

ACADEMIC POSITIONS

- Research Scientist** July 2018 –
Accessibility, Sensing, and Machine Learning Research
Apple, Pittsburgh, PA
- Associate Professor** September 2013 –
Human Computer Interaction Institute and Language Technologies Institute
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA
- Assistant Professor** July 2009 – August 2013
Department of Computer Science
University of Rochester, Rochester, NY

EDUCATION

- Ph.D., Computer Science and Engineering, University of Washington – 2009**
Thesis Title: *Intelligent Interfaces Enabling Blind Web Users to Build Accessibility Into the Web*
Committee: Richard E. Ladner (chair), Tessa Lau, Ed Lazowska, and Jacob O. Wobbrock.
- M.Sc. Computer Science and Engineering, University of Washington – 2005**
Qualifying Exam Project: *Boosting Relation Extraction Recall with Soft Rules.* Advisor: Oren Etzioni.
- B.S.E. Computer Science, Princeton University – 2003**
Thesis Title: *On Using Error-Correcting Codes and Boosting to Learn Multi-Class Classification Problems*
Advisors: Amit Sahai and Robert Shapire

HONORS

- Alfred P. Sloan Research Fellowship (2014)
NSF CAREER Award (2012)
MIT Technology Review Top 35 Innovators Under 35 Award (2009)
- W4A 2016 Best Technical Paper Award [C.69] (2016)
ASSETS 2015 Best Demo Award [P.25] (2015)
W4A 2014 Best Technical Paper Award [C.50] (2014)
W4A Paciello Group Accessibility Challenge Award – Scribe [O.14] (2013)
ACM WSDM 2012 Best Paper Award [C.30] (2012)
ACM UIST 2010 Best Paper Award [C.24] (2010)
W4A Accessibility Challenge Award – VizWiz [O.8] (2010)
University of Washington College of Engineering Student Innovator Award for Research (2009)
NCTI Technology in the Works Award (2009)
NISH National Scholar Award for Workplace Innovation & Design – Slide Rule (Honorable Mention) (2009)
NISH National Scholar Award for Workplace Innovation & Design – WebAnywhere (Honorable Mention) (2009)
Andrew W. Mellon Foundation Award for Technology Collaboration (MATC) (2008)
ACM ASSETS 2008 Best Student Technical Paper [C.15] (2008)
Microsoft Imagine Cup Accessible Technology Award (2008)
Osberg Endowed Presidential Fellowship (University of Washington) (2008)
W4A Accessibility Challenge Award – WebAnywhere [O.5] (2008)
NSF Graduate Research Fellowship (Honorable Mention) (2004)

REFEREED JOURNAL PUBLICATIONS

- [J.12] Huang, T.K., Azaria, A., Romero, O.J., and **Bigham, J.P.** InstructableCrowd: Creating IF-THEN Rules for Smartphones via Conversations with the Crowd. *Human Computation* 2019.
- [J.11] Wu, J., Ahuja, K., Li, R., Chen, V., and **Bigham, J.P.** ScratchThat: Supporting Command-Agnostic Speech Repair in Voice-Driven Assistants. In *ACM Journal on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Presented at UbiComp 2019.
- [J.10] Guo, Anhong, Jain, Anuraag, Ghose, Shomiron, Laput, Gierad, Harrison, Chris, and **Bigham, J.P.** Crowd-AI Camera Sensing in the Real World. In *ACM Journal on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Presented at UbiComp 2018. Singapore.
- [J.9] Gleason, C., Ahmetovic, D., Savagae, S., Toxtli, C., Posthuma, C., Asakawa, C., Kitani, K.M., **Bigham, J.P.** Crowdsourcing the Installation and Maintenance of Indoor Localization Infrastructure to Support Blind Navigation. In *ACM Journal on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Presented at UbiComp 2018. Singapore.
- [J.8] Lasecki, W.S., Miller, C.D., Naim, I., Kushalnagar, R., Sadilek, A., Gildea, D., and **Bigham, J.P.** Scribe: Deep Integration of Human and Machine Intelligence to Caption Speech in Real Time. In *Communications of the ACM*. November 2017.
- [J.7] **Bigham, J.P.**, Lasecki, W.S., and Wobbrock, J.O. Target Acquisition and the Crowd Actor. *Human Computation* (2015) 1:2:101-131.
- [J.6] Brady, E., and **Bigham, J.P.** Crowdsourcing Accessibility: Human-Powered Access Technologies. *Foundations and Trends in Human-Computer Interaction: Vol. 8: No. 4*, pp. 273-372. November 2015. <http://dx.doi.org/10.1561/1100000050>
- [J.5] Lasecki, W.S., Homan, C., and **J.P. Bigham**. Architecting Real-Time Crowd-Powered Systems. *Human Computation Journal (HCJournal)*. September 2014.
- [J.4] Sims, M., **Bigham, J.P.**, Kautz, H., and Halterman, M.W. Crowdsourcing Medical Expertise in Near Realtime. *Journal of Hospital Medicine*. April 17, 2014. ^{1.839 Impact Factor}
- [J.3] Kushalnagar, R., Lasecki, W.S., and **Bigham, J.P.** Accessibility Evaluation of Classroom Captions. *ACM Transactions on Accessible Computing (TACCESS)*. 5:3, 7:1-7:24 (January 2014).
- [J.2] **Bigham, J. P.**, Brudvik, J. T., Leung, J. O. and Ladner, R.E. Enabling Web Users and Developers to Script Accessibility with Accessmonkey. In *Disability and Rehabilitation: Assistive Technology*, 1748-3115, Volume 4, Issue 4, 2009, pp. 288–299.
- [J.1] Turney, P., Littman, M., **Bigham, J. P.**, and Shnayder, V. Combining independent modules in lexical multiple-choice problems. In *Recent Advances in Natural Language Processing III*, Nicolov, Nicolas, Kalina Bontcheva, Galia Angelova and Ruslan Mitkov (eds.), 101 ff, 2004.

