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### **Education**

- 1991 Ph.D., Psychology (Cognition and Perception) University of Michigan, Ann Arbor, MI  
1986 M.A., Psychology (Cognition and Perception) University of Michigan, Ann Arbor, MI  
1984 B.A., Psychology (concentrations in Computer Science and Sociology)  
Graceland College, Lamoni, IA

### **Research Interests**

Human-computer interaction (HCI), serious games for motivating healthy behavior, tangible technology for supporting divergent creativity in young children, Quantified Self and health, computational modeling of visual search.

Dissertation: Motor Control Issues in the Design of Computer Menus

### **Research Experience**

- Fall 1998 Visiting Scientist, Artificial Intelligence Laboratory, University of Michigan.  
1989-90 Research Supervisor, Gary and Judith Olson - Cognitive Science and Machine Intelligence Laboratory, University of Michigan  
1988-89 Research Assistant, Marion Perlmutter, Study of Cognitive Aging, Institute of Gerontology, University of Michigan  
1986 Visiting Research Fellow, NASA, Ames Research Center: Space Human Factors Division, Mountain View, California  
1984-91 Research Assistant, Judith R. Olson, Performance Modelling of Software Use, Graduate School of Business/Dept. of Psychology, Univ. of Michigan

### **Teaching Experience**

- 1991- Assistant & Associate Professor, Lewis & Clark College, Dept. of Psychology  
1990 Instructor, Univ. of Michigan - Dearborn, Behavioral Sciences Department  
1985-90 Instructor, University of Michigan - Ann Arbor, College of Engineering  
1985-89 Instructor & Teaching Assistant, University of Michigan - Ann Arbor, Department of Psychology

## Grant Activity

### *Current*

#### **Rehearsing Disaster: Understanding Earthquake Preparedness Behavior in an Interactive Environment**

Source: National Science Foundation. Dates: 9/19 – 8/23. Amount: \$559,617.

Role: Co-Pi with Peter Drake, Elizabeth Safran and Brian Sebok.

#### **Broad Implementation: Creating Communities of Learners for Informal Cognitive Science Education.** (*currently unfunded but project continues*)

Source: National Science Foundation, Division of Research on Learning. Dates: 9/11 – 8/17.

Amount: \$2,995,325. Sub-award #4552-LCC01 to OMSI and LC (funded 2012-2015).

Role: Research Partner (involving 74 LC student researchers since 2012).

#### **Play Lab.** (*no cost extension through 8/19*)

Source: Institute of Museum and Library Services (IMLS). Dates: 10/16 – 8/19. Amount: \$149,820

Role: Research Partner (and mentoring two LC student interns).

### *Recent*

#### **EDURange: Supporting cyber security education with hands-on exercises, a student-staffed help-desk, and webinars.**

Source: National Science Foundation. Dates: 8/15 – 7/18. Amount: \$240,690.

Role: External Evaluator and Consultant on Learning Objectives and User Interface.

#### **EDURange: A Cybersecurity Competition Platform to Enhance Undergraduate Security Analysis Skills.**

Source: National Science Foundation. Dates: 8/12 – 7/14. Amount: \$119,981.

Role: External Evaluator and Consultant on Learning Objectives and User Interface.

#### **Lewis & Clark Rogers Summer Faculty Student Collaborative Research Program.**

Sources: Various including Rogers, Fairchild, HHMI, Miller Grants. Amount: Varies by year, \$15,700 - \$29,900. Dates: 10 weeks each summer from 2008 – 2017.

Role: Research Mentor and Supervisor for 24 LC and 7 High School students.

## Publications

Weiss, R. S., Turbak, F. A., Mache, J., Nilsen, E., & Locasto, M. E. (2016, August). Finding the Balance Between Guidance and Independence in Cybersecurity Exercises. In *ASE@USENIX Security Symposium*.

Weiss, R. S., Boesen, S., Sullivan, J. F., Locasto, M. E., Mache, J., & Nilsen, E. (2015). Teaching cybersecurity analysis skills in the cloud. In *Proceedings of the 46th ACM Technical Symposium on Computer Science Education* (pp. 332-337). ACM.

Boesen, S., Weiss, R. S., Sullivan, J. F., Locasto, M. E., Mache, J., & Nilsen, E. (2014, August). EDURange: Meeting the Pedagogical Challenges of Student Participation in Cybertraining Environments. In *CSET*.

