MICHAEL S. HORN

Northwestern University
2120 Campus Drive, Evanston, IL 60208
michael-horn@northwestern.edu
https://tidal.northwestern.edu

APPOINTMENTS

2022 –	**Full Professor, Northwestern University** Learning Sciences, School of Education and Social Policy Computer Science, McCormick School of Engineering and Applied Science **Co-Coordinator**, Joint PhD in Computer Science and Learning Sciences (2016 -)	Evanston, IL
2016 – 2022	**Associate Professor, Northwestern University** Learning Sciences, School of Education and Social Policy Computer Science, McCormick School of Engineering and Applied Science **Coordinator**, Learning Sciences Ph.D. Program (2016-2021) **Director:** Learning Sciences MA Program (2019-2021)	Evanston, IL
2010 – 2016	**Assistant Professor, Northwestern University**	Evanston, IL

EDUCATION

2003 – 2009	**Ph.D. Computer Science, Tufts University** Advisor: Robert J.K. Jacob	Medford, MA
1993 – 1997	**Sc.B. Computer Science, Brown University**	Providence, RI

RESEARCH & PROFESSIONAL EXPERIENCE

2011 – 2013	**Field Museum, Department of Zoology, Division of Fishes** *Research Associate*	Chicago, IL
2003 – 2009	**Tufts University, Department of Computer Science** *Research Assistant* Created the Tern tangible programming language.	Medford, MA
2008 – 2009	**Harvard University, Initiative in Innovative Computing** *Fellow* Created multi-touch tabletop exhibit for the Harvard Museum of Natural History.	Cambridge, MA
2007 – 2009	**Museum of Science, Boston** *Exhibit Development Intern* Created *Robot Park,* a tangible programming and robotics exhibit.	Boston
2006 & 2007	**iRobot Corporation** *Software Engineer* Developed control systems for prototype commercial robots.	Bedford, MA
1998 – 2003	**Classroom Connect** *Senior Software Engineer & Project Lead* Developed web-based K-12 curriculum products.	San Francisco
1997 – 1998	**Actioneer, Inc.** *Software Engineer* Developed productivity applications for handheld devices.	San Francisco

ACADEMIC AWARDS

- Charles Deering McCormick Professor of Teaching Excellence, Northwestern University (2025)
- Computer Science Instructor of the Year Award, Northwestern University (2024)
- Daniel Linzer Award for Faculty Excellence in Diversity and Equity—Northwestern University (2023)
- Best Paper Award—ACM CHI Conference (2021)
- Edith Ackermann Award for Outstanding Achievement—ACM IDC Conference (2018)
- Best Paper Honorable Mention Award—ACM CHI Conference (2018)
- First Place Showcase Award—Games Learning, and Society Conference (2016)
- Best Learning Game Nominee—Games for Change Conference (2016)
- Honorable Mention Best Late Breaking Work Paper—ACM CHI Conference (2016)
- National Science Foundation CAREER Award (2015)
- Best Paper Award—ACM CHI Conference (2015)
- Best Paper Award—Interaction Design and Children Conference (2014)
- Best Short Paper Award—Interaction Design and Children Conference (2014)
- Second Place Showcase Award—Games, Learning, and Society Conference (2014)
- Best Design Paper Award—Computer Supported Collaborative Learning Conference (2013)
- Best Paper Nomination—Computer Supported Collaborative Learning Conference (2013)
- Best Workshop Paper—Interaction Design and Children Conference (2013)
- Award for Outstanding Graduate Student Researcher, Tufts University (2009)
- GK-12 Fellow—National Science Foundation (2005-2007)
- Award for Outstanding Contribution to Engineering Education, Tufts University (Spring 2005)
- Gaston Scholarship for Academic Excellence in Computer Science, Brown University (Spring 1997)

EDITORIAL BOARDS

- Editor-in-Chief, International Journal of Child-Computer Interaction (9/2020 – present)
- Associate Editor, Journal of the Learning Sciences (2019 – 2021)
- Associate Editor, Transaction on Computer-Human Intereaction (6/2021 – present)
- Associate Editor, International Journal of Child-Computer Interaction (2016 – 2020)
- Associate Editor, Technology, Knowledge, and Learning (2010-2012)

GRANTS

$1,228,051. Horn, M. *ITEST DTI: CoDecode: designing novel collaborative coding experiences for K-8 classrooms.* National Science Foundation, 2024-2027.

$68,250. Horn, M. *NSF 75th Anniversary STEM Day ITEST Supplement.* National Science Foundation, 2025.

$1,190,907. Matsko, K.K., Horn, M., Hooper, P. *STEM + Computer Science + Justice: Teaching for Transformation (STEM+).* National Science Foundation, Robert Noyce Fellowship, 2025 – 2028.

$1,499,990. Wilensky, U. & Horn, M. *POSE: Phase II: Cultivating Modeling Literacy and Practice through a NetLogo Open-Source Ecosystem.* National Science Foundation, 2023 – 2025.

$848,950. Horn, M., Hillsamer, A., Zang, M. *RETTL: Supporting Computational Literacy by Designing a Collaborative Platform at the Intersection of Music and Code.* National Science Foundation, 2021-2024.

$25,000. Horn, M. *Street Code Jam Fest (Summer 2021).* Verizon Foundation, 2021.

$2,637,054. Wilensky, U. & Horn, M. *"CT-ifying" the High-School Science Curriculum to Broaden Participation in Computational Science.* National Science Foundation, 2018-2021.

$999,865. Horn, M., Freeman, J., Magerko, B., Pinkard, N., Pratt, A. *CSforAll: Broadening Participation in Computer Science Through Music, Dance, and Coding Across Learning Spaces*. National Science Foundation, 2018-2021

$474,800. Magerko, B., Freeman, J., Horn, M. *Collaborative Research: Mixing Learning Experiences for Computer Programming Across Museums, Classrooms, and the Home Using Computational Music.* National Science Foundation, 2016-2020.

$608,426. Horn, M. *CAREER: Blocks, Stickers, and Puzzles: Rethinking Computational Literacy Experiences in Informal Environments.* National Science Foundation, 2015-2020.

$2,502,818. Wilensky, U., Jona, K., & Horn, M. *DD: Integrating Computational Thinking in High School Science and Mathematics.* National Science Foundation. 2016-2019.

$218,268. McGee, S., Horn, M., Hoogstraten, J., Matcuk, M. *Collaborative Research: Designing Digital Rails to Foster Scientific Curiosity around Museum Collections*. 2015-2016.

$996,985. Horn, M., Wilensky, U., Orton, K., & Jona, K. *Broadening Participation in a Computational Future: Casting a Wide Net.* Spencer Foundation, Lyle Spencer Award, 2015-2018.

$599,849. Orton, K., Horn, M., Jona, K., & Wilensky, U. *Computational Thinking in STEM: A Whole-School Model for Broadening Participation and Education in Computing.* National Science Foundation, 2014-2016.

$687,043. Wilensky, U.J. & Horn, M.S. *Learning evolution through model-based inquiry: Supporting agent-based modeling in STEM classrooms.* National Science Foundation, 2012-2015.

$998,711. Jona, K., Horn, M.S., Kalogera, V., Trouille, L., & Wilensky, U. *Casting a Wide Net: Applied Computational Thinking.* National Science Foundation, 2011-2014.

$539,799. Horn, M.S. & Stevens, R. *Augmenting Household Technologies for Learning and Whole-family participation.* National Science Foundation, 2011-2015.

