

Kyle Rector

Assistant Professor

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Education

- University of Washington - Seattle, WA (9/2010 – 8/2016)
 - MS and PhD in Computer Science and Engineering
 - Dissertation: Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology
 - Advisors: Professor Julie A. Kientz and Richard E. Ladner
- Oregon State University - Corvallis, Oregon (9/2005 – 6/2010)
 - BS in Electrical and Computer Engineering, BS in Computer Science
 - GPA 3.83/4.00

Keywords: human-computer interaction, accessibility, eyes-free, exercise, wellness, health, art

Significant Fellowships and Awards

- CHI Honorable Mention Best Paper Award, 2008, 2014, 2016
- Google PhD Fellowship in Human Computer Interaction 2015
- CHI Doctoral Consortium (25% acceptance rate), 2013
- Heidelberg Laureate Forum (Heidelberg, Germany), 2013
- Kynamatrix Research Network "Innovation through Collaboration" Grant, 2013
- Palantir Scholarship for Women in Technology – Semi-Finalist, 2013
- National Science Foundation Graduate Research Fellow, 2010-2012
- ARCS Foundation Fellow, 2010-2012
- University of Washington CSE Fries Fellowship, 2010-2011
- Google Anita Borg Memorial Scholarship Recipient, 2010
- CRA Outstanding Undergraduate Research Award Finalist, 2009
- Google Anita Borg Memorial Scholarship Finalist, 2009

Peer-reviewed Conference Publications

- C1. **Rector, K.**, Bartlett, R., and Mullan, S. Exploring Aural and Haptic Feedback for Visually Impaired People on a Track: A Wizard of Oz Study. 20th International ACM SIGACCESS Conference on Computers and Accessibility, 2018. To appear (26% acceptance rate).
- C2. **Rector, K.**, Salmon, K., Thornton, D., Joshi, N., and Morris, M.R. Eyes-Free Art: Exploring Proxemic Audio Interfaces for Blind and Low Vision Art Engagement. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 2017. [Direct document link](#)

- C3. Boyd, L. E., **Rector, K.**, Profita, H., Stangl, A.J., Zolyomi, A., Kane, S.K., and Hayes, G.R. Understanding the Role Fluidity of Stakeholders During Assistive Technology Research "In the Wild". Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 2017 (23% acceptance rate). [Direct document link](#)
- C4. **Rector, K.**, Lauder, A., Keeling, P., Cheronas, A., Matsen III, F., Kientz, J.A. 2016. ShoulderCam: Evaluating the User Experience of a Depth Camera System to Measure Shoulder Range of Motion. Proceedings of the 10th EAI International Conference on Pervasive Computing Technologies for Healthcare. 4 pages. [Direct document link](#) (35% acceptance rate).
- C5. Sobel, K., **Rector, K.**, Evans, S., Kientz, J.A. 2016. Incloodle: Evaluating an Interactive Application for Young Children with Mixed Abilities. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. 12 pages. **Best Paper Award Honorable Mention (Top 4%)**. [Direct document link](#) (23% acceptance rate).
- C6. **Rector, K.**, Milne, L., Ladner, R.E., Friedman, B. Kientz, J. A. 2015. Exploring the Opportunities and Challenges with Exercise Technologies for People who are blind or Low-Vision. In Proceedings of the 17th International ACM SIGACCESS Conference on Computers & Accessibility. pp. 203-214. [Direct document link](#) (24% acceptance rate).
- C7. Bragg, D., **Rector, K.** Ladner, R.E. 2014. A User-Powered American Sign Language Dictionary. In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing. pp. 1837-1848. [Direct document link](#) (27% acceptance rate).
- C8. Hailpern, J., Asur, S., **Rector, K.** 2014. AttachMate: Highlight Extraction from Email Attachments. In Proceedings of the 27th annual ACM symposium on User interface software and technology. pp. 107-116. [Direct document link](#) (22% acceptance rate).
- C9. **Rector, K.**, Hailpern, J. 2014. MinEMail: SMS Alert System for Managing Critical Emails. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. pp. 783-792. **Best Paper Award Honorable Mention (Top 5%)**. [Direct document link](#) (23% acceptance rate).
- C10. **Rector, K.**, Bennett, C.L., Kientz, J.A. 2013. Eyes-Free Yoga: An Exergame Using Depth Cameras for Blind & Low Vision Exercise. In Proceedings of the 15th International ACM SIGACCESS Conference on Computers and Accessibility. Article 12, 8 pages. [Direct document link](#) (29% acceptance rate).
- C11. Kay, M., **Rector, K.**, Consolvo, S., Greenstein, B., Wobbrock, J., Watson, N., Kientz, J.A. 2013. PVT-Touch: Adapting a Reaction Time Test for Touchscreen Devices. In 2013 7th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth). pp. 248-251. [Direct document link](#) (30% acceptance rate).
- C12. Azenkot, S., **Rector, K.**, Ladner, R.E., Wobbrock, J. 2012. PassChords: Secure Multi-Touch Authentication for Blind People. In Proceedings of the 14th International ACM SIGACCESS Conference on Computers and Accessibility. pp. 159-166. **Best Paper Award**. [Direct document link](#) (28% acceptance rate).
- C13. Cao, J., **Rector, K.**, Park, T.H., Fleming, S.D., Burnett, M., Wiedenbeck, S. 2010. A Debugging Perspective on End-User Mashup Programming. In 2010 IEEE

