

ANTHONY J. HORNOF

PROFESSIONAL POSITIONS

University of Oregon

Department of Computer and Information Science

Full Professor, 2018–present

Associate Professor, 2005–2018

Assistant Professor, 1999–2005

National Science Foundation

Division of Information and Intelligent Systems (CISE/IIS)

Human-Centered Computing / Cyber-Human Systems

Program Director, 2012–2014

EDUCATION

University of Michigan

Ph.D. Computer Science and Engineering, 1999

Major area of study: Intelligent systems

Advisor: Dr. David Kieras

M.S. Computer Science and Engineering, 1996

Columbia University

B.A. Computer Science, 1988

GRANTS

National Science Foundation (NSF) IIS-1748615. \$149,997 for 8/15/17 to 7/31/2022. Principal Investigator (PI): Anthony Hornof. *EAGER: New User-Centered Design Techniques for Building Assistive Technology for Children who are Presymbolic Communicators.*

NSF IIS-1619036. \$439,183 for 7/15/16 to 6/30/22. PI: Anthony Hornof. *CHS: Small: Collaborative Research: A Theory of Human Microstrategy Selection and Integration in Human-Computer Interaction.* Includes REU supplements of \$16,000. (\$77,000 also awarded to the University of Michigan for related grant IIS-1617761.)

NSF IIS-1017593. \$515,591 for 7/1/10 to 6/30/16. Principal Investigator (PI): Anthony Hornof. *HCC: Small: A Computational Theory of Perceptual Integration in Multimodal Multitasking.* (Includes Research Experiences for Undergrads REU supplement of \$16,000.)

NSF IIS-0713688. \$481,319 for 7/15/07 to 9/23/15. PI: Anthony Hornof. *HCC: Easy-to-Learn and Easy-to-Use Eye-Controlled Musical Expression For Children with Severe Disabilities.* (Includes REU supplements of \$32,000.)

NSF IIS-0553117. \$140,052 for 12/1/05 to 5/31/07. PI: Anthony Hornof. *SGER: Collaborating with Children with Severe Disabilities in the Design of Eye-Controlled Software.*

Office of Naval Research (ONR) N00014-06-10054. \$439,787 for 10/1/05 to 9/30/08. PI: Anthony Hornof. *Computational Modeling and Eye Tracking of Multitasking Performance with Multimodal Auditory and Visual Displays.*

NSF IIS-0308244. \$340,934 for 5/15/03 to 4/30/09. PI: Anthony Hornof. *Simulating the Human Visual “Find” Command.* (Includes REUs and other supplements totaling \$39,000.)

ONR N00014-02-10440. \$288,030 for 4/1/02 to 9/30/04. PI: Anthony Hornof. *Eye Tracking Informs Exploratory Cognitive Modeling of Visual Search*.

ONR N00014-01-10548. \$115,519 for 3/15/01 to 12/31/01. PI: Anthony Hornof. *Computational Cognitive Modeling of the Visual Search of Computer Screens*.

JOURNAL ARTICLES

Halverson, T., & Hornof, A. J. (2011). A computational model of “active vision” for visual search in human-computer interaction. *Human-Computer Interaction*, 26, 285-314.

Zhang, Y., & Hornof, A. J. (2011). Mode-of-disparities error correction of eye-tracking data. *Behavior Research Methods*, 43, 834-842.

Burke, M., Hornof, A., Nilsen, E., & Gorman, N. (2005). High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten. *ACM Transactions on Computer-Human Interaction*, 12, 423-445.

Hornof, A. J. (2004). Cognitive strategies for the visual search of hierarchical computer displays. *Human-Computer Interaction*, 19, 183-223.

Hornof, A. J., & Halverson, T. (2002). Cleaning up systematic error in eye tracking data by using required fixation locations. *Behavior Research Methods, Instruments, and Computers*, 34, 592-604.

Hornof, A. J. (2001). Visual search and mouse pointing in labeled versus unlabeled two-dimensional visual hierarchies. *ACM Transactions on Computer-Human Interaction*, 8, 171-197.

BOOK CHAPTER

Hornof, A. (2007). Toward an integrated, comprehensive theory of visual search. In W. D. Gray, ed., *Integrated Models of Cognitive Systems*, Oxford University Press, 314-324.

REFEREED CONFERENCE PUBLICATIONS

Full Papers

Hornof, A. J., & Kieras, D. K. (in review for 2023). Predicting Dual-Task Performance as a Design Practice: Task Analysis, Computational Cognitive Modeling, and Bracketing. *CHI 2023: Human Factors in Computing Systems*. In review.