$2,312,149. Shen, C., Diamond, J., Evans, E., & Horn, M. *Life on Earth.* National Science Foundation, 2010-2013.

$42,732. Horn, M.S. & Stevens, R. *Household resource consumption and learning: Design and research*. Initiative for Sustainability and Energy at Northwestern, Faculty Booster Grant. 2010-2011.

$10,000. Horn, M.S. *Interactive Sustainable Fishing Exhibit.* Dr. Scholl Foundation, 2015.

MUSEUM EXHIBITS, GAMES, AND BROADER IMPACTS

2007 – 2012	**Robot Park Exhibit** Tangible computer programming and robotics	Museum of Science, Boston
2012 – 2015	**Build-a-Tree Exhibit** Evolution puzzle game	California Academy of Sciences Musée national d'histoire naturelle, Luxembourg
2017 – 2020	**Frog Pond Exhibit** Tabletop computer programming	Computer History Museum
2012 – 2015	**Deep Tree Exhibit** A deep zoom into the tree of life	Field Museum Montreal Science Center California Academy of Sciences Oxford Museum of Natural History

Harvard Museum of Natural History
University of Nebraska State Museum
Museum of Natural History, Mexico City
Natural History Museum of Utah

2015 – **PBS NOVA Lab** — WGBH, Boston
Build the tree of life
Nominated Best Learning Game, Games for Change, 2016
http://www.pbs.org/wgbh/nova/labs

2016 – **OSMO Coding**
Tangible programming game
Created in collaboration with Tangible Play
Best Tech Toys, 2016—Wall Street Journal, Amazon.com
https://www.playosmo.com/en/coding/

2014 **Turn Up the Heat**
The world's first and only thermostat board game!
2nd Place Showcase Award, GLS Conference (2014)

2016 **Invasion of the Energy Monsters**
A spooky game about saving energy.
1st Place Showcase Award, GLS Conference (2016)

2018 – **TunePad**
Free online learning platform that introduces digital music production with Python computer coding.
https://tunepad.club

NAACP, DuPage County
James R. Jordan Foundation
YMCA MetaMedia, Evanston
Chicago Youth Centers
Project Exploration, Chicago
Evanston Public Library, Chicago
YWCA, Chicago
Boys and Girls Club, Chicago
Gary Comer Youth Centers, Chicago
Evanston/Skokie School District 65
Chicago Public Schools
Richmond, Virginia Public Schools
Wolverine Pathways, U. Michigan

2024 -- **Mission: Code, Riveting Robots Exhibit** — Science City, Kansas City
Tangible Computer Programming and Robotics Exhibit

SELECTED PUBLICATIONS

Lotsos, A. N., Wang, Y., & Horn, M. S. (2025, July). Conceptions of Design Practice From Academy to Industry: Implications for HCI and Design Education. In Proceedings of the 7th Annual Symposium on HCI Education (pp. 1-12).

Ecford, O. L., & Horn, M. S. (2025). To Be or Not to Be: A Study on Shakespeare, Incarcerated Youth, and Future-Orientation. In *Proceedings of the 19th International Conference of the Learning Sciences-ICLS 2025*, pp. 574-582. International Society of the Learning Sciences.

Chen, J., Zhao, L., Horn, M., & Wilensky, U. (2025). Engaging Millions of Worldwide Youth in Informal STEM Learning: Uncovering Open-Ended Design Principles that Drive Physics Lab's Success. In Proceedings of the 24th Interaction Design and Children (pp. 21-37).

Roberts, C. & Horn, M. (2025) Computational Thinking and Epistemic Heterogeneity: A Critical Review of Music+Coding. *ACM Transactions on Computing Education (online first)*. https://dl.acm.org/doi/10.1145/3749995

Chen, J., Lotsos, A., Wang, G., Zhao, L., Sherin, B., Wilensky, U., & Horn, M. (2025). Processes Matter: How ML/GAI Approaches Could Support Open Qualitative Coding of Online Discourse Datasets. arXiv preprint arXiv:2504.02887.

Giannakos, M., Horn, M., & Cukurova, M. (2025). Learning, design and technology in the age of AI. *Behaviour & Information Technology*, 1-5.

Levy, M., Peel, A., Zhao, L., LaGrassa, N., Horn, M. S., & Wilensky, U. (2025). Secondary science teachers' conceptualizations and modifications to support equitable participation in a co-designed computational thinking lesson. *Journal of Research in Science Teaching 26*(5). https://doi.org/10.1002/tea.21998

Roberts, C. L., & Horn, M. S. (2024). Computational musicking: music+ coding as a hybrid practice. *Behaviour & Information Technology*, 1-21. https://doi.org/10.1080/0144929X.2024.2402533

John Chen, Lexie Zhao, Yinmiao Li, Zhennian Xie, Uri Wilensky, Mike Horn. (2024). "Oh My God! It's Recreating Our Room!" Understanding Children's Experiences with A Room-Scale Augmented Reality Authoring Toolkit. *Proceedings of the CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3613904.364204

Chen, J., Lu, X., Du, Y., Rejtig, M., Bagley, R., Horn, M., & Wilensky, U. (2024). Learning agent-based modeling with LLM companions: Experiences of novices and experts using ChatGPT & NetLogo chat. In *Proceedings of the CHI Conference on Human Factors in Computing Systems* (pp. 1-18). https://doi.org/10.1145/3613904.3642377

Umit Aslan, Michael Horn, Uri Wilensky (2024). Why are some students "not into" computational thinking activities embedded within high school science units? Key takeaways from a microethnographic discourse analysis study. *Science Education*, https://doi.org/10.1002/sce.21850

Peel, A., Dabholkar, S., Anton, G., Horn, M. & Wilensky, U. (2023) Characterizing changes in teacher practice and values through co-design and implementation of computational thinking integrated biology units, *Computer Science Education*, DOI: 10.1080/08993408.2023.2265763

Chen, J., Horn, M., & Wilensky, U. (2023). Interactive Constructionist Scaffolds for Agent-based Modeling and Programming in NetLogo. In Proceedings of FabLearn/Constructionism 2023: Full and Short Research Papers (pp. 1-7).

McCall, L., Freeman, J., McKlin, T., Lee, T., Horn, M., and Magerko, B. (2023). Complementary roles of note-oriented and mixing-oriented software in student learning of computer science plus music. *Computer Music Journal, 46*:3, pp 1-19. Doi:10.1162/COMJ_a_00651.

Kuo, Pei-Yi & Horn, Michael. (2023). EcoSanté Lifestyle Intervention: Encourage Reflections on the Connections between Health and Environment. *ACM Transaction on Computer-Human Interaction (TOCHI)*. https://dl.acm.org/doi/10.1145/3609325

Roberts, C. & Horn, M. (2023). When Literacies Collide: The role of translation in music+coding activities. In *Proceedings of the Learning, Design, and Technology Symposium (LDT'23)*. https://dl.acm.org/doi/10.1145/3594781.3594795

Chen, J., Zhao, L., Horn, M., & Wilensky, U. (2023, June). The Pocketworld Playground: Engaging Online, Out-of-School Learners with Agent-based Programming. In *Proceedings of ACM Interaction Design and Children Conference* (pp. 267-277).