Symposium on Visual Languages and Human-Centric Computing (VL/HCC). pp. 149-156. [Direct document link](#)

- C14. Lawrence, J., Bellamy, R., Burnett, M., **Rector, K.** 2008. Can Information Foraging Pick the Fix? A Field Study. In 2008 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC). pp. 57-64. [Direct document link](#)
- C15. Grigoreanu, V., Cao, J., Kulesza, T., Bogart, C., **Rector, K.**, Burnett, M., Wiedenbeck, S. 2008. Can Feature Design Reduce the Gender Gap in End-User Software Development Environments? In 2008 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC). pp. 149-156. [Direct document link](#)
- C16. Lawrence, J., Bellamy, R., Burnett, M., **Rector, K.** 2008. Using Information Scent to Model the Dynamic Foraging Behavior of Programmers in Maintenance Tasks. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. pp. 1323-1332. **Honorable Mention Best Paper Award** (30/714 papers). [Direct document link](#) (22% acceptance rate).
- C17. Beckwith, L., Inman, D., **Rector, K.**, Burnett, M. 2007. On to the Real World: Gender and Self-Efficacy in Excel. In 2007 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC). pp. 119-126. [Direct document link](#)
- C18. Subrahmanian, N., Kissinger, C., **Rector, K.**, Inman, D., Kaplan, J., Beckwith, L., Burnett, M. 2007. Explaining debugging strategies to end-user programmers. In 2007 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC). pp. 127-136. [Direct document link](#)

Peer-reviewed Journal Publications

- J1. **Rector, K.**, Vilardaga, R., Lansky, L., Lu, K., Bennett, C. L., Ladner, R. E., Kientz, J. A. 2017. Design and Real World Evaluation of Eyes-Free Yoga: An Exergame for Blind & Low Vision Exercise. *ACM Transactions on Accessible Computing*. [Direct document link](#)
- J2. Matsen III, F.A., Lauder, A., **Rector, K.**, Keeling, P., Cheronis, A.L. 2015. Measurement of active shoulder motion using the Kinect, a commercially available infrared position detection system. *Journal of Shoulder and Elbow Surgery*. [Direct document link](#)
- J3. Lawrence, J., Bogart, C., Burnett, M., Bellamy, R., **Rector, K.**, Fleming, S. 2013. How Programmers Debug, Revisited: An Information Foraging Theory Perspective. *IEEE Transactions on Software Engineering*, Vol. 39, No. 2, Feb. 2013. Pp. 197-215. [Direct document link](#)
- J4. Grigoreanu, V., Burnett, M., Wiedenbeck, S., Cao, J., **Rector, K.**, Kwan, I. 2012. End-User Debugging Strategies: A Sensemaking Perspective. *ACM Transactions on Computer-Human Interaction*, Vol. 19, No. 1, Article 5, March 2012. 28 pages. [Direct document link](#)
- J5. Burnett, M., Beckwith, L., Wiedenbeck, S., Fleming, S., Cao, J., Park, T., Grigoreanu, V., **Rector, K.** 2011. Gender Pluralism in Problem-Solving Software. *Interacting with Computers, Elsevier, 2011*. pp. 450-460. [Direct document link](#)
- J6. Welbourne, E., Battle, L., Cole, G., Gould, K., **Rector, K.**, Raymer, S., Balazinska, M., Borriello, G. 2009. Building the Internet of Things Using RFID: The RFID

Ecosystem Experience. *IEEE Internet Computing*, Vol. 13, No. 3, May/June 2009. pp. 48-55. [Direct document link](#)

Patents

P1. Hailpern, J., **Rector, K.** Notifying a User of Critical Emails via Text Messages. [Link to USPTO.gov document](#).