REFEREED CONFERENCE PUBLICATIONS¹


- [C.106] Gleason, C., Pavel, A., McCamey, E., Low, C., Carrington, P., Kitani, K., and **Bigham, J.P.** Twitter A11y: Making Images on Social Media Accessible. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2020)*. Honolulu, HI.
- [C.105] Valencia, S., Pavel, A., Maria, J.S., Yu, S., **Bigham, J.P.**, and Admoni, H. Conversational Agency in Augmentative and Alternative Communication. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2020)*. Honolulu, HI.
- [C.104] Wu, J., Harrison, C., Bigham, J.P., and Laput, G. Automated Class Discovery and One-Shot Interactions for Acoustic Activity Recognition. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2020)*. Honolulu, HI.
- [C.103] Gleason, C., Pavel, A., Liu, X., Carrington, P., Chilton, L.B., and **Bigham, J.P.** Making Memes Accessible. In *ACM Conference on Computers and Accessibility (ASSETS 2019)*. Pittsburgh, PA.
- [C.102] Paredy, S., Guo, A., and **Bigham, J.P.** X-Ray: Screenshot Accessibility via Embedded Metadata. In *ACM Conference on Computers and Accessibility (ASSETS 2019)*. Pittsburgh, PA. * **Artifact Award** *
- [C.101] Gupta, P., Mehri, S., Zhao, T., Pavel, A., Eskenazi, M., and **Bigham, J.P.** Investigating Evaluation of Open-Domain Dialogue Systems With Human Generated Multiple References. In *Proceedings of the Joint ISCA and ACL Special Interest Group on Discourse and Dialogue (SIGDIAL 2019)*.




¹ Premiere conferences in computer science and human-computer interaction (e.g., ASSETS, CHI, CSCW, UIST) are highly selective and intended for archival papers only. These conferences often exceed journals in their selectivity, visibility, and impact. Submissions undergo multiple rounds of review before being accepted for publication. W4A is a top conference in the field of web accessibility. Please see <http://portal.acm.org/citation.cfm?id=1743546.1743569> for a study comparing the impact of conference papers and journals in these areas. When appropriate, the acceptance rate appears in brackets following each citation.









- [C.100] Guo, A., Kong, J., Rivera, M., Xu, F.F., and **Bigham, J.P.** StateLens: A Reverse Engineering Solution for Making Existing Dynamic Touchscreens Accessible. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2019)*.
- [C.99] Gurari, D., Li, Q., Lin, C., Zhao, Y., Guo, A., Stangl, A., and **Bigham, J.P.** VizWiz-Priv: A Dataset for Recognizing the Presence and Purpose of Private Visual Information in Images Taken by Blind People. In *Proceedings of the Computer Vision Pattern Recognition Conference (CVPR 2019)*.
- [C.98] Gordon, M.L., Gatys, L., Guestrin, C., **Bigham, J.P.**, Trister, A., and Patel, K. App Usage Predicts Cognitive Ability in Older Adults. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2019)*.
- [C.97] TurkScanner: Predicting the Hourly Wage of Microtasks. Saito, S., Chiang, C.W., Savage, S., Nakano, T., Kobayashi, T., and **Bigham, J.P.** In *the Web Conference (WWW 2019)*. San Francisco, CA.
- [C.96] Gleason, C, Carrington, P., Cassidy, C., Morris, M.R., Kitani, K.M., and **Bigham, J.P.** "It's almost like they're trying to hide it": How User-Provided Image Descriptions Have Failed to Make Twitter Accessible. In *the Web Conference (WWW 2019)*. San Francisco, CA.
- [C.95] Guo, A., McVea, S., Wang, X., Clary, P., Goldman, K., Li, Y., Zhong, Y., and **Bigham, J.P.** Investigating Cursor-based Interactions to Support Non-Visual Exploration in the Real World. In *ACM Conference on Computers and Accessibility (ASSETS 2018)*, Galway, Ireland.
- [C.94] Carrington, P., Laput, G., and Bigham, J.P. Exploring the Data Tracking and Sharing Preferences of Wheelchair Athletes. In *ACM Conference on Computers and Accessibility (ASSETS 2018)*, Galway, Ireland. *** Best Paper Honorable Mention***
- [C.93] Kaplan, T., Saito, S., Hara, K., and **Bigham, J.P.** Striving to Earn More: A Survey of Work Strategies and Tool Use Among Crowd Workers. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2018)*. To Appear.
- [C.92] Gurari, D., Li, Q., Stangl, A.J., Guo, A., Lin, C., Grauman, K., Luo, J., **Bigham, J.P.** VizWiz Grand Challenge: Answering Visual Questions from Blind People. In *Proceedings of the Computer Vision Pattern Recognition Conference (CVPR 2018)*. Salt Lake City, UT. *** Spotlight Presentation ***
- [C.91] Hara, K., Adams, A., Milland, K., Savage, S., Callison-Burch, C., and **Bigham, J.P.**. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2018)*. Montreal, Canada.^[26%, 5%] *** Best Paper Honorable Mention***
- [C.90] Haung, T.H., Chang, J.C., and **Bigham, J.P.** Evorus: A Crowd-powered Conversational Assistant Built to Automate Itself Over Time. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2018)*. Montreal, Canada. ^[26%, 5%] *** Best Paper Honorable Mention***
- [C.89] Rauschenberger, M., Rello, L., Baeza-Yates, R., and **Bigham, J.P.** Towards Language Independent Detection of Dyslexia with a Web-based Game. In *Proceedings of the International Web for All Conference (W4A 2018)*. Lyon, France.
- [C.88] Rosenblatt, L., Hara, K., Carrington, P., and **Bigham, J.P.** Vocal Programming for People with Upper-Body Motor Impairments. In *Proceedings of the International Web for All Conference (W4A 2018)*. Lyon, France.
- [C.87] Swaminathan, S., Fok, R., Chen, F., Huang, T.H., Lin, I., Jadvani, R., Lasecki, W.S., and **Bigham, J.P.** WearMail: On-the-Go Access to Information in Your Email with a Privacy-Preserving Human Computation Workflow. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2017)*.^[23%]
- [C.86] Huang, T.H., and **Bigham, J.P.**. A 10-Month-Long Deployment Study of On-Demand Recruiting for Low-Latency Crowdsourcing. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2017)*.^[29%]
- [C.85] Kaur, H., Gordon, M., Yang, Y., **Bigham, J.P.**, Teevan, J., Kamar, E., Lasecki, W.S. CrowdMask: Using Crowds to Preserve Privacy in Crowd-Powered Systems via Progressive Filtering. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2017)*.^[29%]
- [C.84] Hara, Kotaro, and **Bigham, J.P.** Introducing People with ASD to Crowd Work. In *ACM Conference on Computers and Accessibility (ASSETS 2017)*. Baltimore, MD.^[22%]
- [C.83] **Bigham, J.P.**, Lin, Irene, and Savage, Saiph. The Effects of "Not Knowing What You Don't Know" on Web Accessibility for Blind Web Users. In *ACM Conference on Computers and Accessibility (ASSETS 2017)*. Baltimore, MD.^[22%]
- [C.82] Rello, Luz, **Bigham, J.P.** Good Background Colors for Readers: A Study of People with and without Dyslexia. In *ACM Conference on Computers and Accessibility (ASSETS 2017)*. Baltimore, MD.^[22%]