Hornof, A., Whitman, H., Sutherland, M., Gerendasy, S., McGrenere, J. (2017). Designing for the “universe of one”: Personalized interactive media systems for people with the severe cognitive impairment associated with Rett syndrome. *CHI 2017: Human Factors in Computing Systems*, 2137-2148. [25% acceptance rate]

Hornof, A. J. (2014). The prospects for eye-controlled musical performance. *Proceedings of NIME 2014: The International Conference on New Interfaces for Musical Expression*. 461-466. [Overall 28% acceptance rate]

Kieras, D., & Hornof, A. J. (2014). Towards accurate and practical predictive models of active-vision-based visual search. *Proceedings of CHI 2014: Human Factors in Computing Systems*, 3875-3884. [Overall 23% acceptance rate]
[• Best Paper Award — Top 1% of all papers submitted. •]

Zhang, Y., & Hornof, A. J. (2014). Understanding multitasking through strategy exploration and individualized cognitive modeling. *Proceedings of CHI 2014: Human Factors in Computing Systems*, 3885-3894. [Overall 23% acceptance rate]
[• Best Paper Award — Top 1% of all papers submitted. •]

Zhang, Y., & Hornof, A. J. (2012). A discrete movement model for cursor tracking validated in the context of a dual-task experiment. *Proceedings of the 56th Annual Meeting of the Human Factors and Ergonomics Society*, 1000-1004.

Hornof, A. J., & Vessey, K. E. V. (2011). The sound of one eye clapping: Tapping an accurate rhythm with eye movements. *Proceedings of the 55th Annual Meeting of the Human Factors and Ergonomics Society*, 1225-1229.

Hornof, A. J., & Zhang, Y. (2010). Task-constrained interleaving of perceptual and motor processes in a time-critical dual task as revealed through eye tracking. *Proceedings of ICCM 2010: The 10th International Conference on Cognitive Modeling*, Philadelphia, Pennsylvania, August 5-8, 97-102.

[• Siegel-Wolf Award for the Best Applied Paper. •]

Hornof, A. J., Zhang, Y., & Halverson, T. (2010). Knowing where and when to look in a time-critical multimodal dual task. *Proceedings of ACM CHI 2010: Conference on Human Factors in Computing Systems*, New York: ACM, 2103-2112. [Overall 22% acceptance rate] [• Honorable Mention Paper — Top 5% of all papers submitted. •]

Hornof, A. J., Halverson, T., Isaacson, A., & Brown, E. (2008). Transforming object locations on a 2D visual display into cued locations in 3D auditory space. *Proceedings of the 52nd Annual Meeting of the Human Factors and Ergonomics Society*, 1170-1174.

Hornof, A. J. & Cavender, A. (2005). EyeDraw: Enabling children with severe motor impairments to draw with their eyes. *Proceedings of ACM CHI 2005: Conference on Human Factors in Computing Systems*, New York: ACM, 161-170. [25% acceptance rate].

Kaur, I. & Hornof, A. J. (2005). A comparison of LSA, WordNet and PMI-IR for predicting user click behavior. *Proceedings of ACM CHI 2005: Conference on Human Factors in Computing Systems*, New York: ACM, 51-60. [25% acceptance rate].

Hornof, A. J., Cavender, A., & Hoselton, R. (2004). EyeDraw: A system for drawing pictures with eye movements. *Proceedings of ASSETS 2004: The Sixth International ACM SIGACCESS Conference on Computers and Accessibility*, Atlanta, Georgia, October 18-20, 86-93. [53% acceptance rate].

Halverson, T., & Hornof, A. J. (2004). Local density guides visual search: Sparse groups are first and faster. *Proceedings of the 48th Annual Meeting of the Human Factors and Ergonomics Society*, New Orleans, Louisiana, September 20-24, 1860-1864.

Halverson, T., & Hornof, A. J. (2004). Strategy shifts in mixed-density search. *Proceedings of the 26th Annual Meeting of the Cognitive Science Society*, Chicago, Illinois, August 4-8, 529-534. [31% acceptance rate].

Halverson, T. & Hornof, A. (2004). Explaining eye movements in the visual search of varying density layouts. *Proceedings of the Sixth International Conference on Cognitive Modeling*, Pittsburgh, Pennsylvania, July 30 - August 1, 124-129. [33% acceptance rate].

