research Assistant*. Princeton University. Department of Computer Science. Full-time research; teaching.
- Feb—Aug 2001. *Software Engineer*. The Adrenaline Group. Software Development Team. Designed and implemented distributed architecture for associative client-side database caching in Java; constructed and taught company course in C++, application development, and graphics.
- 2000 Summer. *Software Design Engineer*. Microsoft Corporation. DirectX Group, SDK Team. Designed and implemented DirectX 8.0 multimedia samples, and

shared sample components (binaries and source code shipped with SDK) using DirectMusic, DirectSound, and DirectInput.

- 1997—2000. *Teaching Assistant*. Duke University Computer Science Department. 10-30 hours per week. Guided and helped students enrolled in computer science courses in laboratory work and programming projects in Java/C++, simulations, and graphics.
- 1999 Fall. *Lead Developer*. BuyIQ.com (failed E-commerce start-up). Designed and implemented SQL Server database with ASP front-end for consumer research / shopping site, along with authoring/publishing tool and utilities for managing / maintaining web site and database.
- 1999 Summer. *Software Engineer*. Evans and Sutherland Corporation. Designed and implemented architecture for GL-Trace, an application for observing and tracing multithreaded OpenGL applications.
- 1998 Summer. *Software Design Engineer*. Microsoft Corporation. WindowsNT Development Group. Graphics Device Interface (GDI) Team. Implemented features for color management and test-bed application to flexibly test GDI+.
- 1998 Spring. *Lead Developer* (with George Stetten and Visnu Pitiyanuvath). 3D Java / C++ Game Engine. Designed and Implemented graphics / game engine in Java and in C++/OpenGL used in simulation course.
- 1997 Summer. *Custom Programmer / Consultant*. Data Systems International. Designed and implemented database software while working directly and extensively with client.

MOBILE MUSIC COMMERCIAL SOFTWARE APPLICATIONS

- Smule** (startup company), Co-founder, 2008. (reaching 200+ millions users)
- Ocarina** (iPhone app). concept and design, programming (10+ million users)
- Ocarina 2** (iPhone app). concept and design, programming
- Magic Piano** (iPad, iPhone app). concept and design, programming (90+ million users)
- Leaf Trombone: World Stage** (iPhone app). concept and design.
- Magic Fiddle** (iPad app). concept and design, programming.
- Sonic Lighter** (iPhone app). Concept and design, programming.
- Zephyr** (iPhone app). Concept and design.
- I Am T-Pain** (iPhone app), creative advisor.
- AutoRap** (iPhone app), creative advisor, marketing.
- Sing!** (iPhone app), concept: globe and distributed singing, creative advisor.

ACADEMIC, DEPARTMENTAL, AND PROFESSIONAL SERVICE

- Undergraduate Study of Writing Committee, Stanford University, 2021-present
Committee on the University Press (C-UP), Stanford University, 2020-present

Committee on Diversity, Equity, Inclusion, Stanford Music Dept., 2021-present
Graduate Studies Committee, Stanford Music Dept. 2020-present
Senator, Stanford University Faculty Senate, 2019–2021
Course Design Team, Stanford First-Year Experience “Why College?”, 2020
Course Design Team, Stanford First-Year Experience “Citizenship”, 2020
Curricular Implementation Committee, Stanford Music Dept., 2020
Curricular Revision Task Force, Stanford Music Dept., 2019-2020
Host and Co-producer, Artful Design TV, 2020-present
Board Member, Stanford University Press Faculty Editorial Board, 2018-present
Board Member, San Francisco Symphony Board of Governors, 2011–present
Organizer and Host, Artful Design Manifestival, 2018
Courtesy Appointment, Stanford University Computer Science, 2008–present
Committee Member, Stanford Music Dept. Curriculum Task Force, 2018-2020
Stanford University Art + Technology Task Force, 2017–2018
Committee, Stanford CS+X / CS+Music Joint Major Program, 2013–2014
Stanford CS+Music Joint Major Program advisor, 2014–2018
Stanford Music Dept. Graduate Studies Committee, 2013–2016
Faculty Search Committee, Stanford Music Dept. (CCRMA), 2011
Faculty Search Committee, Stanford Music Dept. (Ethnomusicology), 2010
Faculty Search Committee, Stanford Music Dept. (Composition), 2008
Program Committee, *International Computer Music Conference (ICMC)*, 2006, 2008
Program Committee, *New Interfaces for Musical Expression (NIME)*, 2008
Reviewer, *ACM CHI*, 2010-present
Reviewer, *International Computer Music Conference (ICMC)*, 2004–present
Reviewer, *New Interfaces for Musical Expression (NIME)*, 2006–present
Reviewer, *Music Information Retrieval ISMIR*, 2012–present
Reviewer, *Computer Music Journal*, 2006–present
Reviewer, *Leonardo Music Journal*, 2010–present
Reviewer, *IEEE Multimedia*; 2007–present
Member, *Association for Computing Machinery*
Member, *International Computer Music Association*
Member, *TOPLAP* (live coding organization)
Member, *Computer Science Graduate Council* (Princeton), 2002–2007

ADDITIONAL INFORMATION

Spoken languages: English, Chinese (Mandarin)
Citizenship: U.S.
Born: November 1977 in Beijing, China

REFERENCES

(available upon request.)