- [C.81] Huang, T.-H., Chen, V., and **Bigham, J.P.** Real-time On-Demand Crowd-powered Entity Extraction. In the *Proceedings of Collective Intelligence (CI 2017)*. New York, New York.
- [C.80] Williams, K., Zimmerman, J., and **Bigham, J.P.** Scopist: Building a Skill Ladder into Crowd Transcription. In the *Proceedings of the International Web for All Conference (W4A 2017)*. Perth, Australia.^[67%]
- [C.79] Morris, M.R., **Bigham, J.P.**, Brewer, R., Bragg, J., Kulkarni, A., Li, J., and Savage, S. Subcontracting Microwork. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2017)*. Denver, Colorado.^[25%]
- [C.78] Guo, A., Kim, J., Chen, X.A., Yeh, T., Hudson, S.E., Mankoff, J., and **Bigham, J.P.** Facade: Auto-generating Tactile Interfaces to Appliances. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2017)*. Denver, Colorado.^[25%]
- [C.77] Kacorri, H., Kitani, K.M., **Bigham, J.P.**, and Asakawa, C. People with Visual Impairment Training Personal Object Recognizers: Feasibility and Challenges. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2017)*. Denver, Colorado.^[25%] * **Best Paper Honorable Mention***
- [C.76] Huang, Y., Huang, Y., Xue, N., and **Bigham, J.P.** Leveraging Complementary Contributions of Different Workers for Efficient Crowdsourcing of Video Captions In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2017)*. Denver, Colorado.^[25%]
- [C.75] Huang, T.H., Lasecki, Walter S., Azaria, A., and **Bigham, J.P.** "Is there anything else I can help you with?": Challenges in Deploying an On-Demand Crowd-Powered Conversational Agent. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2016)*, pp. 79-88. Austin, Texas, 2016.^[30%]
- [C.74] Guo, A., Chen, X., Qi, H., White, S., Ghosh, S., Asakawa, C., and **Bigham, J.P.** VizLens: A Robust and Interactive Screen Reader for Interfaces in the Real World. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2016)*. Tokyo, Japan, 2016. pp. 651-664.^[20%]
- [C.73] Gaur, Y., Metze, F., and **Bigham, J.P.** Manipulating Word Lattices to Incorporate Human Corrections. In *Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH 2016)*. San Francisco, CA, 2016.
- [C.72] Guo, Q., Kulkarni, C., Kittur, A., **Bigham, J.P.**, and Brunskill, E. Questimator: Generating Knowledge Assessments for Arbitrary Topics. In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI 2016)*, pp. 3726-3732. New York, New York, 2016.^[25%]
- [C.71] Rello, L., Ballesteros, M., Ali, A., Serra, M., Sanchez, D.A., **Bigham, J.P.** Dytective: Detecting Risk of Dyslexia with a Game. In *Proceedings of Pervasive Health 2016*.
- [C.70] Nebeling, M., To, A., Guo, A., de Freitas, A., Teevan, J., Dow, S., and **Bigham, J.P.** WearWrite: Crowd-Assisted Writing from Smartwatches. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2016)*, pp. 3834-3846. San Jose, California, 2016.^[23%]
- [C.69] Morris, M.R., Perkins, A., Yoa, C., Bahram, S., **Bigham, J.P.**, and Kane, S. "With most of it being pictures now, I rarely use it": Understanding Twitter's Evolving Accessibility to Blind Users. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2016)*, pp. 5506-5516. San Jose, California, 2016.^[23%]
-  [C.68] Gaur, Y., Lasecki, W.S., Metze, F., and **Bigham, J.P.** The Effects of Automatic Speech Recognition Quality on Human Transcription Latency. In the *Proceedings of the International Web for All Conference (W4A 2016)*. Montreal, Canada. * **Best Paper ***
- [C.67] Rello, L., Subirats, S., and **Bigham, J.P.** An Online Chess Game Designed for People with Dyslexia. In the *Proceedings of the International Web for All Conference (W4A 2016)*. Montreal, Canada.
- [C.66] Huang, T.H., Lasecki, W.S., and **Bigham, J.P.** Guardian: A Crowd-Powered Spoken Dialogue System for Web APIs. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2015)*, pp. 62-71. San Diego, CA. 2015.^[30%]
- [C.65] Rello, L., Ballesteros, M., and **Bigham, J.P.** A Spellchecker for Dyslexia. In *ACM Conference on Computers and Accessibility (ASSETS 2015)*, pp. 39 -47. Lisbon, Portugal. 2015.^[23%]
- [C.64] Guar, Y., Metze, F., Miao, Y., and **Bigham, J.P.** Using Keyword Spotting to Help Humans Correct Captioning Faster. In *Proceedings of Annual Conference of the International Speech Communication Association (INTERSPEECH 2015)*. Dresden, Germany, 2015.^[51%]
-  [C.63] Zhong, Y., Weber, A., Burkhardt, C., Weaver, P., and **Bigham, J.P.** Enhancing Android Accessibility for Users with Hand Tremor by Reducing Fine Pointing and Steady Tapping. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2015)*, pp. 29:1-29:10. Florence, Italy. 2015.^[34%] * **Candidate for Best Paper ***

