

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. Boyd, L. **Rector, K.**, Profita, H., Stangl, A., Zolyomi, A., Kane, S., and Hayes G. Understanding the Role Fluidity of Stakeholders During Assistive Technology Research "In the Wild". CHI 2017. To appear.
- C2. **Rector, K.**, Lauder, A., Keeling, P., Cheronos, 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).

- C3. 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).
- C4. **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).
- C5. 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).
- C6. 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).
- C7. **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).
- C8. **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).
- C9. 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).
- C10. 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).
- C11. 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](#)
- C12. 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](#)
- C13. 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](#)

- C14. 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).
- C15. 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](#)
- C16. 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. Matsen III, F.A., Lauder, A., **Rector, K.**, Keeling, P., Cheronos, 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](#)
- J2. 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](#)
- J3. 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](#)
- J4. 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](#)
- J5. 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. **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](#)

Presentations and Demonstrations

- P1. Enhancing Quality of Life for People who are Blind or Low Vision using Computing Technology. Knox College (45-minute talk)
- P2. Enhancing Quality of Life for People who are Blind or Low Vision using Computing Technology. Grinnell College (45-minute talk)
- P3. Design and Evaluation of Eyes-Free Exercise Technologies. Presented on 11/09/2015. Technische Universität Darmstadt (45-minute talk).
- P4. Design and Evaluation of Eyes-Free Exercise Technologies. Presented on 10/22/2015. Google Accessibility Week in Google Kirkland (45-minute talk).
- P5. Eyes-Free Yoga: An Exergame Using Depth Cameras for Blind & Low Vision Exercise. ASSETS 2013. (Demonstration).
- P6. Eyes-Free Yoga: Exergame Using Depth Cameras for the Visually Impaired. Grace Hopper Celebration of Women in Computing 2013 (20-minute talk).
- P7. Lecture on designing accessible technology. Presented on 3/3/2014. (MHCID 520, 70-minute lecture)
- P8. Lecture on Accessible Technology research. Presented on 6/5/2014. (CSE 143 Lightning talk, 50-minute lecture)

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

- ASSETS Organizing Committee – Publicity Chair, 2016
- CHI Program Committee Member – Late Breaking Work, 2016

- ASSETS Program Committee Member, 2015
- Peer Reviewer: UbiComp Posters (2016), TOCHI (2016), CHI WiP (2013, 2014, 2015), CHI Papers and Notes (2014, 2015, 2016), UbiComp (2014), UIST (2014), ASSETS (2014, 2015), CHI PLAY (2014), TEI (2015), PervasiveHealth (2015)

Local Service

- DUB coordinator – University of Washington, 2013-2014
 - Recruited and hosted speakers for a weekly interdepartmental HCI gathering

Teaching and Student Mentoring

- Saturday Computing Experience, University of Washington, 2011
 - Created curriculum and taught nine Deaf high school students with Arduino programming
- CSE 440: Introduction to Human-Computer Interaction, University of Washington, 2012
 - Lead TA
 - Led weekly meetings for group projects and graded assignments.
- Saturday Computing Experience at University of Washington, 2012
 - Assisted eleven Deaf high school students with Scratch Programming
- Summer Computing Experience at University of Washington, 2012
 - Tutored three Deaf college students in introductory Java class
- Saturday Computing Experience at University of Washington, 2013
 - Assisted 15 Deaf high school students with Processing
- Lydia Monirian (Spring Break 2014) – High School student who conducted a 2-week internship to learn more about Computer Science
 - Project: Eyes-Free Ballet
- Leo Lansky (Spring & Summer 2014) – Undergraduate student.
 - Project: Eyes-Free motivational techniques for exercise
- Kellie Lu (Summer 2014) – Undergraduate student, CRA-W DREU Program
 - Project: Eyes-Free motivational techniques for exercise

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.