Weiss, R., Mache, J., & Nilsen, E. (2013). Top 10 hands-on cybersecurity exercises. *Journal of Computing Sciences in Colleges*, 29(1), 140-147.

- Nilsen, E., \*LeDonne, R., Klemperer, E., Olund, S. (2011) Conflict Resolution With a Serious Game for Peace. *Proceedings of Games + Learning + Society Conference*, June 2011, 175 - 184.
- Klemperer, E., LeDonne, R., Nilsen, E. (2011) Promoting Human Rights While Polarizing Political Perceptions With a Serious Game. *Proceedings of Games + Learning + Society Conference*, June 2011, 161 - 168.
- 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(4), December, 2005. 423 - 445
- 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.
- Butzon S., Sheedy J., & Nilsen E. (2002) The efficacy of computer glasses in reduction of computer worker symptoms. *Optometry* 73(4): 221-30 (Optometry (St. Louis))
- Kolker D., Hutchinson R., & Nilsen E. (2002) Comparison of tests of accommodation for computer users. *Optometry* 73(4): 212-220 (Optometry (St. Louis))
- Nilsen, E. (2000) Giving GOMS to Undergrads: Teaching Cognitive Modeling. *CHI 2000. Conference on Human Factors in Computer Systems*. April, 2000.
- Nilsen, E., Evans, J. (1999) Exploring the Divide Between Two Unified Theories of Cognition: Modeling Visual Attention in Menu Selection. *CHI '99 Conference on Human Factors in Computer Systems*. 288,289.
- Nilsen, E., Salibello, C. (1997) Survey of U.S. Optometrist's Regarding Prevalence and Treatment of Visual Stress Symptoms. *HCI International '97. Proceedings of the 7th International Conference on Human-Computer Interaction*, San Francisco, California, 24-30 August. Elsevier Science B. V.
- Schlichting, C. and Nilsen, E. (1996) Signal Detection analysis of WWW search engines. *Designing for the Web: Empirical Studies Conference Proceedings*, 1996, available electronically at <http://microsoft.com/usability/webconf.htm>
- Nilsen, E. (1996) The Gnosis Of Knowledge Navigation On The Net. *Behavior Research Methods, Instruments, & Computers*, 28 (2), 179-182.
- Nilsen, E., Fencsik, D., Smith, A., Solares, L., Stratton, S. (1995) Reducing Visual Stress Symptoms of VDT Users With Prescription Eyeglasses. *CHI '95 Conference Adjunct Proceedings*, 83-84
- Salibello, C. and Nilsen, E. (1995) ) Is There A Typical VDT Patient? A Demographic Analysis. *Journal of the American Optometric Association*, 66, 479-483.
- Meyer, S., Cohen, O., Nilsen, E. (1994) Device comparisons for goal-directed tasks. *CHI '94 Conference Companion Proceedings*, 251-252.

- Nilsen, E. (1993) Computer supported co-operative work meets the liberal arts. *Psychology Teaching Review*, (2), 2, 95-104.
- Nilsen, E., Jong, H., Olson, J., Biolsi, K., Reuter, H., Mutter, S. (1993) The growth of software skill: A longitudinal look at learning and performance. *Proceedings of the INTERCHI '93 Conference on Human Factors in Computer Systems*, 149-156.
- Cohen, O., Meyer, S., and Nilsen E. (1993) Studying the movement of high tech rodents: Pointing and dragging. *Adjunct Proceedings of the INTERCHI '93 Conference on Human Factors in Computer Systems*, 135-136.
- Nilsen, E., Jong, H., Olson, J., Polson P. (1992) Method engineering: From data to model to practice. *Proceedings of the CHI '92 Conference on Human Factors in Computer Systems*, 313-320.
- Walker, N., Smelcer, J. B., & Nilsen, E. (1991) Optimizing speed and accuracy of menu selection: a comparison of walking and pull-down menus. *International Journal of Man-Machine Studies*. 35(6), 871-890.
- Nilsen, E. (1991) Perceptual-motor control in human-computer interaction. *Cognitive Science & Machine Intelligence Laboratory Technical Report #37*, The University of Michigan.
- Nilsen, E. (1991) Perceptual-motor control in human-computer interaction. *SIGCHI Bulletin*, 23(4), 83.
- Olson, J.R., Nilsen, E. (1988) Analysis of the cognition involved in spreadsheet software interaction. *Human Computer Interaction*, 3, 309-349.