Wallace, I. & Horn, M. (2023). The Street Code Project: Computational literacy and the performing arts. In J. Diamond & S. Rosenfeld (Eds.), *Amplifying Informal Science Learning: Rethinking Research, Design, and Engagement* (pp. 212-221). Routledge. doi: 10.4324/9781003145387-24

Hershkovitz, A., Bain, C., Kelter, J., Peel, A., Wu, S., Horn, M. S., & Wilensky, U. (2023). Contribution of Computational Thinking to STEM Education: High School Teachers' Perceptions after a Professional Development Program. *Journal of Computers in Mathematics and Science Teaching, 42*(1), 35-65.

Horn, M.S., Banerjee, A., Brucker, M. (2022). TunePad Playbooks: Designing Computational Notebooks for Creative Music Coding. *ACM Conference on Human Factors in Computing Systems (CHI' 22).*

Mmachi God'sglory Obiorah, James K.L. Hammerman, Becky Rother, Will Granger, Haley Margaret West, Michael Horn, Laura Trouille (2021). U!Scientist: Designing for People-Powered Research in Museums. *ACM Conference on Human Factors in Computing Systems (CHI' 2021).*
Best Paper Award (top 1% of all submissions)

Mmachi God'sglory Obiorah, Anne Marie Piper, Michael Horn (2021). Designing AACs for People with Aphasia Dining in Restaurants. *ACM Conference on Human Factors in Computing Systems (CHI' 2021).*

Polinsky, N., Andrus, B., Horn, M.S., Uttal, D.H. (2021). Symbolic relations in collaborative coding: how children and parents map across symbol systems while coding robots. *Interaction Design and Children (IDC'21)*

McKlin, T., McCall, L., Lee, T., Magerko, B., Horn, M., & Freeman, J. (2021). Leveraging Prior Computing and Music Experience for Situational Interest Formation. In Proc. *ACM Technical Symposium on Computer Science Education* (pp. 928-933).

Kelter, J., Peel, A., Bain, C., Anton, G., Dabholkar, S., Horn M. S., & Wilensky, U. (2021). Constructionist Co-design: A Dual Approach to Curriculum and Professional Development. *British Journal of Educational Technology*, 1043-1059.

Horn M.S., Banerjee A., West M. (2020) Music and Coding as an Approach to a Broad-Based Computational Literacy. In: Giannakos M. (eds) *Non-Formal and Informal Science Learning in the ICT Era*. Lecture Notes in Educational Technology. Springer, Singapore. https://doi.org/10.1007/978-981-15-6747-6_5

Arastoopour Irgens, G., Dabholkar, S., Bain, C., Woods, P., Hall, K., Swanson, H., Horn, M., & Wilensky, U. (2020). Modeling and Measuring Students' Computational Thinking Practices in Science. *Journal of Science Education and Technology.*

Horn, M. S., Banerjee, A., Bar-El, D., & Wallace, I. H. (2020). Engaging families around museum exhibits: comparing tangible and multi-touch interfaces. In *Proc. of Interaction Design and Children Conference* (pp. 556-566).

Horn, M., Banerjee, A., West, M., Pinkard, N., Pratt, A., Freeman, J., Magerko, B., & McKlin, T. (2020). TunePad: Engaging Learners at the Intersection of Music and Code. *Proceedings of the International Conference of the Learning Sciences (ICLS)*, pp. 1237-1244.

Horn, M. & Bers, M. (2019). Tangible Computing. In S.A. Fincher & A.V. Robins (Eds.), *The Cambridge Handbook of Computing Education Research*. Cambridge University Press.

Horn, M.S. (2018). Tangible Interaction and Cultural Forms: Supporting computer-based learning in informal environments. *Journal of the Learning* Sciences, 27(4), 1-34.

Leong, Z.A., Horn, M., Thaniel, L., & Meier, E. (2018). Inspiring AWE: Transforming Clinic Waiting Rooms into Informal Learning Environments with Active Waiting Education. *SIGCHI Conference on Human Factors in Computing Systems (CHI'18)*, 1668-1679. ACM.

Roberts, J., Banerjee, A., Hong, A., McGee, S., Horn, M., & Matcuk, M. (2018). Digital Exhibit Labels in Museums: Promoting Visitor Engagement with Cultural Artifacts. *SIGCHI Conference on Human Factors in Computing Systems (CHI'18)*, 4758-4770. ACM.
Best Paper Honorable Mention

Villanosa, K. & Horn, M. (2018). Words mean things: How museum workers' discursive practices position the diverse communities they seek to engage. *International Conference of the Learning Sciences.*

Beheshti, E., Kim, D., Ecanow, G., & Horn, M. (2017). Looking inside the wires. Understanding museum visitor learning with an augmented circuit exhibit. *ACM Conference on Human Factors in Computing Systems (CHI'17).*

Horn, M., Phillips, B., Evans, E.M., Block, F., Diamond, J., Shen, C. (2016). Visualizing biological data in museums: Visitor learning at an interactive tree of life exhibit. *Journal of Research in Science Teaching, 53*(6), 895-918.

Weintrop, D., Beheshti, E., Horn, M., Orton, K., Jona, K., Trouille, L., & Wilensky, U. (2016). Defining Computational Thinking for Math and Science Classrooms. *Journal of Science Education and Technology*, 1-21.

Horn, M., Banerjee, A., Davis, P., & Stevens, R. (2016). Invasion of the Energy Monsters: A spooky game about saving energy. *Games, Learning, and Society* (GLS'16).
First Place Showcase Award

Block, F., Hammerman, J., Horn, M.S., Phillips, B.C., Evans, E.M., Diamond, J., Shen, C. (2015). Fluid grouping: Quantifying group engagement around interactive tabletop exhibits in the wild. *ACM Conference on Human Factors in Computing Systems* (CHI'15), ACM Press, 867-876.
Best Paper Award (top 1% of all submissions)

Horn, M., Stevens, R., Leong, Z.A., & Greenberg, M. (2015). Kids and thermostats: Understanding children's involvement with household energy systems. *Journal of Child-Computer Interaction* 3-4, 14-22.

Davis, P., Horn, M.S., Block, F., Phillips, B., Evans, E.M., Diamond, J., & Shen, C. (2015). "Whoa! We're going deep in the trees!": Patterns of collaboration around an interactive information visualization exhibit. *International Journal of Computer-Supported Collaborative Learning, 10*, 53-76.

AlSulaiman, S. & Horn, M.S. (2015). Peter the Fashionista? Computer programming games and gender-oriented cultural forms. *ACM CHI PLAY 2015,* ACM Press.

Hu, F., Zekelman, A., Horn, M., & Judd, F. (2015). Strawbies: Explorations in tangible programming (demo presentation). *Interaction Design and Children (IDC'15).*

DiAngelo, S., Pollock, D.H., & Horn, M.S. (2015). Fishing with Friends: Tabletop games to raise environmental awareness in aquariums. *Interaction Design and Children (IDC'15)*, 29-38, ACM Press.

Leong, Z.A. & Horn, M.S. (2014). Waiting for learning: Designing interactive education materials for patient waiting areas. *Interaction Design and Children (IDC'14),* ACM Press, 359-362.
Best Full Paper Award

Horn, M., Brady, C., Hjorth, A., Wagh, A., Wilensky, U. (2014). Frog Pond: A code-first learning environment on evolution and natural selection. *Interaction Design and Children (IDC'14)*, ACM, 357-360.
Best Short Paper Award

Horn, M.S., Banerjee, A., D'Angelo, S., Kuo, P-Y., Pollock, D.H., Stevens, R. (2014). Turn Up the Heat! Board games, environmental sustainability, and cultural forms. *Games, Learning, and Society (GLS'14).*
GLS Showcase Award (2nd Place)

Wilensky, U., Brady, C., and Horn, M.S. (2014). Fostering computational literacy in science classrooms. *Communications of the ACM, 57*(8), 17-21.