Hornof, A. & Halverson, T. (2003). Cognitive strategies and eye movements for searching hierarchical computer displays. *ACM CHI 2003: Conference on Human Factors in Computing Systems*, New York: ACM, 249-256. [16% acceptance rate].

Hornof, A. J., & Kieras, D. E. (1999). Cognitive modeling demonstrates how people use anticipated location knowledge of menu items. *Proceedings of ACM CHI 99: Conference on Human Factors in Computing Systems*, New York: ACM, 410-417. [25% acceptance rate].

Hornof, A. J., & Kieras, D. E. (1997). Cognitive modeling reveals menu search is both random and systematic. *Proceedings of ACM CHI 97: Conference on Human Factors in Computing Systems*, New York: ACM, 107-114. [23% acceptance rate].

Kieras, D. E., Wood, S. D., Abotel, K., & Hornof, A. (1995). GLEAN: A computer-based tool for rapid GOMS model usability evaluation of user interface designs. *Proceedings of the ACM Symposium on User Interface Software and Technology, UIST '95*, New York: ACM, 91-100. [27% acceptance rate].

Short Papers

Zhang, Y., & Hornof, A. J. (2014). Easy post-hoc spatial recalibration of eye tracking data. *Proceedings of ETRA 2014: Symposium on Eye Tracking Research and Applications*, 95-98. [41% acceptance rate].

Hornof, A. J. (2009). Designing with children with severe motor impairments. *Proceedings of ACM CHI 2009: Conference on Human Factors in Computing Systems*, 2177-2180. [25% acceptance rate].

Halverson, T., & Hornof, A. J. (2007). A minimal model for predicting visual search in human-computer interaction. *Extended Abstracts of ACM CHI 2007: Conference on Human Factors in Computing Systems*, 431-434.

Hornof, A., & Sato, L. (2004). EyeMusic: Making Music with the Eyes. *Proceedings of the 2004 Conference on New Interfaces for Musical Expression (NIME04)*, Hamamatsu, Japan, June 3-5, 185-188. [45% acceptance rate].

Burke, M., Gorman, N., Nilsen, E., & Hornof, A. (2004). Banner ads hinder visual search and are forgotten. *Extended Abstracts of ACM CHI 2004: Conference on Human Factors in Computing Systems*, New York: ACM, 1139-1142. [29% acceptance rate].

Halverson, T., & Hornof, A. J. (2004). Link colors guide a search. *Extended Abstracts of ACM CHI 2004: Conference on Human Factors in Computing Systems*, New York: ACM, 1367-1370. [29% acceptance rate].

Hornof, A. J., Cavender, A., & Hoselton, R. (2004). EyeDraw: A system for drawing pictures with the eyes. *Extended Abstracts of ACM CHI 2004: Conference on Human Factors in Computing Systems*, New York: ACM, 1251-1254. [29% acceptance rate].

Commentaries

Kieras, D., & Hornof, A. (2017). Cognitive architecture enables comprehensive predictive models of visual search. *Behavioral and Brain Sciences*, 40, 29-30.

Papers Presented as Posters

Kieras, D. E., Hornof, A., & Zhang, Y. (2015). Visual search of displays of many objects: Modeling detailed eye movement effects with improved EPIC. In *Proceedings of the 13th International Conference on Cognitive Modeling*. Groningen, The Netherlands: University of Groningen, pp. 55-60. Presented as a poster. Published as a six-page paper.

Zhang, Y. & Hornof, A. J. (2013). Using model tracing and evolutionary algorithms to determine parameter settings for cognitive models from time series data such as visual scanpaths. In *Proceedings of the 12th International Conference on Cognitive Modeling*. Ottawa, Canada: Carleton University, pp. 433-438.

Halverson, T. & Hornof, A. J. (2008). The effects of semantic grouping on visual search. *Extended Abstracts of CHI 2008: Conference on Human Factors in Computing Systems*, New York: ACM. Presented as a poster. Published as a “Works in Progress” paper, pp. 3471-3476.

Hornof, A. J., Rogers, T., & Halverson, T. (2007). EyeMusic: Performing live music and multimedia compositions with eye movements. Presented at *NIME 2007, the International Conference on New Interfaces for Musical Expression*. In proceedings on pp. 299-300.