### **Conference Presentations (Peer Reviewed)**

- 2019 Videogames and Earthquake Preparedness: Effects of Avatar Identification and Resource Richness. Safran, E. B., Drake, P., Nilsen, E., Sebok, B. (July, 2019) 44th Annual Natural Hazards Workshop.
- 2019 Using Tangible Technology to Teach Children Coding Concepts. Allie Gregoire, Hanna Lyubinina, Ellie Lasarow, Hera Dewan, Iri Angelova, Sophia Aron, Macy Balassone, Zack Hart, Zara Kazi, Dylan Pastrana, Serena Saba, Sheridan Shenkin, Abbie St Vaughan, Erik Nilsen. (Lewis & Clark College). *Western Psychological Association Convention*. April 2019.
- 2018 Divergent and Convergent Play with Tangrams: Tangible Technology Produces Functional Fixedness in Young Children. Willow Wood, Arianna Marshank, Blake Murray, Samantha Barstack, Ryan Nilsen, Sofia Solares, Jackie Potter, Maddie Caron, Macy Balassone, Sophia Aron, Elizabeth Goldsmith, Caroline Lawrence, Lili Chambers, Eamonn Gottlieb, Malavika Arun, Sydney Roth, Anastasia Adriano, and Erik Nilsen (Lewis & Clark College). *Western Psychological Association Convention*. April 2018.

- 2018 Methods of Motivation: Visualizing Activity with Fitbit and Google Maps. Sam Peers Nitzberg, Sheridan Shenkin, Rishi Javia and Erik Nilsen. (Lewis & Clark College). *Western Psychological Association Convention*. April 2018.
- 2018 Effects of Framing and Character Identification with Narrative Videos on Intent to Take Earthquake Preparedness Action. Safran, E. B., Sebok, B., Nilsen, E., Duffett, B., Petrie, G., Smay, H., Weaver, A., Garcia, D. (July,2018) 43<sup>rd</sup> Annual Natural Hazards Workshop.
- 2017 Virtual Map Interface Increases Daily Steps for Activity Tracker Users. Blake Murray, Arianna Marshank, Willow Wood, Andres Cortes, Jeremy McWilliams and Erik Nilsen (Lewis & Clark College). *Western Psychological Association Meeting*. April 2017.
- 2017 Tangible Technology with Tangrams: Puzzling Findings for Functional Fixedness. Arianna Marshank, Blake Murray, Willow Wood, Sophia Aron, Samantha Barstack, Lili Chambers, Anastasia Adriano, Malavika Arun, Macy Balassone, Elizabeth Goldsmith, Eamonn Gottlieb, Caroline Lawrence, Ryan Nilsen, Sydney Roth and Erik Nilsen (Lewis & Clark College). *Western Psychological Association Meeting*. April 2017.
- 2016 Finding the Balance Between Guidance and Independence in Cybersecurity Exercises. Weiss, R. S., Turbak, F. A., Mache, J., Nilsen, E., & Locasto, M. E. In *ASE@USENIX Security Symposium*. August 2016.
- 2016 Parent-child Co-play With Tangible Tech Shape Recognition and Creativity in Preschoolers. Raiven Greenberg, Karma Rose Macias, Jesus Hernandez, Noah Tewelde, Marco Chairez, Hannah Fritz, Owen Gartner, Ang Li, Sydney Roth, Elizabeth Valadez, Willow Wood, & Erik Nilsen (Lewis & Clark College) *Western Psychological Association Meeting*. April 2016.
- 2016 Traveling the Trail With Fitbits: Social Referencing and Maps Motivate Movement. Jesus Hernandez, Raiven Greenberg, Karma Rose Macias, Marco Chairez, Noah Tewelde, Jeremy McWilliams & Erik Nilsen (Lewis & Clark College) *Western Psychological Association Meeting*. April 2016.
- 2016 Safran, E. B., Sebok, B., Nilsen, E. (2016) Next Generation Earthquake Messaging Strategies. 41<sup>st</sup> Annual Natural Hazards Workshop
- 2015 Using Tangible Technology Improves Shape Recognition and Creativity in Preschoolers. Schooler, Joel, Heinselman, Susan, Callaghan, Noah, Macias, Karma Rose, Greenberg, Raiven, Halpern, Hannah, Bauer, Gemma, Higger, Hayden, Macomber-Millman, Nakaia, Murillo, Joaquin, Rebensdorf, Elijah and Nilsen, Erik. *Western Psychological Association Meeting*. April 2015.
- 2015 Teaching cybersecurity analysis skills in the cloud. Weiss, R. S., Boesen, S., Sullivan, J. F., Locasto, M. E., Mache, J., & Nilsen, E. *46th ACM Technical Symposium on Computer Science Education* ACM.
- 2015 Social Referencing Facilitates Fitness with Fitbit: Competition Wins, Collaboration Places. Heinselman, Susan, Callaghan, Noah, Schooler, Joel, Rebensdorf, Elijah & Nilsen, Erik. *Western Psychological Association Meeting*. April 2015.