Other Publications

- O1. Ladner, R. E., **Rector, K.** 2017. Making Your Presentation Accessible. *ACM Interactions*. 24, 4 (June 2017), 56-59. [Direct document link](#)
- O2. **Rector, K.** 2017. Enhancing Exercise for People who are blind or Low Vision Using Interactive Technology. *Interactions* (5th ed., vol. 24, pp. 68-71). New York, NY: ACM. [Direct document link](#) Published October 2017
- O3. **Rector, K.** The Development of Novel Eyes-Free Exercise Technologies Using Participatory Design. *Accessibility and Computing: The Newsletter of ACM SIGACCESS*, Issue 108, January 2014. New York: ACM Press. pp. 47-49. First appeared in the Doctorial Consortium of ASSETS 2013. [Direct document link](#)

Creative Works/Projects

2017 - 2018 Installation: "Exploring Iowa's Renewable Energy"

Commissioned by City of Iowa City. In collaboration with Kyle Rector (Lead Artist), Stephen Baek (Lead Artist), Daniel Fine (Lead Artist), Daniel Miller (Lead Artist), Dana Keeton (Lead Artist), Yifan Du (Assistant Artist), Colleen Reynolds (Assistant Artist), Jon Winet (Consulting Artist). Further details can be found at

<https://cs.uiowa.edu/research/spotlight/steam-mural-exploring-iowa%E2%80%99s-renewable-energy>

Grants

May 2018 – Present

Mobile Applications to Help Older Adults Make Safe Street-Crossing Decisions
Funded by SaferSim UTC. Award amount: (\$50,000.00). Investigator/s Kyle Rector (Principal Investigator), Joseph Kearney (Co-Principal), Jodie Plumert (Co-Principal).

May 2018 – Present

Exploring Crowdsourcing to Gather Accessible Verbal Descriptions about Art in the Museum

Funded by Internal Funding Initiative. Award amount: (\$24,237.00). Investigator/s Kyle Rector (Principal Investigator), Veronica Smith (Collaborator).

Feb 2017 - Jan 2018

"Sun & Wind: harnessing Iowa's green energies"

Funded by Robert A Lee Recreation Center - S.T.E.A.M. Wall Project. Award amount: (\$5,000.00). Investigator/s Kyle Rector (Multi-PI), Stephen Baek (Multi-PI), Daniel Fine (Multi-PI), Dana Keeton (Multi-PI), Daniel Miller (Multi-PI), Jon Winet (Multi-PI).

Presentations

Colloquium Talks

- 2017 Enhancing Quality of Life for People who are Blind or Low Vision using Computing Technology, Indiana University Purdue University Indianapolis, Indianapolis, Indiana, United States
- 2017 Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, Carleton College, Northfield, Minnesota, United States
- 2016 Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, Knox College, Galesburg, Illinois, United States
- 2016 Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, Grinnell Department of Computer Science, Grinnell, Iowa, United States
- 2016 DeLTA Center, Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, Iowa City, Iowa, United States
- 2015 Design and Evaluation of Eyes-Free Exercise Technologies, Technische Universität Darmstadt, Darmstadt, Germany

Invited Lectures

- 2017 MUS:2800, Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology
- 2017 University of Iowa Computing Conference, Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, University of Iowa Department of Computer Science, Iowa City, Iowa, United States
- 2015 Google Accessibility Week, Design and Evaluation of Eyes-Free Exercise Technologies, Google, Kirkland, Washington, United States
- 2014 Exploration Session, Accessible Technology research, University of Washington Department of Computer Science and Engineering, Seattle, Washington, United States
- 2014 HCID520 User Interface Software & Technology, Designing accessible technology, University of Washington Masters of Human-Computer Interaction and Design, Seattle, Washington, United States

Keynote Speaker

- 2018 Simpson College Undergraduate Research Symposium, Enhancing Quality of Life for People who are Blind or Low Vision Using Computing Technology, Simpson College, Indianola, Iowa, United States

Panels

- 2018 Google PhD Fellowship Summit, What's next after PhD?, Google, Mountain View, California, United States
- 2017 Sonia Kovalevsky Day, Expert Panel, University of Iowa, Iowa City, Iowa, United States