Brock, D., McClimens, B., Hornof, A. J., & Halverson, T. (2006). Cognitive Models of the Effect of Audio Cueing on Attentional Shifts in a Complex Multimodal Dual-Display Dual-Task. *Proceedings of the 28th Annual Meeting of the Cognitive Science Society*, Vancouver, BC, July 26-29, 2006. Presented as a poster. Published as a six-page paper, 1044-1049.

Halverson, T. & Hornof, A. J. (2006). Towards a Flexible, Reusable Model for Predicting Eye Movements During Visual Search of Text. *Proceedings of the 28th Annual Meeting of*

the Cognitive Science Society, Vancouver, BC, July 26-29, 2006. Presented as a poster. Published as a six-page paper, 1428-1433.

Hornof, A. & Halverson, T. (2003). Predicting cognitive strategies and eye movements in hierarchical visual search. In F. Detje, D. Dörner, & H. Schaub (Eds.) *Proceedings of the Fifth International Conference on Cognitive Modeling*. Bamberg, Germany: Universitas-Verlag Bamberg. Presented as poster. Published as a two-page paper, 261-262.

Hornof, A. & Halverson, T. (2003). Predicting cognitive strategies and eye movements in hierarchical visual search. Abstract in *Proceedings of the 25th Annual Meeting of the Cognitive Science Society*. Presented as a poster. Published as a six-page paper.

Hornof, A. J. (1998). The low-level cognitive processes involved in the visual search of pull-down menus and computer screens, as revealed by cognitive modeling. Doctoral Consortium paper. *CHI 98 Conference Summary on Human Factors in Computing Systems*, New York: ACM, 52-53.

JURIED MUSICAL PERFORMANCES

EyeMusic v1.0. Electronic music and video performance based on eye movements, composed by Rogers, T., Hornof, A., and Halverson, T. Performed live by A. Hornof on June 7, 2007, at the Frederick Loewe Theater in New York City, at NIME 2007, the International Conference on New Interfaces for Musical Expression.

INVITED KEYNOTE SPEAKING

Plenary Keynote Speaker at COGAIN 2008: The 4th Annual Conference on Communication by Gaze Interaction. Prague, Czech Republic, September 2-3, 2008. Talk title: “Scientific and Technical Challenges of Communication by Gaze.”

University of Oregon Neuroscience Institute annual research retreat. Blue River, Oregon. September 17-18, 2008. Talk title: “Scientific, Science-Influenced, and Exploratory Activities Underway in the UO Cognitive Modeling and Eye Tracking Lab.”

Keynote speaker and panelist for the workshop entitled “What Have Eye Movements Told Us So Far, and What is Next?” at CogSci 2006, the 28th Annual Conference of the Cognitive Science Society, July 26, 2006, Vancouver, BC.

INVITED PANELS

Invited panelist and presenter at ICDR 2007, the Interagency Committee on Disabilities Research annual conference, speaking on “Eye-Controlled Creative Expression for Children With Severe Disabilities,” Sept. 10, 2007, Arlington, Virginia.

Invited panelist at “Creating a Community of Discourse about Teaching and Learning,” as part of “The Parker Palmer Day of Dialogue: Rediscovery of Community in Higher Education,” October 7-8, 1998, University of Michigan, Ann Arbor, Michigan.

REFEREED WORKSHOPS

Ibrahim, S., Brulé, E., Benton, L., Hornof, A., Beneteau, E., Metatla, O. et al. (2020). What We Learn When Designing with Marginalised Children Proceedings of the 2020 ACM Interaction Design and Children Conference: Extended Abstracts. IDC '20, New York, NY, USA London, United Kingdom. (Dr. Hornof was one of the workshop organizers.)

Hornof, A. (2017). Position paper entitled “Emotional and ethical challenges when designing for people with extreme cognitive impairments” presented at workshop on “Ethical Encounters in Human-Computer Interaction,” CHI 2017, Denver, CO.

Hornof, A. (2008). Working with children with severe motor impairments as design partners. Invited presentation at the workshop on “Designing for Children with Special Needs.” Published in *Proceedings of IDC 2008, The 7th International Conference on Interaction Design and Children*. New York: ACM, 69-72.

Hornof, A. (2006). Position paper entitled “Applying trad HCI to new media: Cognitive modeling and eye tracking” presented at workshop on “About Face: Interface Creative Engagement in New Media Arts and HCI,” CHI 2006, Montréal, Quebec.

Hornof, A. (2002). Position paper on the analysis of eye movement data presented at the workshop on “Automatic Capture, Representation and Analysis of User Behavior,” CHI 2002, Minneapolis, MN.