- 2014 Boesen, S., Weiss, R. S., Sullivan, J. F., Locasto, M. E., Mache, J., & Nilsen, E. (2014, August). EDURange: Meeting the Pedagogical Challenges of Student Participation in Cybertraining Environments. *9th USENIX Workshop on Cyber Security Experimentation and Test (CSET '14)*.
- 2014 Convergent Coaching Diminishes Divergent Play for Preschoolers. Lucas, Steven, Etzel, Desiree, Pichon, Marjorie, Farrakhan, Malik, Brown, Noelle, Fechtmeyer, Christian, Ledesma-Diaz, Abigail, Mahapatra, Nikhil, Millington, Niko, Sellers, Tate, Walker, Alyssa & Nilsen, Erik Lewis & Clark College. *Western Psychological Association Meeting*. April 2014.
- 2013 Development of “Difference” in Divergent Thinking of Young Children. Nilsen, K., Livstrom, I., Lifschitz, R., Blasher, D., Vega, E., Benson, M., Harrell, C., Hennessey, D., Moore, L., Ni, J., Sweek, E., Walker, A., & Nilsen, E. *Western Psychological Association Meeting*. April 2013.
- 2011 Conflict Resolution With a Serious Game for Peace. Nilsen, E., LeDonne, R., Klemperer, E., Olund, S. *Games + Learning + Society Conference*. June 2011.
- 2011 Promoting Human Rights While Polarizing Political Perceptions With a Serious Game. Klemperer, E., LeDonne, R., Nilsen, E. *Games + Learning + Society Conference*. June 2011
- 2010 Dispositional, Cognitive and Physiological Influences on Risky Decision Making. Rose Blackman, Dylan Peden, Richie LeDonne, Jessaca Willis, & Erik Nilsen, *Western Psychological Association Meeting*. April 2010.
- 2010 Impulsiveness Impairs and Arousal Assists Performance on the Game of Dice Task. Allison Sweeney, Noah Freed, and Erik Nilsen. *Western Psychological Association Meeting*. April 2010.
- 2010 The Eyes Have It: Memory for and Effectiveness of Store Signage, Andrew Nilsen, Erik Nilsen, Nathan Colker, Anthony Levi. *Western Psychological Association Meeting*. April 2010.
- 2009 Computer-Mediated Yogic Breathing Impacts Mood And Time Estimation, Erik Nilsen, Jocelyn Moore, Hailee Barnes, Lindsay Alt, Brian Ambuel, Michael Earley, Alice Longley, Alexander Maso, Kate Schatz. *Western Psychological Association Meeting*. April 2009.
- 2008 Promulgating Peace and Shrinking Stereotypes With a Computer Game. Erik Nilsen *Western Psychological Association Meeting*. April 2008.
- 2005 Erik Nilsen, Janel Putnam, Thomas Armstrong, Kerry Balaam, Marin Casselli, Rachel Farrell, Danielle Jamieson & Ian Rasmussen Learning from web-based tutorials: Getting to the heart of teaching effectiveness. *Western Psychological Association Meeting*. April 2005.
- 2005 Erik Nilsen, Alexander Goldman, Molly Young, Takanori Endo, Fay Carroll, Emiko Maeda, Nathalie Matson, Marriah Patterson, Matty Shepard & Sho Shinomiya. The effects of paper color on mood and performance. *Western Psychological Association Meeting*. April 2005.
- 2004 Burke, M., Gorman, N., Nilsen, E., & Hornof, A. Banner ads hinder visual search and are forgotten. *CHI 2004: Conference on Human Factors in Computing Systems*, April 2004.