Professional Experience

- University of Iowa – Assistant Professor, 8/2016-present
 - Interests in Human-Computer Interaction and Accessibility
 - Designing and developing technology systems to enhance quality of life for people who are blind or low vision
 - Teaching Human-Computer Interaction to undergraduates (Fall 2016)
- Microsoft Research Redmond – Research Intern, 6/2015-9/2015
 - Mentors: Neel Joshi and Meredith Ringel Morris
 - Worked on project relating to making art accessible to people who are blind or low vision.
- Hewlett-Packard Labs - Research Intern, 6/2013-9/2013
 - Manager: Bernardo Huberman, Mentor: Joshua Hailpern
 - Worked in the Social Computing Lab
- Google - Software Engineering Intern, 12/2011-3/2012
 - Manager: Naomi Black, Mentor: Loretta Guarino Reid
 - Worked in the Accessibility team to add more videos to YouTube
- Google - Software Engineering Intern, 6/2010-9/2010
 - Manager: Melody Olson, Mentor: Susan Ashlock
 - Working in AdPlanner to improve customer's experience
- National Science Foundation Research Experience for Undergraduates, 9/2006-6/2010
 - Mentor: Prof. Dr. Margaret Burnett
 - Co-led in developing and refining qualitative code sets
 - Administered studies
- Computing Research Association for Women Distributed Mentor Program, 6/2009-9/2009
 - Carnegie Mellon University Human Computer Interaction Institute
 - Mentors: Prof. Dr. Jennifer Mankoff, Prof. Dr. Scott Hudson
 - Worked on a project to rapidly prototype physical devices
- Senior Design Project: Aerial Photography and Mapping System, 9/2008-5/2009
 - **1st place** in multidisciplinary groups: judged by industry members
 - Implemented interfaces between ATmega128.2 and computer, digital compass, digital tilt device, GPS, camera, and servos
- Computing Research Association for Women Distributed Mentor Program, 6/2008-9/2008
 - University of Washington, Computer Science and Engineering
 - Mentor: Prof. Dr. Magdalena Balazinska
 - Improved Google Desktop Search by integrating contextual filters
- Hewlett-Packard - Engineering Intern, 6/2007-9/2007
 - Manager: Carole Petersen, Mentor: Glenn McCloy
 - Coded interfaces, ran printer bank tests, wrote a macro detecting particles on failed nozzles
- Intel - Engineering Technician Intern, 6/2006-9/2006
 - Mentor: Craig Leathers
 - Coded a beta estimator to reduce tool time
- Tektronix Scholar Program, 1/2006-6/2006

- Mentors: Prof. Dr. Margaret Burnett and Dr. Laura Beckwith
 - Found correlations between gender and interaction with Excel spreadsheets
- Intel - Level 1 Technician in Copper Electroplating, 6/2004-8/2004

National/International Awards and Honors

- ASSETS Doctoral Consortium (50% acceptance rate), 2013
- Google Student Conference Travel Award, 2013
- Google GRAD CS Forum, 2012
- Society of Women Engineers Scholarship, 2009
- Grace Hopper Conference Scholarship, 2009
- Richard Tapia Conference – Scholarship Recipient, 2009
- CRA-W Computer Architecture Summer School – Brown University, 2008

Local Awards and Honors

- University of Washington College of Engineering Awards Nominee, 2016
- Guinn Scholarship, 2009
- Zonta Club of Corvallis M.K. Rusnak Scholarship, 2009
- Eta Kappa Nu Honor Society – President, 2007-2009
- OSU Computer Science Undergraduate Scholarship, 2008
- McDougall Scholarship, 2007
- Waldo-Cummings Outstanding Student Award Honorable Mention, 2007
- College of Engineering Scholarship, 2006
- Walter Davies Scholarship, 2005, 2006, 2009
- Elks National Foundation Legacy Award Scholarship, 2005

Professional Service

- Program Committee Member
 - ACM ASSETS 2015-2018
 - ACM SIGCOMPASS 2018
 - PervasiveHealth 2016-2018
 - ACM CHI 2017-2018
 - ACM CHI Late Breaking Work 2016
- Guest Editor
 - IEEE Pervasive Computing Special Issue on Accessibility
- National Science Foundation, Reviewer 2017
- Organizing Committee
 - ACM ASSETS Publicity Chair 2016
 - ACM ASSETS Mentoring Chair 2017
 - ACM CHI Accessibility Chair 2020
- Peer Reviewer: UbiComp Posters, TOCHI, CHI WiP, CHI Papers and Notes, UbiComp, UIST, ASSETS, CHI PLAY, TEI, PervasiveHealth, CSCW

Local Service

- Computer Science Colloquium Series, Coordinator, 2018-present
- WiSE – Women in Science and Engineering, Advisory Board, 2017-present