OTHER PUBLICATIONS

Howes, A., Cowan, B. R., Janssen, C. P., Cox, A. L., Cairns, P., Hornof, A. J., Payne, S. J., & Pirolli, P. (2014). Interaction science SIG: Overcoming challenges. In *CHI EA '14: Proceedings of the Extended Abstracts of the 32nd Annual ACM Conference on Human Factors in Computing Systems*, ACM, 1127-1130.

Hornof, A. J. (July/August, 2001). Research alert: Visual search and mouse pointing in labeled versus unlabeled two-dimensional visual hierarchies. *ACM interactions*, New York: ACM, 14-16.

INVITED TALKS

“Eye Tracking for Analysis and Accessibility.” Microsoft Research Lab, Redmond, WA, July 19, 2017.

“The Role of Cognitive Strategy in Human-Computer Interaction.” College of Information Sciences and Technology, Penn State, State College, PA, January 13, 2016.

“The Critical Role of Human Cognitive Strategy in Cognitive Computing.” IBM T.J. Watson Research Center, Yorktown Heights, NY, August 14, 2014.

“Cognitive Strategies for Human-Computer Interaction as Revealed by Computational Modeling of Human Performance.” Networking and Information Technology Research and Development (NITRD) Program, Human Computer Interaction and Information Management Coordinating Group (HCI&IM CG) Meeting, Arlington, VA, June 18, 2014.

“Theories, Techniques, and Populations in Human-Computer Interaction.” National Science Foundation, Human-Centered Computing Program, Arlington, VA, April 27, 2010.

“Monitoring Eye Movements and Strategies in a MultiModal Dual Task: Representing a Secondary Visual Display Using Spatialized Audio.” Portland State University, Portland, OR, January 14, 2008.

“Monitoring Eye Movements and Strategies in a MultiModal Dual Task: Representing a Secondary Visual Display Using Spatialized Audio.” Office of Naval Research Workshop on Attention, Perception and Modeling for Complex Displays, Arlington, VA, May 22, 2007.

“Art and Science: Cognitive Modeling and Eye Tracking.” Rensselaer Polytechnic Institute, Troy, NY, September 13, 2006.

“Eye Tracking for Communication and New Media Art.” SMARTlab Digital Media Institute, University of East London, July 2, 2006.

“An Introduction to Eye Tracking for Communication.” Stephen Hawking School, London, England, June 21, 2006.

“Finding and Explaining the Effects of Multimodal Display Characteristics on Multitasking Performance (and an Update on Models of Visual Search).” ONR Workshop on Attention, Perception and Modeling for Complex Displays, ONR, Arlington, VA, March 2-3 2006.

“Human-Computer Visual Interaction: Cognitive Modeling, Eye Tracking, and EyeDraw.” Intel Research, Hillsboro, OR, May 6, 2005.

“Engineering and Design at the Eye-Movement Level.” Franklin W. Olin College of Engineering, Needham, Massachusetts, April 14, 2005.

“A Quick Introduction to EPIC as an Integrated Cognitive System Especially as it is Applied to a Real World Task Domain, and My Current Type 2 Integration Challenge.” Integrated Models of Cognitive Systems (IMCS) Workshop, Saratoga Springs, NY, March 3-6, 2005.

“Where the Eyes Meet the Computer: Human-Computer *Visual* Interaction.” IBM Almaden Research Center, San Jose, CA, February 23, 2005.

“Human-Computer Visual Interaction.” Department of Computer Science, North Carolina State University, Raleigh, NC, August 3, 2004.

“The Effect of Color and Local Density on the Visual Search of Text.” Office of Naval Research Workshop on Attention, Perception and Modeling for Complex Displays, Naval Undersea Warfare Center, Newport, Rhode Island. May 5-7, 2004.

“Cognitive Strategies and Eye Movements for Searching Hierarchical Displays.” Office of Naval Research Workshop on Attention, Perception and Modeling for Complex Displays, Rensselaer Polytechnic Institute, Troy, NY. June 4-6, 2003.

“Predicting Eye Movements in Hierarchical Visual Search.” Center for Human-Computer Communication, Oregon Graduate Institute, October 11, 2002.

“Cognitive Strategies For Visual Search.” Department of Computer Science, University College London, July 1, 2002.

“Cognitive Strategies for Visual Search.” Office of Naval Research, Attention, Perception and Data Visualization Workshop, George Mason University, Fairfax, Virginia, May 22-24, 2002.