Horn, M.S. (2013). The role of cultural forms in tangible interaction design. *Tangible, Embedded, and Embodied Interaction (TEI'13).* ACM Press.

Davis, P., Horn, M.S., & Sherin, B.L. (2013). The right kind of wrong: A knowledge-in-pieces approach to science learning in museums. *Curator, 56*(1), 31-46.

Davis, P., Horn, M.S., Schrementi, L., Block, F., Phillips, B., Evans, E.M., Diamond, J., & Shen, C. (2013). Going Deep: Supporting collaborative exploration of evolution in natural history museums. *Conference on Computer Supported Collaborative Learning (CSCL'13)*, Madison, Wisconsin.
Best Design Paper Award

Horn, M.S., AlSulaiman, S., Koh, J. (2013). Translating Roberto to Omar: Computational literacy, stickerbooks, and cultural forms. *Interaction Design and Children (IDC'13)*, ACM Press, 120-127.

Block, F., Horn, M.S., Phillips, B.C., Diamond, J., Evans, E.M., & Shen, C. (2012). DeepTree Exhibit: Visualizing the tree of life to facilitate informal learning. *IEEE Transaction on Visualization & Computer Graphics, 18*(12), 2789-2798.

Horn, M.S., Crouser, R.J., Bers, M.U. (2012). Tangible interaction and learning: The case for a hybrid approach, *Personal and Ubiquitous Computing, 16*(4), 379-389.

Block, F., Wigdor, D., Phillips, B. C., Horn, M. S., & Shen, C. (2012). FlowBlocks: A multi-touch UI for crowd interaction. *User Interface Software and Technology (UIST'12)*, ACM Press, 497-508.

Horn, M.S., Leong, Z.A., Block, F., Diamond, J., Evans, E.M., Phillips, B., & Shen, C. (2012). Of BATs and APEs: An interactive tabletop game for natural history museums. *ACM Conference on Human Factors in Computing Systems (CHI'12)*, ACM Press, 2059-2068.

Bao, P., Hecht, B., Carton, S., Quaderi, M., Horn, M.S., & Gergle, D. (2012). Omnipedia: Bridging the Wikipedia language gap. ACM *Human Factors in Computing Systems (CHI'12)*, ACM Press, 1075-1084.

Olson, I., Leong, Z.A., Horn, M. (2011). "It's just a toolbar!" Using tangibles to help children manage conflict around a multi-touch tabletop. *Tangible, Embedded, and Embodied Interaction (TEI'11)*, ACM, 29-36.

Horn, M. S., Davis, P., Hubbard, A., Keifert, D., Leong, Z.A., & Olson, I.C. (2011). Learning Sustainability: Children, learning, and the next generation eco-feedback technology. *Interaction Design and Children (IDC'11)*, ACM, 161-164.

Horn, M.S., Solovey, E.T., Crouser, J.R., and Jacob, R.J.K. (2009). Comparing tangible and graphical programming interfaces for use in informal science education. *ACM Conference on Human Factors in Computing Systems (CHI'09)*, ACM Press, 975-984.

Horn, M.S., Tobiasz, M., and Shen, C. (2009). Visualizing Biodiversity with Voronoi Treemaps. *International Symposium on Voronoi Diagrams in Science and Engineering (ISVD'09)*, Copenhagen, Denmark.

Horn, M.S., Solovey, E.T., and Jacob, R.J.K. (2008). Tangible programming and informal science learning: making TUIs work for museums. *Interaction Design and Children (IDC'08)*, ACM Press, 194-201.

Jacob, R.J.K., Girouard, A., Hirshfield, L.M., Horn, M.S., Shaer, O., Treacy, E.S., and Zigelbaum, J. (2008). Reality-Based Interaction: A Framework for post-WIMP interfaces. *Conference on Human Factors in Computing Systems (CHI'08)*, ACM Press, 201-210.

BOOKS

Horn, M.S., West, M., Roberts, C. *Introduction to Digital Music with Python Programming: Learning Music with Code.* (2022). Routledge Press.

Diamond, J., Horn, M.S., & Uttal, D. (2016). *Practical evaluation guide: Tools for museums and other informal educational settings. 3rd edition.* AltaMira Press.

OTHER JOURNAL ARTICLES

Horn, M., Davis, P., Banerjee, A., Stevens, R. (2020). Fight the Power! Games, thermostats, and the energy patriarchy. *International Journal of Design for Learning 11*(2), 118-129.

Martin, K., Horn, M., & Wilensky, U. (2020). Constructivist Dialogue Mapping Analysis of Ant Adaptation. *Informatics in Education, 19*(1), 77-112.

Weintrop, D., Holbert, N., Horn, M., & Wilensky, U. (2016). Computational thinking in constructionist video games. *International Journal of Game-Based Learning, 6*(1), 1-17.

Shaer, O., Horn, M.S., & Jacob, R.J.K. (2009). Tangible user interface laboratory: Teaching tangible interaction design in practice, *AI for Engineering Design, Analysis, and Manufacturing, 23*, 251-261.

OTHER ARCHIVAL CONFERENCE PAPERS*

* In the field of Computer Science, archival conference proceedings such as the Association for Computing Machinery's (ACM) CHI, IDC, TEI, and UIST are among the top publication venues. These are peer-reviewed publications, with a multi-stage revision process, and low

Peel, A., Chatterjee, S., Kelter, J., Horn, M., & Wilensky, U. (2024). Applying Conjecture Mapping to Support Teachers' Computational Thinking and Science Integration. In *Society for Information Technology & Teacher Education International Conference* (pp. 383-388). Association for the Advancement of Computing in Education (AACE).

Chen, J., Zhao, L., Xiao, F., Horn, M. S., & Wilensky, U. J. (2022). Self-Governed Collaborative Inquiry in Action: A Case Study of a Large-Scale Online Youth Community. In *Proceedings of the 15th International Conference on Computer-Supported Collaborative Learning-CSCL 2022*, pp. 383-386. International Society of the Learning Sciences.

Peel, A., Kelter, J., Zhao, L., Horn, M., & Wilensky, U. (2022, January). Designing learning environments with iterative conjecture mapping to support teachers' computational thinking learning. In International Conference for the Learning Sciences (ICLS).

Davey, B., Peel, A., Horn, M. S., & Wilensky, U. (2022, January). Learning Natural Selection through Computational Models in a High School AP Biology Classroom. In The Interdisciplinarity of the Learning Sciences, 16th International Conference of the Learning Sciences (ICLS).

Wu, S. P., Peel, A., Zhao, L., Horn, M., & Wilensky, U. (2022). A Professional Development That Helps Teachers Integrate Computational Thinking Into Their Science Classrooms Through Codesign. Innovations, 7(2).