- [C.62] Huang, Y., Dobreski, B., Deo, B.B., JXin, J., Barbosa, N.M., Wang, Y., and **Bigham, J.P.** CAN: Composable Accessibility Infrastructure via Data-Driven Crowdsourcing. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2015)*, 2:1--2:10. Florence, Italy, 2015. ^[34%]
- [C.61] Lasecki, W.S., Rello, L., and **Bigham, J.P.** Measuring Text Simplification with the Crowd. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2015)*, pp. 4:1--4:9. Florence, Italy, 2015. ^[34%]
-  [C.60] Brady, E., Morris, M.R., and **Bigham, J.P.** Gauging Receptiveness to Social Microvolunteering. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 1055--1064. ^[23%, top 5%] * **Best Paper Honorable Mention***
- [C.59] Laput, G., Lasecki, W.S., Wiese, J., Xiao, R., **Bigham, J.P.**, and Harrison, C. Sensors: Adaptive, Rapidly Deployable, Human-Intelligent Sensor Feeds. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 1935-1944. ^[23%]
- [C.58] Lasecki, W.S., Gordon, M., Leung, W., Lim, E., **Bigham, J.P.**, and Dow, S. Exploring Privacy and Accuracy Trade-Offs in Crowdsourced Behavioral Video Coding. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 1945-1954. ^[23%]
- [C.57] Lasecki, W.S., Marcus, A., Rzeszotarski, J., and **Bigham, J.P.** The Effects of Sequence and Delay on Crowd Work. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 1375-1378. ^[23%]
-  [C.56] Lasecki, W.S., Kim, J., Rafter, N., Sen, O., **Bigham, J.P.**, and Bernstein, M. Apparition: Crowdsourced User Interfaces That Come To Life As You Sketch Them. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 1925-1934. ^[23%, top 5%] * **Best Paper Honorable Mention***
- [C.55] Zhong, Y., Lasecki, W.S., Brady, E., and **Bigham, J.P.** RegionSpeak: Quick Comprehensive Spatial Descriptions of Complex Images for Blind Users. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2015)*, pp. 2353-2362. ^[23%]
- [C.54] Zyskowski, K., Gray, M., **Bigham, J.P.**, Kane, S., and Morris, M.R. Accessible Crowdwork? Understanding the Value in and Challenge of Microtask Employment for People with Disabilities. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW 2015)*, pp 1682--1693. Vancouver, BC, Canada. ^[28%]
- [C.53] **Bigham, J.P.** Making the Web Easier to See with Opportunistic Accessibility Improvement. In the *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2014)*, pp. 117-122. Waikiki, HI. ^[22%]
- [C.52] Lasecki, W.S., Gordon, M., Jung, M.F., Koutra, D., Dow, S., and **Bigham, J.P.** Glimpse: Rapidly Coding Behavioral Video with the Crowd. In the *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2014)*, pp. 551-562. Waikiki, HI. ^[22%]
- [C.51] Brady, E. and **Bigham, J.P.** How Companies Engage Customers Around Accessibility on Social Media. In *Proceedings of the ACM Conference on Computers and Accessibility (ASSETS 2014)*, pp. 51-58. Rochester, NY. ^[26%]
- [C.50] Zhong, Y., Raman, T.V., Burkhardt, C., Biadsy, F., and **Bigham, J.P.** JustSpeak: Enabling Universal Voice Control on Android. In *Proceedings of the Cross-Disciplinary Conference on Web Accessibility (W4A 2014)*, pp. 36:1-4. Seoul, South Korea. ^[43%]
-  [C.49] Lasecki, W.S., Kushalnagar, R., and **Bigham, J.P.** Helping Students Keep Up with Real-Time Captions by Pausing and Highlighting. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2014)*. pp. 39:1-10. Seoul, South Korea. ^[43%] * **Best Paper ***
- [C.48] Loparev, A., Lasecki, W.S., Murray, K.I., and **Bigham, J.P.** Introducing Shared Control to Existing Video Games. In *Proceedings of the Foundations of Digital Games (FDG 2014)*. Ft. Lauderdale, FL.
- [C.47] **Bigham, J.P.** and Lasecki, W.S. Crowd Storage: Storing Information on Existing Memories. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2014)*, pp. 601-604. Toronto, Canada. ^[22%]
- [C.46] Lasecki, W.S., Weingard, L., Ferguson, G. and **Bigham, J.P.** Finding Dependencies Between Actions Using the Crowd. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2014)*, pp. 3095-3098. Toronto, Canada. ^[22%]
- [C.45] Kane, S. and **Bigham, J.P.** Tracking @stemxcomet: Teaching Programming to Blind Students via 3D Printing, Crisis Management, and Twitter. In *Proceedings of the ACM Conference on Computer Science Education (SIGCSE 2014)*, pp. 247-252. Atlanta, GA. ^[39%]