“Think Global, Act Local: The Strategic Coordination of Perceptual and Motor Processes for Scanning Hierarchical Computer Screen Layouts” Office of Naval Research, Cognitive Science Grantees Meeting, Orlando, Florida, January 25, 2002.

“Almost-Perfect Search: The Strategic Coordination of Perceptual and Motor Processes for Scanning Hierarchical Computer Screen Layouts.” Oregon State University, Department of Computer Science, January 14, 2002.

“Predictive Engineering Models of Interface Usability: Cognitive Modeling and Human-Computer Interaction.” ACM Special Interest Group on Computer & Human Interaction (CHI-FOO), Portland, Oregon, March 21, 2001.

“Computational Cognitive Models of Menu Selection.” ACT-R Summer School, Carnegie Mellon University, July 25-August 1, 2000.

“Design Principles for Friendly Technology.” Michigan Association for Computer Users in Learning Conference (MACUL ‘94), Grand Rapids, Michigan, March 10-11, 1994.

“Classifying Things: Scaffolding the Process.” Fifth Annual Industrial Partners of Computer Science and Engineering Review (IPoCSE), University of Michigan, Ann Arbor, Michigan, March 17-18, 1994.

CONFERENCE TUTORIALS

“Human-Computer Interaction: Introduction and Overview,” ACM CHI 2010: Conference on Human Factors in Computing Systems. Three-hour course taught with K. Butler and R. Jacob in Atlanta, Georgia, on April 11, 2010. (Invited as co-instructor after program was published.)

“Building Cognitive Models with the EPIC Architecture for Human Cognition and Performance,” Sixth International Conference on Cognitive Modeling, Pittsburgh, Pennsylvania. Full-day tutorial on July 29, 2004. Co-instructor: David Kieras

TECHNICAL REPORTS

Vessey, K., & Hornof, A. J. (2013). *Reviewing Nyan 2.0XT by Recreating the Burke et al. (2004) Banner Ad Study*. Department of CIS Technical Report 2013-01, University of Oregon. Seventeen pages.

Hornof, A. J., & Vessey, K. E. V. (2011). *The sound of one eye clapping: Tapping an accurate rhythm with eye movements*. Department of CIS Technical Report CIS-TR-2011-01, University of Oregon. Four pages.

Vessey, K., & Hornof, A. J. (2009). *A pilot study using Tobii studio 1.3.22 to recreate the Burke et al. (2004) banner ad study*. Department of CIS Technical Report 2010-05, University of Oregon. Seventeen pages.

Hornof, A. (2002). *Cognitive strategies for the visual search of hierarchical computer displays*. Department of CIS Technical Report 02-04, University of Oregon.

Burke, M. K. and A. J. Hornof (2001). *The effect of animated banner advertisements on a visual search task*. Department of CIS Technical Report 02-03, University of Oregon.

Halverson, T., & Hornof, A. J. (2001). *Issues in the design and development of experimental software for use with an eye tracking system*. Department of CIS Technical Report 02-02, University of Oregon.

MUSICAL COMPOSITIONS

Rogers, T., Hornof, A., & Halverson, T. (2006). *EyeMusic v1.0.*. Performed live by Rogers on March 31, 2006, at SEAMUS, the annual conference for the Society for Electro-Acoustic Music in the United States, and by Hornof on June 7 at NIME 2007.

Stolet, J., & Hornof, A. J. (2003). *Eye Music v. 0.9b*. Electronic music composition based on eye movements, performed November 15, 2003, at the Future Music Oregon concert at the University of Oregon School of Music.

SOFTWARE ARTIFACTS

- **EyeDraw** – Enables children with disabilities to draw pictures by just moving their eyes. Currently in active use at five homes and clinics.
- **EyeMusic** – Makes music from eye movements. Used by Andrea Polli at Hunter College for sonifying weather data.
- **VizFix** – Assists in the visualization and analysis of eye movement data. Presented at workshops and conferences.
- **EyeGazeMac** – Creates a network connection between an eye tracker and a Macintosh, for data collection purposes. Used by eye tracking researchers at George Mason University.

EDITORIAL SERVICE

Associate Editor, *ACM Transactions on Computer-Human Interaction*. 2014-present.

PROGRAM COMMITTEES

Papers Associate Chair. *ACM CHI: Conference on Human Factors in Computing Systems*, 2007, 2009-2012, 2017-2020. Session Chair: 2007, 2017.