Dabholkar, S., Peel, A., Hao, D., Kelter, J., Horn, M. & Wilensky, U (2021). Analysis of Co-designed Biology Units Integrated with Computational Thinking Activities. *International Society of the Learning Sciences (ISLS) Annual Meeting.*

Andrus, B.M., Polinsky, N., McCarty, S., Bomar, A., Smyth, P., Uttal, D., & Horn, M. (2021). Children and Parents Using Coordinated Multimodal Meaning Making During a Robot Coding Activity. *International Society of the Learning Sciences (ISLS) Annual Meeting.*

Aslan, U., LaGrassa, N., Horn, M., & Wilensky, U. (2020). Phenomenological Programming: a novel approach to designing domain specific programming environments for science learning. In *Proceedings of Interaction Design and Children (IDC).*

Dabholkar, S., Arastoopour Irgens, G., Horn, M., & Wilensky, U. (2020). Students' epistemic connections between science inquiry practices and disciplinary ideas in a computational science unit. *Proceedings of the International Conference of the Learning Sciences* (ICLS 2020).

Martin, K., Bain, C., Swanson, H., Horn, M., & Wilensky, U. (2020). Building Blocks: Kids Designing Scientific, Domain-specific, Block-based, Agent-based Microworlds. *Proceedings of the International Conference of the Learning Sciences (ICLS).*

Kelter, J. Z., Peel, A., Bain, C., Anton, G., Dabholkar, S., Aslan, Ü., Horn, M., & Wilensky, U. (2020). Seeds of (r)Evolution: Constructionist Co-Design with High School Science Teachers. In B. Tangney, J. R. Byrne, & C. Girvan (Eds.), *Proc of the Constructionism Conference*, Dublin, Ireland, pp. 497-505.

Aslan, U., LaGrassa, N., Horn, M., & Wilensky, U. (2020). Code-first learning environments for science education: a design experiment on kinetic molecular theory. *Proc. of the Constructionism Conference.* Dublin, Ireland.

Peel, A., Dabholkar, S., Anton, G., Wu, S., Wilensky, U., & Horn, M. (2020). A Case Study of Teacher Professional Growth Through Co-design and Implementation of Computationally Enriched Biology Units. In *Proceedings of the International Conference of the Learning Sciences (ICLS)*, pp. 1950-1957.

Bain, C., Anton, G., Horn, M., Wilensky, U. (2020). Back to computational transparency: Co-design with Teachers to Integrate Computational Thinking in Science Classrooms. *Proceedings of the International Conference of the Learning Sciences (ICLS 2020).*

Swanson, H., Arastoopour Irgens, G., Bain, C., Hall, K., Wood, P., Rogge, C., Horn, M., & Wilensky, U. (2018). Characterizing Computational Thinking in High School Science. *International Conference of the Learning Sciences.*

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acceptance rates (CHI's acceptance rate has ranged from 15-25%). Conference proceeding publications rival top journals in the field in their selectivity, citations, and influence. Thus, within the field of human-computer interaction, proceedings publications are considered on par with publications in a journal. For rankings see: https://scholar.google.com/citations?view_op=top_venues&vq=eng_humancomputerinteraction

Swanson, H., Anton, G., Bain, C., Horn, M., Wilensky, U. (2017). Computational thinking in science classroom. *Proceedings of the International Conference on Computational Thinking in Education, 1*, 17-22.

Wagh, A., Levy, S., Horn, M., Guo, Y., Brady, C., Wilensky, U. (2017). Anchor Code: Modularity as evidence for conceptual learning and computational practices of students using a code-first environment. *Conference on Computer Supported Collaborative Learning (CSCL'17).*

Orton, K., Weintrop, D., Beheshti, E., Horn, M., Jona, K., Wilensky, U. (2016). Bringing computational thinking into high school mathematics and science classrooms. *International Conference of the Learning Sciences.*

Guo, Y., Wagh, A., Brady, C., Levy, S., Horn, M., Wilensky, U. (2016). Frogs to think with—Improving students' computational thinking and understanding of evolution in a code-first learning environment. *Interaction Design and Children* (IDC'16).

Kuo, P-Y. & Horn, M.S. (2014). Energy Diet: Energy feedback on a bathroom scale. *International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp'14),* ACM Press, 435-446.

Banerjee, A. & Horn, M.S. (2014). Ghost Hunter: Parents and children playing together to learn about energy consumption. *Tangible, Embedded, and Embodied Interaction (TEI'14)*, ACM Press, 267-274.

Solomon, C., Banerjee, A., & Horn, M.S. (2014). Ultimate trainer: Instructional feedback for ultimate frisbee players. *Tangible, Embedded, and Embodied Interactoin (TEI'14),* ACM Press, 137-140.

Beheshti, E., Van Devender, A., & Horn, M.S. (2012). Touch, click, navigate: Comparing tabletop and desktop interaction for map navigation tasks. *Interactive Tabletops and Surfaces (ITS'12)*, ACM Press, 205-214.

Olson, I.C. & Horn, M. (2011). Modeling on the Table: Agent-Based Modeling in Elementary School with NetTango. *Interaction Design and Children (IDC'11)*, ACM Press, 189-192.

Leong, Z.A. & Horn, M.S. (2011). Representing Equality: A Tangible Balance Beam for Early Algebra Education. *Interaction Design and Children (IDC'11)*, ACM Press, 173-176.

Horn, M.S. and Jacob, R.J.K. (2007). Designing Tangible Programming Languages for Classroom Use. *Tangible and Embedded Interaction (TEI'07)*, ACM Press, 159-162.

Zigelbaum, J., Horn, M.S., Shaer, O., and Jacob, R.J.K. (2007). The Tangible Video Editor: Collaborative Video Editing with Active Tokens. *Tangible and Embedded Interaction (TEI'07)*, ACM Press, 43-46.

OTHER BOOK CHAPTERS

Swanson H., Anton G., Bain C., Horn M., Wilensky U. (2019) Introducing and Assessing Computational Thinking in the Secondary Science Classroom. In: Kong SC., Abelson H. (eds) *Computational Thinking Education*. Springer, Singapore

Horn M.S., Banerjee A., West M. (2020) Music and Coding as an Approach to a Broad-Based Computational Literacy. In: Giannakos M. (eds) *Non-Formal and Informal Science Learning in the ICT Era*. Lecture Notes in Educational Technology. Springer, Singapore. https://doi.org/10.1007/978-981-15-6747-6_5

Swanson H., Anton G., Bain C., Horn M., Wilensky U. (2019) Introducing and Assessing Computational Thinking in the Secondary Science Classroom. In: Kong SC., Abelson H. (eds) *Computational Thinking Education*. Springer, Singapore

Horn, M. & Bers, M. (2019). Tangible Computing. In S.A. Fincher & A.V. Robins (Eds.), *The Cambridge Handbook of Computing Education Research*. Cambridge University Press.

Bers, M. U. & Horn, M. S. (2009). Tangible programming in early childhood: Revisiting developmental assumptions through new technologies. In I. R. Berson & M. J. Berson (Eds.), *High-tech tots: Childhood in a digital world*. Greenwich, CT: Information Age Publishing.

Patent Applications

Bers, M.U, & Horn, M.S. "Educational robotic systems and methods." U.S. Patent Application 14/242,220.

Other Papers, Presentations, and Demos

West, M., Roberts, C., Ecford, O., Horn, M. (2025, April). Observing Joy: An observation protocol to assess joyful learning in STEAM classrooms. Paper presented at the Annual Meeting of the American Education Research Association (AERA'25), Denver CO.

Kshirsagar, K., & Horn, M. (2023, June). TWIST-YAY! A kinesthetic play experience through a mathematical kinetic sculpture. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (pp. 709-712).