- Public Digital Arts Curriculum Committee 2016-present
- DUB coordinator – University of Washington, 2013-2014
 - Recruited and hosted speakers for a weekly interdepartmental HCI gathering

Student Mentoring

PHD Advisor

8/2018 - Present Malik, Jeehan
 8/2018 - Present Rumi, Masuma
 8/2018 - Present Zak, Elizabeth
 6/2018 - Present Corbett, Megan

MCS Advisor

8/2017 - 7/2018 Wedoff, Ryan

Summer Intern

6/2017 - 8/2017 Mullan, Sean

Thesis/Dissertation Committee

2016 - Present Superti Pantoja, Luiza
 2016 - Present Diederich, Kyle

BS Students

8/2018 - Present Nelson, Zachary
 Iowa Center for Research by Undergraduates (ICRU) Fellowship
 7/2018 - Present Wang, Amelia
 Computing Research Association for Women (CRA-W) Distributed
 Research Experiences for Undergraduates (DREU) Program
 1/2018 - Present Khoo, Yi Xuan (Wendy), ICRU Fellowship
 8/2017 - 12/2017 Gray, Lauren, Independent Study
 1/2017 - 5/2018 Bartlett, Rachel, ICRU Fellowship
 3/2014 - 8/2014 Lansky, Leo
 6/2014 - 8/2014 Lu, Kellie, CRA-W DREU Program

High School Students

7/2017 - 8/2017 Kim, Si Young
 Secondary Student Training Program (SSTP)
 3/2014 Lydia Monirian
 2-week internship to learn more about Computer Science
 Project: Eyes-Free Ballet

Teaching Experience

Spring 2018 Research and Design of Accessible Computing Technologies, 15 students
 Fall 2017 Human-Computer Interaction, 60 students
 Spring 2017 Research and Design of Accessible Computing Technologies, 9 students
 Fall 2016 Human-Computer Interaction, 54 students

- Spring 2013 Saturday Computing Experience at University of Washington
Assisted 15 Deaf high school students with Processing
- Summ 2012 Summer Computing Experience at University of Washington
Tutored three Deaf college students in introductory Java class
- Spring 2012 Saturday Computing Experience at University of Washington
Assisted eleven Deaf high school students with Scratch Programming
- Fall 2012 Introduction to Human-Computer Interaction, University of Washington
Lead TA
Led weekly meetings for group projects and graded assignments
- Spring 2011 Saturday Computing Experience, University of Washington
Created curriculum and taught nine Deaf high school students with
Arduino programming

Selected Media Coverage (Eyes-Free Yoga)

- Couch, C. "Fitness Technology That Helps the Blind Get Moving." MIT Technology Review. October 16, 2015. <http://www.technologyreview.com/news/542426/fitness-technology-that-helps-the-blind-get-moving/>
- Microsoft's #ICreatedthis campaign. Featured for one day on Microsoft's Facebook page, Twitter page, and Blog.
- Facebook
https://www.facebook.com/Microsoft/photos/a.195193573720.126782.20528438720/10152029454208721/?type=1&stream_ref=10
- Twitter <https://twitter.com/Microsoft/status/441966767481827328>
- Blog <http://blogs.technet.com/b/firehose/archive/2014/03/07/accessible-yoga-for-the-blind-using-kinect.aspx>
- Ma, M. "Yoga accessible for the blind with new Microsoft Kinect-based program." University of Washington Press Release. October 17, 2013. <http://www.washington.edu/news/2013/10/17/yoga-accessible-for-the-blind-with-new-microsoft-kinect-based-program/>
- Quick, D., "Researchers turn Kinect into a yoga instructor for the visually impaired." Gizmag. October 17, 2013. <http://www.gizmag.com/eyes-free-yoga-kinect-visually-impaired/29450/>
- Soper, T. "No eyes Namaste: Microsoft Kinect helping the blind do yoga." GeekWire. October 17, 2013. <http://www.geekwire.com/2013/yoga-microsoft-kinect-blind/>
- Katz, L. "'Eyes-Free Yoga' turns Kinect into teacher for the blind." c|net. October 19, 2013. http://news.cnet.com/8301-17938_105-57608274-1/eyes-free-yoga-turns-kinect-into-teacher-for-the-blind/
- "Kinect-based program makes yoga accessible for the blind." Kurzweil Accelerating Intelligence. October 20, 2013. <http://www.kurzweilai.net/kinect-based-program-makes-yoga-accessible-for-the-blind>
- Eyes-Free Yoga was also covered in India, France, Germany, the Netherlands, Indonesia, Mexico, Poland, and South Korea.