Program Committee. *ACM ASSETS: Conference on Computers and Accessibility*, 2017-2018, 2020-2023. Chair of Best Paper Awards Subcommittee, 2022.

Program Committee. *ETRA: Eye Tracking Research & Applications Symposium*, 2004.

Program Committee. *ICCM: International Conference on Cognitive Modeling*, 2001.

DOCTORAL CONSORTIUMS (associated with conferences)

Faculty mentor. ACM ASSETS 2016. Conference on Computers and Accessibility.

Chair and faculty mentor. ICCM 2007. International Conference on Cognitive Modeling.

Faculty mentor. ACM ASSETS 2005. Conference on Computers and Accessibility.
Faculty mentor. ACM CHI 2003. Conference on Human Factors in Computing Systems.

REVIEWING (refereeing)

ACM Conference on Human Factors in Computing Systems (CHI), 2004-2012, 2015-2020, 2022-2024.
ACM Designing Interactive Systems (DIS) Conference, 2019.
ACM Interaction Design and Children (IDC), 2020.
ACM Symposium on User Interface Software and Technology (UIST), 2005.
ACM Transactions on Computer-Human Interaction (ToCHI), 2003, 2006, 2009, 2013.
ACM Transactions on Applied Perception, 2009.
Annual Meeting of the Cognitive Science Society, 2007.
Behavior Research Methods, Instruments, and Computers, 2002.
Cognitive Science, 2011.
Eurographics, 2011.
Human-Computer Interaction, 2002-2005, 2010, 2011, 2013, 2017
Human Factors, 2006.
International Conference on Cognitive Modeling, 2004.
International Journal of Human-Computer Studies, 2004.
Journal of Experimental Psychology: Applied, 1999.
NASA Intelligent Systems Program proposals, 2000.
NSF Proposal Review Panels, Arlington, Virginia, 2000, 2002, 2004, 2005, 2009, 2011 (2), 2012, 2016, 2017, 2018 (virtual), 2019, 2022 (virtual).
NSF Individual Proposals, 2009, 2010, 2019, 2021.
NSF Site Review Panel, 2005.

EXTERNAL FACULTY REVIEWING

Requests from universities for faculty evaluations (e.g., for tenure) include:

- New York University
- Texas A&M University
- University of Maryland, Baltimore County
- University of Maryland, College Park

OTHER SERVICE TO DISCIPLINE

NSF Human-Centered Computing Workshop, Arlington, VA, 2006.

VISITING SCHOLAR

Rensselaer Polytechnic Institute, Department of Cognitive Science, Fall, 2006.
Portland State University, Department of Computer Science, Winter 2007.

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

Association of Computing Machinery (ACM)
ACM Special Interest Group on Computer-Human Interaction (ACM SIGCHI)
Human Factors and Ergonomics Society
Cognitive Science Society

UNIVERSITY SERVICE

University of Oregon (UO) Natural Sciences Diversity Leadership Committee, 2018-2021, Committee Chair 2019-2021
UO University Senate, 2005-2006, 2011-2012, 2017-2019, 2020-2023.
UO Student-Faculty Committee on Grievances, 2008-2010.

FACULTY MENTORING

Mentoring Team for Stephanie De Anda's NIH Award #5K23DC018033-02.

STUDENTS ADVISED

Doctoral

- Yunfeng Zhang, Ph.D. awarded 2015. Dissertation title: “Towards a Comprehensive Computational Theory of Human Multitasking: Advancing Cognitive Modeling with Detailed Analyses of Eye Movement Data and Large-Scale Exploration of Task Strategies”. Currently (as of 2017) a Research Staff Member at IBM T. J. Watson Research Center.
- Tim Halverson, Ph.D. awarded 2008. Dissertation title: “An ‘Active Vision’ Computational Model of Visual Search for Human-Computer Interaction.” Accepted a position as a Research Computer Scientist with the Collaborative Interfaces Branch of Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, Ohio. Currently (as of 2016) working as a private contractor with the same laboratory.
- Marah Sutherland, Ph.D. student in the University of Oregon College of Education. Advised 2016-2017 on the project that led to our CHI 2017 publication.

Master’s

- Rachel Nehmer, M.S., 2010.
- Andy Isaacson, M.S., 2008.
- Troy Rogers, M.M. Intermedia Music Technology, 2005. Directed research project in 2005.
- Ishwinder Kaur, M.S., 2005. Went on for another M.S. at the M.I.T. Media Lab, 2007.