Brucker, M., West, M., & Horn, M. (2023, June). Digital Drum Circles: Relational CS Education through Music Making. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (pp. 705-708).

Kelter, J., Peel, A., Davey, B., Horn, M., & Wilensky, U. (2023). Quickstart Spaceship Programming for Developing Physical Intuition and Connecting it to Propositional Physics Knowledge. In *Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023*, pp. 1294-1297. International Society of the Learning Sciences.

Chen, J., Horn, M., & Wilensky, U. (2023). Interactive Constructionist Scaffolds for Agent-based Modeling and Programming in NetLogo. In *Proceedings of FabLearn/Constructionism 2023*: Full and Short Research Papers (pp. 1-7).

Chen, J., Horn, M., & Wilensky, U. (2023). Tortuga: Building Interactive Scaffolds for Agent-based Modeling and Programming in NetLogo. In *Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023*, pp. 990-993. International Society of the Learning Sciences.

Chen, J., Horn, M., & Wilensky, U. (2023, June). NetLogo AR: Bringing Room-Scale Real-World Environments Into Computational Modeling for Children. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (pp. 736-739).

Wu, S. P. W., Peel, A., Bain, C., Horn, M. S. & Wilensky, U. (2021). Different Paths, Same Direction: How Teachers Learn Computational Thinking in STEM Practices through Professional Development. *International Conference on Computational Thinking Education and STEM (CTE).*

Peel, A., Dabholkar, S., Wu, S., Horn, M.S., Wilensky, U. (2021). An Evolving Definition of Computational Thinking in Science and Mathematics Classrooms. *International Conference of Computational Thinking Education and STEM (CTE).*

Bain, C., Hershkovitz, A., Dabholkar, S., Horn, M. S., & Wilensky, U. (2021). Identifying Evidence of Student Engagement in CT via Automated Response Analysis. In Dabholkar S. (Symposium organizer), Integrating Computational Thinking in Science Curricula: Professional Development and Student Assessment. *Annual Meeting of the National Association of Research in Science Teaching (NARST).*

Peel, A., Kelter, J., Horn, M., & Wilensky, U. (2021). Designing professional learning experiences to support teachers' computational thinking learning and confidence. *Annual Meeting of the National Association of Research in Science Teaching (NARST).*

Dabholkar, S., Tran, S., Horn, M. S., & Wilensky, U. (2021). Students' Attitudinal Change After Participating in a CT integrated Biology Unit. In Dabholkar S. (Symposium organizer), Integrating Computational Thinking in Science Curricula: Professional Development and Student Assessment. *Annual Meeting of the National Association of Research in Science Teaching (NARST).*

Levy, M., Wu, S. P. W., Dabholkar, S., Horn, M. S., & Wilensky, U. (2021). Teachers' Sensemaking of CT Integration and Pedagogical Approaches. In Dabholkar S. (Symposium organizer), Integrating Computational Thinking in Science Curricula: Professional Development and Student Assessment. *Annual Meeting of the National Association of Research in Science Teaching (NARST).*

Hershkovitz, A., Bain, C., Kelter J., Horn, M. S., & Wilensky, U. (2021). Teachers' Perceptions of the Contribution of Computational Thinking to Science and Math Classrooms. In Dabholkar S. (Symposium organizer), Integrating

Computational Thinking in Science Curricula: Professional Development and Student Assessment. *Annual Meeting of the National Association of Research in Science Teaching (NARST).*

Aslan, U. Wu, S. P., Horn, M., & Wilensky, U. (2021). Connecting "the chemistry triplet" through co-designing computational models with teachers: A case study on calorimetry. *Annual Meeting of the American Education Research Association (AERA).*

Dabholkar, S., Horn, M., & Wilensky, U. (2021). A technology-mediated co-design approach for integrating Computational Thinking in a science classroom. *Annual Meeting of the American Education Research Association (AERA).* **Best Student Paper Award (SIG-LS/ATL)**

Aslan, U., LaGrassa, N., Horn, M., & Wilensky, U. (2020). Putting the Taxonomy into Practice: Investigating Students' Learning of Chemistry with Integrated Computational Thinking Activities. *American Education Research Association (AERA) Conference. San Francisco, CA.*

Dabholkar, S., Peel, A, Anton, G., Horn, M., & Wilensky, U. (2020). Analysis of teachers' involvement in co-design and implementation of CT (Computational Thinking) integrated biology units. *American Education Research Association (AERA) Conference, San Francisco, CA, USA.*

Bain, C., Anton, G., Horn, M., Wilensky, U. (2020). Using blocks-based agent-based modeling for computational activities in STEM classrooms. Paper presented at the *2020 Blocks and Beyond Conference.*

Peel, A., Dabholkar, S., Anton, G., Horn, M., & Wilensky, U. (2020). Teachers' professional growth through co-design and implementation of computational thinking (CT) integrated biology units. Presented at the *Annual Meeting of the Association of Science Teacher Education (ASTE).* January, 2020. San Antonio, TX.

Thompson, J., Wu, S.P.W., Mills, J., Horn, M.S., & Wilensky, U. (2020). The use of programming software in a secondary mathematics classes. *Proceedings of 2020 ASEE Annual Conference. Montreal, Canada.*

Wu, S. P. W., Anton, G., Bain, C., Peel, A. M., Horn, M. S., & Wilensky, U. (2020). Engage Teachers as Active Co-Designers to Integrate Computational Thinking in STEM Classes. *Presented at NARST Annual International Conference (NARST 2020)*, Portland, Oregon.

Wu, S. P. W., Peel, A. M., Bain, C., Anton, G., Horn, M. S., & Wilensky, U. (2020). Workshops and co-design can help teachers integrate computational thinking into their K-12 STEM classes. *Proceedings of the Computational Thinking Education (CTE) 2020 Conference.* Hong Kong, China.

Horn, M. and Schelhowe, H. (2019). 2018 Edith Ackermann Award: Bildungsmedien: where TechKreativ meets Footwork. In *Proceedings of the 18th ACM International Conference on Interaction Design and Children*, 11-14.

Arastoopour Irgens, G., Dabholkar, S., Chandra, S., Horn, M., & Wilensky, U. (2019). Classifying Emergent Student Learning in a High School Computational Chemistry Unit. Paper to be presented at the *American Education Research Association (AERA) Conference.* Toronto, CA.

Yao, N., Brewer, J., D'Angelo, S., Horn, M., & Gergle, D. (2018). Visualizing Gaze Information from Multiple Students to Support Remote Instruction. In *Proceedings SIGCHI Conference on Human Factors in Computing Systems (CHI'18 extended abstracts).*

Banerjee, A., Robert, R., Horn, M. (2018). FieldGuide: Smartwatches in a Multi-display Museum Environment. In *Proceedings SIGCHI Conference on Human Factors in Computing Systems (CHI'18 extended abstracts).*

Beheshti, E., Villanosa, K., and Horn, M.S. (2018). Understanding parent-child sensemaking around interactive museum exhibits. *Annual Meeting of the American Education Research Association (AERA).*

Beheshti, E. and Horn, M.S. (2018). Looking inside the circuit: Understanding electricity with an augmented circuit exhibit. *Annual Meeting of the American Education Research Association (AERA).*

Horn, M., Roberts, J., Banerjee, A., McGee, S., & Matcuk, M. (2017). Touch | Don't Touch: Exploring the role of interactive displays in natural history museums to help visitors appreciate objects behind glass. In *Proceedings Computer Supported Collaborative Learning (CSCL'17).*

Kim, D., & Horn, M. (2017). "You switch, and I press": Comparing children's collaborative behavior in a tangible and graphical interface game. In *Proceedings Computer Supported Collaborative Learning (CSCL'17).*

McGee, S., Roberts, J., Banerjee, A., Foong, E., Matcuk, M., Horn, M. (2017). Designing digital rails to foster scientific curiosity around museum collections. *Annual Meeting of the American Education Research Association (AERA).*

Obiorah, M., Harburg, E., Bos, M., Horn, M. (2017). JumpGym: Exploring the impact of a jumping exergame for waiting areas. Presented at the *Annual Symposium of Computer-Human Interaction in Play (CHI Play'17 extended abstracts)*, 13-24.