- [C.44] Zhong, Y., Garrigues, P., and **Bigham, J.P.** Real-Time Object Scanning Using a Mobile Phone and Cloud-based Visual Search Engine. In *Proceedings of the ACM Conference on Computers and Accessibility (ASSETS 2013)*, pp. 20:1-20:8. Seattle, WA. ^[29%]
- [C.43] Lasecki, W.S., Thiha, P., Zhong, Y., Brady, E., and **Bigham, J.P.** Answering Visual Questions with Conversational Crowd Assistants. In *Proceedings of the ACM Conference on Computers and Accessibility (ASSETS 2013)*, pp. 8:1-8:8. Seattle, WA. ^[29%]
- [C.42] Lasecki, W.S., Wesley, R., Nichols, J., Kulkarni, A., Allen, J., and **Bigham, J.P.** Chorus: A Crowd-Powered Conversational Assistant. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2013)*, pp. 151-162. St. Andrews, Scotland. ^[19%]
- [C.41] Naim, I., Gildea, D., Lasecki, W.S., and **Bigham, J.P.** Text Alignment for Real-Time Crowd Captioning. In *Proceedings of the North American Chapter of the Association for Computational Linguistics Conference (NAACL 2013)*, pp. 201-210. Atlanta, GA. ^[30%]
- [C.40] Kushalnagar, R., Lasecki, W.S., and **Bigham, J.P.** Captions Versus Transcripts for Online Video Content. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2013)*, pp. 32:1-32:4. Rio de Janeiro, Brazil. ^[35%]
-  [C.39] Lasecki, W.S., Miller, C., and **Bigham, J.P.** Warping Time for More Effective Real-Time Crowdsourcing. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2013)*, pp. 2033-2036. Paris, France. ^[20%, top 5%] * **Best Paper Honorable Mention** *
- [C.38] Brady, E., Morris, M.R., Zhong, Y., White, S., and **Bigham, J.P.** Visual Challenges in the Everyday Lives of Blind People. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2013)*, pp. 2117-2126. Paris, France. ^[20%]
- [C.37] Lasecki, W.S., Song, Y., Kautz, H., and **Bigham, J.P.** Real-time Crowd Labeling for Deployable Activity Recognition. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW 2013)*, pp. 1203-1212, San Antonio, TX. ^[35%]
- [C.36] Brady, E., Morris, M.R., Zhong, Y., and **Bigham, J.P.** Investigating the Appropriateness of Social Network Question Asking as a Resource for Blind Users. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW 2013)*. pp. 1225-1236, San Antonio, TX. ^[35%]
-  [C.35] Lasecki, W.S., Miller, C.D., Sadilek, A., Abumoussa, A., Borrello, D., Kushalnagar, R., and **Bigham, J.P.** Real-time Captioning by Groups of Non-Experts. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2012)*, pp. 23-33, Cambridge, MA. ^[21%, top 3%] * **Best Paper Nomination** *
- [C.34] Kushalnagar, R., Lasecki, W.S., and **Bigham, J.P.** A Readability Evaluation of Real-Time Crowd Captions in the Classroom. In *Proceedings of the ACM International Conference on Computers and Accessibility (ASSETS 2012)*, pp. 71-78, Boulder, CO. ^[28%]
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- [O.9] Miller, R. C., Little, G. Bernstein, M., **Bigham, J. P.**, Chilton, L. B., Goldman, M., Horton, J. J. and Nayak, R. Heads in the Cloud. *XRDS: Crossroads, The ACM Magazine for Students*. 27-31, Volume 17, Issue 2, December 2010.
- [O.8] **Bigham, J.P.**, Jayant, C., Ji, H., Little, G., Miller, A., Miller, R.C., Miller, R., Tatrowicz, A., White, B., White, S., and Yeh, T. VizWiz: Nearly Real-time Answers to Visual Questions. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2008) – Web Accessibility Challenge*. Raleigh, NC, 2010.
* **Winner of W4A Accessibility Challenge Delegate's Award**
- [O.7] **Bigham, J. P.** WebAnywhere. *National Federation of the Blind Technology Blog*. Invited Post. September 2008. <http://www.nfb.org/nfb/NewsBot.asp?MODE=VIEW&ID=361>
- [O.6] **Bigham, J. P.** A Web 2.0 Approach to Web Accessibility. In *Proceedings of the 9th International Conference on Low Vision (VISION 2008)*. Invited Paper. Montreal, Canada, 2008.