Undergraduates

- Sam Gerendasy, B.S. anticipated 2019.
- Vinitha Gadiraju, B.S. anticipated 2018.
- Riley Hatfield, B.S. in Psychology anticipated, 2018.
- Haley Whitman, B.S. 2017.
- Masado Ishii, B.S. 2017.
- Sam Dodson, B.A. Lewis and Clark College, 2013.
- Kyle Vessey, B.S. 2010.
- Erik Brown, B.S., 2007.
- Linda Sato, B.S., 2006.
- Anna Cavender, B.S., 2004. Recognized by the Computing Research Association as the Most Outstanding Female Undergraduate in computing research for 2004. Went on to earn a Ph.D. in Computer Science and Engineering from the University of Washington in 2010, and then on to a position at Google.
- Rob Hoselton, B.S., 2004.
- Moira Burke, B.A., summa cum laude, 2001. Honors College thesis: The Effect of Animated Banner Ads on a Visual Search Task. Went on to earn a Ph.D. in the Human-Computer Interaction Institute at Carnegie Mellon University in 2012, and then on to a research position at Facebook.

Doctoral Student Committees

- Ross Casebolt, UO Math, 2022.
- David Kuhns, UO Psychology, 2014.
- Päivi Majaranta, University of Tampere, Finland, 2009. Thesis reviewer.
- Luke Duesbery, UO College of Education, 2007.
- Harpreet Dhaliwal, UO Psychology, 2003.
- David Ozab, UO School of Music, 2003; proxy member.

Master’s of Fine Arts Graduate Student Reviews

- Ashli Taylor, 2007

- Ty Warren, 2008.

TEACHING EXPERIENCE

Assistant Professor, University of Oregon

- CIS 170 “Science of Computing” (computer programming for non-majors), 2008.
- CIS 211 “Computer Science II” (object-oriented programming), 2003, 2016.
- CIS 410/510 “Eye Tracking Methodology and Applications,” 2009, 2010.
- CIS 410/510 “Modeling Cognitive Agents,” 2004.
- CIS 410/510 “Human Cognitive Modeling and Simulation,” 2015.
- CIS 422/522 “Software Methodologies” (software engineering), 2000-2010, 2018-2022.
- CIS 443/543 “User Interfaces,” 2000-2007, 2011-2012, 2014-2022.
- CIS 507/607 Seminars on cognitive modeling, eye tracking, and HCI, 2001-2012, 2015-2016.
- CIS 607 “Seminar on Diversity in Computer Science”, 2020-2022.
- CIS 640 “Writing in Computer Research,” 2010, 2020-2022.
- CIS 677 “Knowledge-Based Interfaces,” 2000, 2005, 2009.

Graduate Student Instructor, University of Michigan

- EECS 280 “Programming and Introductory Data Structures,” 1999.
- EECS 481 “Software Engineering,” 1993, 1998.

TEACHING ACCOMPLISHMENTS

Student projects accepted as finalists to the CHI 2006 Student Design Competition:

Hanson-Smith, V., Wimalasuriya, D., & Fortier, A. (2006). NutriStat: Tracking young child nutrition. In *Extended Abstracts of CHI '06: Conference on Human Factors in Computing Systems*, New York: ACM, 1831-1836.

Rong, J., Ochoa, L., Ritter, L., & Brown, E. (2006). Food information network: Informed shopping for healthier living. In *Extended Abstracts of CHI '06: Conference on Human Factors in Computing Systems*, New York: ACM, 1879-1884.

TEACHING AWARDS

Nominated for Mortar Board Professor of the Month, University of Oregon, 2000-2001.

PROFESSIONAL EXPERIENCE

Project Manager and Programmer/Analyst, 1990-1993

DRT Systems International, New York, NY

Solved technology problems for New York City accounting firms, law firms, and banks. Managed projects that generated revenue in excess of \$150,000 per annum.

Developed an international tax planner system that modeled the flow of currencies through the world market, identifying all taxes encountered. Managed the project.

Designed and developed a Unix-based imaging system that gave lawyers access to over one million pages of documents stored on a CD jukebox. Managed the project.

LAN & Microcomputer Specialist, 1987-1990

Deloitte & Touche Management Consulting, New York, NY

Wrote specifications for the installation of a Macintosh and IBM 3090 distributed network for a major public school system in Florida.

Developed software systems including an automated timesheet system, document and time tracking system, data conversion package, and contacts database.