- 2001 Nilsen, E., Emanuel, K., Braun, J., & Schoeneman K. Expert/Novice Differences in Visual Search During Perceptual Problem Solving. *Western Psychological Association Meeting*. May 2001.
- 2001 Nilsen, E., Braun, J., Emanuel, K., Schoeneman K., & Wilson, M. Successful Searching in Cyberspace: Influence of Experience, Gender and Age. *Western Psychological Association Meeting*. May 2001.
- 2001 Shearer, A., Nilsen, E. User Response to Two Algorithms as a Test of Collaborative Filtering. *CHI 2000. Conference on Human Factors in Computer Systems*. April, 2001.
- 2000 Nilsen, E., Schoeneman, K., & Schreiber, J. Encoding Matters: Using Iconic vs Symbolic Precues With Conjunction Targets. *Western Psychological Association Meeting*. April 2000.
- 1999 Nilsen, E., Evans, J. Exploring the Divide Between Two Unified Theories of Cognition: Modeling Visual Attention in Menu Selection. *CHI '99 Conference on Human Factors in Computer Systems*. April 1999.
- 1997 Nilsen, E., Salibello, C. Survey of U.S. Optometrist's Regarding Prevalence and Treatment of Visual Stress Symptoms. *HCI International '97 Meeting*, Aug. 1997
- 1997 Nilsen, E., Emerson, M., Fencsik, D., & Isenberg, Z. When relative mapping is absolutely better: A study of a hybrid input device. *Western Psychological Association Meeting*, April 1997.
- 1995 Nilsen, E., Fencsik, D., Smith, A., Solares, L., Stratton, S. Reducing Visual Stress Symptoms of VDT Users With Prescription Eyeglasses. *CHI '95 Conference on Human Factors in Computer Systems*.
- 1994 Meyer, S., Cohen, O., Nilsen, E. Device comparisons for goal-directed tasks. *CHI '94 Conference on Human Factors in Computer Systems*.
- 1994 Nilsen, E. and Crotchett, K. A computer-based measure of knowledge organization. *Western Psychological Association Convention*.
- 1993 Cohen, O., Meyer, S., and Nilsen E. Studying the movement of high tech rodents: Pointing and dragging. *INTERCHI '93*.
- 1993 Friends, J., and Nilsen, E. Incorporating computer simulations in introduction to psychology: A study on sequencing. *Western Psychological Association – Rocky Mountain Psychological Association Convention*.

### **Invited Presentations**

- 2017 OMSI After Dark. Science of '97 and '17: Tangible Toys from Actimate Barney to Cognitoys Dino. Invited presenter for this monthly event for the public hosted at OMSI.
- 2016 Assessing the Landscape of High School STEM Research Experiences within Living Laboratory workshop. Invited Speaker and Panel member at NSF-funded workshop at Museum of Science, Boston, MA. Part of the National Living Laboratory Project.

- 2016 OMSI Science Pub. Melding Digital and Tangible Toys to Support Creative Play for Preschoolers. Invited Presenter for this public speaking series hosted by OMSI.
- 2015 National Living Laboratory (NLL) Academic Meeting. Invited Speaker for all day workshop introducing the NLL approach to new collaborators (Video Conference Presentation). March 18, Philadelphia, PA.

**Professional Service and Activities**

*Journal and Conference Paper Reviews*

- 1996 - 98 Reviewer for Journal of Experimental Psychology: Applied
- 1994- Reviewer for International Journal of Human Computer Studies
- 1994 Program Committee Member for Computers in Psychology CIP '94 Conference
- 1994 Paper Review Committee Member for Graphics Interface '94 Conference
- 1993- Reviewer for ACM Transactions On Human Computer Interaction
- 1992- Reviewer for Behavior Research Methods, Instruments, & Computers
- 1992 - Review Committee Member for CHI '93 - '2002, 2006, 2007 Conferences
- 1991- Reviewer for Human Computer Interaction

*Lewis & Clark Committee Service for 2013 – 2017.*

- 2016/18 Chairperson of Institutional Review Board.
- 2014/15 - Member of Institutional Review Board.
- 2015/16
- 2015/16 Member of Rogers Steering Committee.
- 2015/16 Member of RHMS Faculty Search Committee.
- 2013/14 Member Developmental Review Committee for Paul Allen.
- 2013/14 Member of CAS Strategic Planning Committee.
- 2013/14 Member of IA Faculty Search Committee.