- [O.5] **Bigham, J. P.**, Prince, C. M., Hahn, S., and Ladner, R. E. WebAnywhere: A Screen Reading Interface for the Web on Any Computer. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2008) – Web Accessibility Challenge*. Beijing, China, 2008. ***Winner of W4A Accessibility Challenge Delegate’s Award**
- [O.4] Borodin, Y., **Bigham, J. P.**, Stent, A., and Ramakrishnan, I.V. Towards One World Web with HearSay3. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A 2008) – Web Accessibility Challenge*. Beijing, China, 2008.
- [O.3] **Bigham, J. P.** Enabling Blind Web Users to Create Accessible Web Content. *General Exam Document*. University of Washington Department of Computer Science and Engineering, 2007.
- [O.2] **Bigham, J. P.** Boosting Relation Extraction Recall with Soft Rules. *Qualifying Exam Document*. University of Washington Department of Computer Science and Engineering, 2005.
- [O.1] **Bigham, J. P.** On Using Error-Correcting Codes and Boosting to Learn Multi-Class Classification Problems. *Undergraduate Thesis*. Princeton University, 2003.

INVITED TALKS AND PANELS

- [T.63] *A Crowd-Powered Approach to Truly Intelligent User Interfaces*. Information School. University of Texas – Austin. February 2017.
- [T.62] *A Crowd-Powered Approach to Truly Intelligent User Interfaces*. Computer Science Colloquium. Texas State University. February 2017.
- [T.61] *A Crowd-Powered Approach to Truly Intelligent User Interfaces*. Computer Science Department. University of Iowa. November 2016.
- [T.60] *A Crowd-Powered Approach to Truly Intelligent User Interfaces*. ACT. November 2016.
- [T.59] *Carnegie Mellon University Accessibility Capacity Building Institute*. October 2016.
- [T.58] *A Crowd-Powered Approach to Truly Intelligent User Interfaces*. Computer Science Department. Oregon State University. June 2016.
- [T.57] Microsoft Research Faculty Summit. July 2016.
- [T.56] *Automating Crowd-Powered Systems*. Brown University. Computer Science Department. October, 2015.
- [T.55] *Automating Crowd-Powered Systems*. HCI Colloquium. University of Illinois. September, 2015.
- [T.54] *Automating Crowd-Powered Systems*. ICML Crowdsourcing Workshop. Invited Talk. Lille, France. July 2015.
- [T.53] Crowd Consortium Panel. College Park, Maryland. May 2015.
- [T.52] *Automating Crowd-Powered Systems*. University of Zurich. Zurich, Switzerland. May 2015.
- [T.51] *Automating Crowd-Powered Systems*. Microsoft Research. Redmond, WA. March 2015.
- [T.50] *Crowds and Learning: Three On-Going Projects*. Crowdsourcing, Online Education, and Massive Open Online Courses. Workshop at HCOMP 2014. Invited Talk.
- [T.49] *12 Lessons Learned from Deploying Crowd-Powered Systems*. Microsoft Research Faculty Summit. Redmond, WA. July 2014.
- [T.48] *Quickly Answering Visual Questions*. CVPR Workshop on Computer Vision and Human Computation. Invited Talk. Columbus, OH. June 2014.
- [T.49] *Crowd Agents: A Top-Down Approach to Intelligent Interactive Systems*. Distinguished Colloquium Series, Northwestern University. Evanston, IL. May 2014.
- [T.48] *Crowd Agents: A Top-Down Approach to Intelligent Interactive Systems*. HCI Colloquium. University of Wisconsin, Madison, WI. May 2014.
- [T.47] *Crowd Agents: A Top-Down Approach to Intelligent Interactive Systems*. CUNY, New York City, NY. March 2014.
- [T.46] *Crowd Agents: A Top-Down Approach to Intelligent Interactive Systems*. Google Tech Talk, Mountain View, CA. January 2014.
- [T.45] *Crowd Agents: A Top-Down Approach to Intelligent Interactive Systems*. Machine Learning Lunch, Carnegie Mellon University. November 2013.
- [T.44] *Interactive Crowd Support. Workshop on Environmental Sensing Technologies for Visual Impairment (ESTVI 13)*. Smith Kettlewell Eye Institute. San Francisco, CA. August 2013.
- [T.43] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. International Conference on Machine Learning (ICML 2013) – Machine Learning Meets Crowdsourcing. Atlanta, GA. June 2013.
- [T.42] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. Xerox Research Center. Webster, NY. June 2013.