Gorson, J., Patel, N., Beheshti, E., Magerko, B., and Horn, M.S. (2017). TunePad: Computational thinking through sound composition. *Proceedings of Interaction Design and Children (work in progress).*

Obiorah, M.G., Piper, A.M., and Horn, M. (2017). Independent word discovery for people with aphasia. *Poster presented at the ACM Conference on Computers and Accessibility (ASSETS'17).*

Beheshti, E., Kim, D., Ecanow, G., and Horn, M. (2017). Close the circuit 'N play the electrons: Learning electricity with an augmented circuit exhibit. *Proceedings of Interaction Design and Children (demo)*, 675-678.

Beheshti, E., Weintrop, D., Swanson, H., Orton, K., Horn, M., Jona, K., Trouille, L., Wilensky U. (2017). Computational thinking in practice: How STEM professionals use CT in their work. *Annual Meeting of the American Education Research Association.*

Beheshti, E., Weintrop, D., Orton, K., Horn, M. S., Jona, K., Trouille, L., Wilensky, U. (2015). Bringing Expert Computational Practices into High School Science Classrooms. *NARST Conference.*

Beheshti, E., Obiorah, M., & Horn, M., (2015). Let's dive into it! Learning electricity with multiple representations. *Interaction Design and Children (IDC'15).*

Horn, M., Phillips, B., Evans, E.M., Block, F., Diamond, J., Shen, C. (2015). Visualizing the tree of life: Learning around an interactive visualization of biological data in museums. *NARST Conference.*

Horn, M.S. (2014). Beyond video games for social change. *ACM Interactions, 21*(2), 66-68.

Villanosa, K., Block, F., Horn, M.S., Shen, C. (2014). Build-a-Tree: Parent-child gaming to learn about evolution in museum settings. *Games, Learning, and Society (GLS'14).*

Horn, M., Weintrop, D., & Routman, E. (2014). Programming in the pond: A tabletop computer programming exhibit. Work-in-progress at *Human Factors in Computing Systems Extended Abstracts (CHI'14).*

Horn, M.S., Banerjee, A., D'Angelo, S., Kuo, P-Y, Pollock, D.H., Stevens, R. (2014). Game Arcade: Turn Up the Heat!. *Games, Learning, and Society Demo Track (GLS'14).*

Villanosa, K., Block, F., Hosford, A., Horn, M.S., Shen, C. (2014). Game Arcade: Build-a-Tree. *Games, Learning, and Society Demo Track (GLS'14).*

Beheshti, E., Aljuhani, A., Horn, M.S. (2014). Electrons to Light Bulbs: Understanding Electricity with a Multi-Level Simulation Environment. *IEEE Frontiers in Education (FIE'14).*

Weintrop, D., Beheshti, E., Horn, M. S., Orton, K., Jona, K., Trouille, L., & Wilensky, U. (2014). Defining Computational Thinking for Science, Technology, Engineering, and Math. Poster presented at the annual meeting of the American Education Research Association (AERA'14).

Brady, C., Banerjee, A., Hjorth, A., Horn, M.S., Wagh, A., Wilensky, U. (2014). Getting your drift—activity designs for grappling with evolution. Poster presented at the International Conference of the Learning Sciences (ICLS'14), Boulder, Colorado.

Evans, E.M., Phillips, B.C., Horn, M.S., Block, F., Diamond, J., & Shen, C. (2013). Active prolonged engagement: When does it become active prolonged "learning"? In Uttal, D. (chair), Developmental research outside the lab: Children's STEM learning in museums. Symposium presented at the *Society for Research in Child Development Biennial Meeting SRCD'13*.

Phillips, B.C., Evans, E.M., Horn, M.S., Block, F., Diamond, J., & Shen, C. (2013). How is a human like a banana? Conceptions of humans as part of the natural world. Symposium presented at the *Society for Research in Child Development Biennial Meeting SRCD'13*.

Chua, K.C., Qin, Y., Block, F., Phillips, B., Diamond, J., Evans, E.M., Horn, M.S., Shen, C. (2012). FloTree: A multi-touch interactive simulation of evolutionary processes. Demo presented at *Interactive Tabletops and Surfaces (ITS'12)*, Boston, Massachusetts.

Weintrop, D., Holbert, N., Wilensky, U., & Horn, M.S. (2012). Redefining constructionist video games: Marrying constructionism and video game design. Presented at *Constructionism 2012*, Athens, Greece.

Horn, M.S. & Wilensky, U. (2012). NetTango: A mash-up of NetLogo and Tern. In Moher, T. (chair) and Pinkard, N. (discussant), When systems collide: Challenges and opportunities in learning technology mash-ups. Symposium presented at AERA, Vancouver, British Columbia.

Horn, M. (2012). Spinners, Dice, and Pawns: Using board games to prepare learners for agent-based modeling activities. In M. Berland (chair) and Kafai, Y. (discussant), Fiddling on the fly: thinking, learning, and designing using board games. Symposium presented at AERA, Vancouver, British Columbia.

Boxerman, J.Z., Horn, M.S, (2011). Helping learners comprehend changes over time and space on a geological scale. Presented at the Geological Society of American Annual Meeting, Minneapolis, MN.

Leong, Z.A. & Horn, M.S. (2010). The BEAM: a digitally enhanced balance beam for mathematics education. *Interaction Design and Children (demo presentation)*, Barcelona, Spain, June 9-12. ACM Press.

Blikstein, P., Buechley, L., Horn, M.S., Raffle, H. (2010). A new age in tangible computational interfaces for learning. In *Proc. International Conference of the Learning Sciences (ICLS'10)*, Chicago, IL.

Horn, M.S. & Shen, C. (2009). Frogs and Toads Memory: A Voronoi Twist on the Classic Children's Game. In *Intl. Symposium on Voronoi Diagrams in Science and Engineering (ISVD'09)*, Copenhagen, Denmark.

Horn, M.S. and Jacob, R.J.K. (2007). Tangible Programming in the Classroom with Tern. *Human Factors in Computing Systems (CHI'07 Trends Interactivity)*, ACM Press.

Jacob, R.J.K., Girouard, A., Hirshfield, L.M., Horn, M.S., Shaer, O., Solovey, E.T., and Zigelbaum, J. (2007). Reality-Based Interation: Unifying the New Generation of Interaction Styles. *Human Factors in Computing Systems (extended abstracts) CHI'07*, ACM Press.

Jacob, R.J.K., Girouard, A., Hirshfield, L.M., Horn, M.S., Shaer, O., Solovey, E.T., and Zigelbaum, J. (2007). "What Is the Next Generation of Human-Computer Interaction?" *ACM Interactions*, *14*(3), 53-58.