- [T.41] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. Cognitive Science Dinner, University of Rochester, Rochester, NY. April 2013.
- [T.40] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. University of Michigan Computer Science and Engineering, Ann Arbor, Michigan. February 2013.
- [T.40] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. HCII Colloquium, Carnegie Mellon University, Pittsburgh, Pennsylvania. February 2013.
- [T.39] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. HCII Crowdsourcing Lunch Seminar. Carnegie Mellon University, Pittsburgh, PA. December 2012.
- [T.38] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. School of Information Colloquium. University of Michigan, Ann Arbor, MI. December 2012.
- [T.37] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. GVU Brown Bag Lunch. Georgia Institute of Technology, Atlanta, GA. November 2012.
- [T.36] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. HCI Seminar. MIT, Cambridge, MA. November 2012.
- [T.35] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. Math and Computer Science Colloquium. Houghton College, Houghton, NY. October 2012.
- [T.34] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. Department of Information Science Colloquium. Cornell University, Ithaca, NY. October 2012.
- [T.33] *Crowd Agents: Interactive Crowd-Powered Systems in the Real World*. Laboratory for Laser Energetics Colloquium. University of Rochester, Rochester, NY. September 2012.
- [T.32] *Crowd Agents*. Human Computation (HCOMP) Workshop. Keynote. Toronto, ON. July 2012.
- [T.31] *Real-Time Crowd Support for People with Disabilities*. Dartmouth University, Computer Science Colloquium. Hanover, NH, November 2011.
- [T.30] *Real-Time Crowd Support for People with Disabilities*. Boston University. Boston, MA, August 2011.
- [T.29] *Heads in the Cloud – New Approaches for Access Technology*. Smith-Kettlewell Eye Institute. San Francisco, CA, June 2011.
- [T.28] *Heads in the Cloud – How Strangers, Virtual Farmers, and Your Friends from High Schools May Solve Artificial Intelligence*. Provost’s Phelps Colloquium. University of Rochester. Rochester, NY, March, 2011.
- [T.27] *Heads in the Cloud – New Approaches for Access Technology*. University of Washington Department of Computer Science and Engineering, Seattle, WA, January, 2011.
- [T.26] *Heads in the Cloud – New Approaches for Access Technology*. University of San Diego, San Diego, CA, November, 2010.
- [T.25] *Electronic Health Records: Issues for Non-Visual Access*. Accessible Electronic Health Records Workshop at ASSETS 2010. October, 2010.
- [T.24] *Legal and Regulatory Barriers to Accessibility Technology in the Cloud*. Panelist. Moderator: Preston Padden, Silicon Flatirons. Coleman Conference Workshop. October, 2010.
- [T.23] *Heads in the Cloud –How Strangers, Virtual Farmers, and Your Friends from High Schools are Bringing Artificial Intelligence into the Real World*. Johns Hopkins University, Baltimore, MD, September, 2010.
- [T.22] *Accessibility on Demand*. IBM Almaden, San Jose, CA. June, 2010.
- [T.21] *Accessibility on Demand*. Yahoo! Inc. Sunnyvale, CA. June, 2010.
- [T.20] *Improving Access for Blind Web Users*. Xerox Research. Webster, NY, January, 2010.
- [T.19] *Improving Access for Blind Web Users*. MIT CSAIL. Cambridge, Massachusetts, April, 2009.
- [T.18] *Improving Access for Blind Web Users*. Northeastern University. Boston, Massachusetts, March, 2009.
- [T.17] *Improving Access for Blind Web Users*. University of Wisconsin. Madison, Wisconsin. March, 2009.
- [T.16] *Improving Access for Blind Web Users*. Washington University. St. Louis, Missouri. March, 2009.
- [T.15] *Improving Access for Blind Web Users*. University of Oregon. Eugene, Oregon. February, 2009.
- [T.14] *Improving Access for Blind Web Users*. Oregon State University. Corvallis, Oregon. February, 2009.
- [T.13] *Improving Access for Blind Web Users*. Microsoft Research. Redmond, Washington. February, 2009.
- [T.12] *Improving Access for Blind Web Users*. University of Rochester. Rochester, New York. February, 2009.
- [T.11] *Understanding the Global Marketplace – Perspectives from WebAnywhere*. National Center for Technology Innovation (NCTI) Technology Innovators Conference. Washington, D.C. November, 2008.
- [T.10] *Overview of NFB Youth Slam Computer Science Track*. AccessComputing Leadership Institute. Panel. Seattle, Washington. November, 2008.
- [T.9] *Research Trends in Supporting Accessibility*. Scripting Enabled. Adobe, Inc. Seattle, WA. Nov., 2008.

- [T.8] *Accessibility, Usability, and Availability – Building an Inclusive Web Experience*. Amazon Accessibility Day, Amazon Inc. Seattle, Washington. October, 2008.
- [T.7] *Accessibility Panel*. LMS Seminar, Electronics and Computer Science Department. Panel. Southampton University, United Kingdom. September, 2008.
- [T.6] *Toward Social Accessibility*. National Association of Disability Practitioners Conference: The Future of Supporting Students Through Technology. High Wycombe, United Kingdom. September, 2008.
- [T.5] *A Web 2.0 Approach to Web Accessibility*. International Conference on Low Vision (VISION 2008). Montreal, Canada. July, 2008.
- [T.4] *WebAnywhere: A Screen Reader On-the-Go*. Microsoft Imagine Cup Finals. Paris, France. July, 2008.
- [T.3] *A Web 2.0 Approach to Web Accessibility*. Stony Brook University, Stony Brook, New York. Nov., 2007.
- [T.2] *WebAnywhere: A Screen Reader On-the-Go*. Tech Talk, Google Inc. Kirkland, WA. August, 2007.
- [T.1] *WebInSight: Making Web Images Accessible*. Tech Talk, Google Inc. Kirkland, WA. May 2007.