Horn, M.S. & Jacob, R.J.K. (2006). Tangible Programming in the Classroom: A Practical Approach. *Human Factors in Computing Systems Conference (extended abstracts) CHI'06*, ACM Press, 869-874.

TEACHING

2022 – 2024	**Introduction to Python Programming for Everyone** (undergrad)	Northwestern University
2021 – 2025	**Transformative Computer Science Education** (grad/undergrad)	Northwestern University
2016, 2018, 2020	**Learning in Museums** (grad/undergraduate)	Northwestern University

2009 – 2015, 2020, 2023, 2024	**Intro to Design for the Learning Sciences** (graduate)	Northwestern University
2011 - 2020	**Human-Computer Interaction** (undergraduate)	Northwestern University
2013 -	**Tangible Interaction Design and Learning** (grad / undergrad)	Northwestern University
2010	**Design & Emotion** (graduate)	Northwestern University
2008	**Tangible User Interface Laboratory** (undergraduate)	Tufts University
2006 - 2009	**Problem Solving in Discrete Mathematics** (teacher PD) Developed curriculum, led activities, and mentored local K-12 mathematics teachers for a summer professional development institute on Discrete Mathematics.	Tufts University
2005	**Introduction to Computer Science** (undergraduate)	Tufts University
2003 - 2005	**Coordinator CSEMS Mentoring Program** Coordinated an academic mentoring and enrichment program for underrepresented undergraduates in engineering and computer science.	Tufts University

PROFESSIONAL ACTIVITIES & COMMUNITY

Conference Chairing

- ACM Tangible Embedded and Embodied Interaction (2026), General Co-Chair
- ACM Interaction Design and Children (2025), Papers Co-Chair
- ACM Interaction Design and Children (2023), General Chair
- ACM Interaction Design and Children (2017, 2018, 2022), Papers Co-Chair
- ACM Interactive Tabletops and Surfaces (2012, 2013), Program Committee Co-Chair
- ACM Tangible Embedded and Embodied Interaction (2012, 2014), Studios Co-Chair
- ACM Tangible Embedded and Embodied Interaction (2016), Design Competition Co-Chair
- ACM Interaction Design and Children (2011), Demos Co-Chair

Conference Committees

- ACM Human Factors in Computing Systems (2012, 2018, 2020, 2022, 2024, 2025), Program Committee
- ACM Tangible Embedded and Embodied Interaction (2020), Graduate Student Consortium Co-Chair
- International Conference of the Learning Sciences (2018), Program Committee
- ACM Tangible Embedded and Embodied Interaction (2011 – 2018), Program Committee
- ACM CHIPlay (2017), Program Committee
- ACM Tangible Embedded and Embodied Interaction (2013), Doctoral Symposium Mentor Faculty
- ACM Interaction Design and Children (2011 – 2016, 2019), Program Committee
- ACM Interactive Tabletops and Surfaces (2011), Program Committee
- ACM Human Factors in Computing Systems (2011), Work-in-Progress Program Committee

Memberships

- Association for Computing Machinery (ACM)
- IEEE Computer Society
- American Educational Research Association (AERA)
- International Society of the Learning Sciences (ISLS)

Ad Hoc Reviewer (Selection)

- Computer Supported Collaborative Learning (CSCL)
- International Conference of the Learning Sciences (ICLS)
- ACM Conference on Human Factors in Computing Systems (CHI)
- Tangible, Embedded, and Embodied Interaction (TEI)
- Interaction Design and Children (IDC)
- Interactive Tabletops and Surfaces (ITS)
- Interacting with Computers
- Computers & Education
- Transactions on Computer Human Interaction (TOCHI)
- International Journal of Human-Computer Studies
- Journal of Computers for Mathematical Learning
- Journal of Personal and Ubiquitous Computing
- Journal of the Learning Sciences

INVITED TALKS

- Georgia Institute of Technology, Responsible AI Symposium, October 2025
- University of Illinois, Urbana-Champaign, Computer Science, September 2025
- Dolby Future of Learning Summit, February 2025
- University of Rochester, Computer Science, October 2023
- University of Delaware, School of Education, October 2022
- University of Colorado, Boulder, AI Institute, October 2022
- Illinois Statewide K-12 Computer Science Education Panel, September 2021
- Pompeau Fabra University, Barcelona, Spain, April 2021
- European Union COM n PLAY panel presentation, February 2021
- FabLearn 2020 panel presentation in memory of Mike Eisenberg, April 2020
- Interaction Design and Children Ackermann Award, Boise, Idaho, June 2019
- Pompeau Fabra University, Barcelona, Spain, December 2018.
- University of Indiana, Indianapolis, January 2018.
- Interdisciplinary Center, Herzliya, Israel, November 2018.
- University of Illinois, Urbana-Champaign, September 2017.
- University of Colorado, Boulder, Computer Science Colloquium, November 2016.
- University of Illinois, Chicago, Learning Sciences Colloquium, October 2015.
- Northwestern Science Café, September 2015.
- École Polytechnique Fédérale de Lausanne (EPFL), October 2012.
- DePaul University, College of Computing and Digital Media, March 2012.
- Wellesley College, Computer Science, March 2012
- Purdue University, School of Engineering Education, October 2011.
- University of Illinois, Chicago, IL, October 2011.
- Design for Mobile Conference (D4M'2010), Chicago, IL, September 2010

PRESS COVERAGE

July 2016	**Red Eye**, 3 young innovators + Chicago = a kids' coding app used in 15,000 schools http://www.redeyechicago.com/news/redeye-three-chicago-undergrads-are-doing-big-things-in-silicon-valley-20160624-story.html
May 2016	**Wired**, Osmo turns blocks into code to teach kids programming https://www.wired.com/2016/05/osmo-turns-blocks-code-teach-kids-programming/
May 2016	**Engadget**, Osmo's blocks are like Lego for coding https://www.engadget.com/2016/05/25/osmo-coding/
May 2016	**Forbes**, Osmo aims to be the 'Lego' of coding www.forbes.com/sites/andyrobertson/2016/05/25/osmo-coding-lego
June 2016	**The Wall Street Journal**, Is your child coding yet? New building blocks teach programming basics. http://www.wsj.com/articles/is-your-child-coding-yet-new-building-blocks-teach-programming-basics-1465316688
Fall 2015	**Crain's Chicago Business**, How to create the next generation of coders *http://www.chicagobusiness.com/article/20151112/ISSUE01/151119984/how-to-create-the-next-generation-of-coders*
Spring 2012	**Harvard Gazette**, Touch, drag, learn *http://news.harvard.edu/gazette/story/2012/06/touch-drag-learn/*
Spring 2012	**ACM TechNews**, *Teaching Tree-Thinking Through Touch* *http://technews.acm.org/archives.cfm?fo=2012-06-jun/jun-06-2012.html*
Spring 2012	**ScienceDaily** article on the Life on Earth project and Build-a-Tree game *http://www.sciencedaily.com/releases/2012/06/120604111121.htm*
Spring 2012	**NewScientist** article on Omnipedia research *http://bit.ly/J2OkWN*
February 2008	**Computerworld** article with a discussion on Reality-Based Interaction *http://www.cs.tufts.edu/~jacob/papers/computerworld.pdf*
January 2008	**NECN TV** interview on my tangible programming research *http://www.necn.com/category/9/2299*