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- [S.27] Vanhemert, Kyle. “Human Smarts Plus AI Could Unlock Computer Vision.” *Wired*. April 29, 2015. <http://www.wired.com/2015/04/mashing-human-smarts-ai-unlock-computer-vision/>
- [S.26] Ragusea, Adam. “Why blind internet users are angry with Google, CAPTCHA.” *Marketplace on NPR*. January 1, 2014. <http://www.marketplace.org/topics/tech/why-blind-internet-users-are-angry-google-captcha>
- [S.25] Rehme, Julie. “Making Computers Smarter, and Helping Deaf People Too.” September 24, 2013. <http://blogs.scientificamerican.com/guest-blog/2013/09/24/making-computers-smarter-and-helping-deaf-people-too/>
- [S.24] Aguilar, Mario. “Two Monumental Ways Google Glass Could Help the Blind.” *Gizmodo*. August 2, 2013. <http://gizmodo.com/two-monumental-ways-google-glass-could-help-the-blind-1001958958>
- [S.23] Stross, Randall. “An Instant Path to an Online Army,” *New York Times* (online and print). April 20, 2013. <http://www.nytimes.com/2013/04/21/technology/apps-help-find-online-workers-quickly.html>.
- [S.22] Leber, Jessica. “Where Siri Has Trouble Hearing, a Crowd of Humans Could Help,” March 18, 2013. <http://www.technologyreview.com/news/512406/where-siri-has-trouble-hearing-a-crowd-of-humans-could-help/>
- [S.21] Quenqua, Douglas. “Pushing Science’s Limits in Sign Language Lexicon.” *The New York Times*, December 3, 2012. <http://www.nytimes.com/2012/12/04/science/sign-language-researchers-broaden-science-lexicon.html>
- [S.20] Simonite, Tom. “Artificial Intelligence, Powered by Many Humans.” *MIT Technology Review*, September 10, 2012. <http://www.technologyreview.com/news/429118/artificial-intelligence-powered-by-many-humans/>
- [S.19] Adams, Dan. “‘App Camp’ Puts Vision Tools to Test.” *Boston Globe*, August 18, 2012. http://www.boston.com/business/technology/articles/2012/08/18/app_camp_teaches_visually_impaired_youth_to_use_iphones_ipads/
- [S.18] Aron, Jacob. “Crowdsourcing Serves Up the Subtitles to Your Life.” *New Scientist*. <http://www.newscientist.com/article/mg21528745.200-crowdsourcing-serves-up-the-subtitles-to-your-life.html>. July 25, 2012.
- [S.17] Kornowski, Liat. “How the Blind Are Reinventing the iPhone.” <http://www.theatlantic.com/technology/archive/2012/05/how-the-blind-are-reinventing-the-iphone/256589/>. May 2, 2012.
- [S.16] Frenkel, Karen A. “Jeffrey Bigham: Using the Crowd to Help People With Disabilities.” *Communications of the ACM*. 2012. <http://cacm.acm.org/opinion/articles/147919-jeffrey-bigham-using-the-crowd-to-help-people-with-disabilities/>
- [S.15] Rose, Damon. “Smartphone cameras bring independence to blind people.” *BBC*. <http://www.bbc.co.uk/news/technology-14505748>. 8/19/2011.
- [S.14] Pavlus, John. “Adding Human Intelligence to Software.” *Technology Review*, October, 2010.
- [S.13] “Technology Review Top 35 Under 35 - Jeffrey P. Bigham.” *Technology Review*, 2009.
- [S.12] Tompa, Rachel. “Technologies for the Blind and Deaf Could Have Much Broader Impact, Says UW’s Richard Ladner” <http://www.xconomy.com/seattle/2009/07/28/technologies-for-the-blind-and-deaf-could-have-much-broader-impact-says-uws-richard-ladner/>

- [S.11] Prabhu, Maya T. NCTI funds research on assistive technologies. <http://www.eschoolnews.com/news/top-news/index.cfm?i=59585>
- [S.10] *Recipients of Third Annual Mellon Awards for Technology Collaboration Announced*. December, 2008. <http://matc.mellon.org/press-release>
- [S.9] Paulson, Tom. *Professor's work erases technological barriers: Projects help deaf, blind benefit everyone*. Seattle Post-Intelligencer. December, 2008. http://seattlepi.nwsource.com/local/390358_cybersigning03.html
- [S.8] Aycinena, Peggy. *Access For All*. Communications of the ACM. August, 2008.
- [S.7] Thomas, Jeffrey. *The Blind Can Now Use the Web from Anywhere*. America.gov. August, 2008. <http://www.america.gov/st/educ-english/2008/August/200808011316311CJsamohT0.1210901.html>
- [S.8] Makovec, Anne. *Project makes web more accessible to blind*. ABC News. July, 2008. http://abclocal.go.com/kgo/story?section=news/drive_to_discover&id=6243441
- [S.5] Nelson, Bryn. *Opening New Portals for the Blind*. MSNBC. July, 2008. <http://www.msnbc.msn.com/id/25630182/>
- [S.4] Stansbury, Meris. *Emerging Tech Makes Learning More Accessible*. eSchool News. July, 2008. <http://www.eschoolnews.com/news/top-news/index.cfm?i=54514>
- [S.3] Blankinship, Donna. *Web-Based Program Gives the Blind Internet Access*. Associated Press. July, 2008.
- [S.2] *Imagine Cup 2008: Web-based Screen Reader Wins Top Accessibility Prize*. Microsoft Press Pass. June, 2008. <http://www.microsoft.com/presspass/features/2008/jun08/06-18imagineaccess.msp>
- [S.1] Hickey, Hannah. *Online Service Lets Blind Surf the Internet From Any Computer, Anywhere*. University of Washington Press Release. June, 2008. <http://uwnews.org/article.asp?articleID=42563>

GRANTS AND OTHER SUPPORT

- [G.42] **CCRI: ENS: Collaborative Research: Developing the Dialog Ecosystem to Support and Enhance Research in Spoken Dialog Systems**
National Science Foundation, #CNS-1924855
Co-PI, September 2019, \$1,700,00
- [G.41] **FW-HTF-RL: Collaborative Research: Up-skilling and Re-skilling Marginalized Rural and Urban Digital Workers: AI-worker collaboration to access creative work**
National Science Foundation, #1928631
Principal Investigator, July 2019, \$2,500,000
with co-PIs Chris Callison-Burch, Benjamin Hanrahan, Aniket Kittur, Beibei Li, Amy Ogan, Amy Pavel, Saiph Savage, and Julia Ticona.
- [G.40] **CHS: Small: Deep Integration of Crowds and AI for Robust, Scalable, and Privacy-Preserving Conversational Assistance**
National Science Foundation, #IIS-1816012
Principal Investigator, August 2018, \$500,000
- [G.39] **Detecting Suspicious Online Interactions**
(DARPA) Active Social Engineering Defense (ASED) program
Co-PI (with Artur Dubrawski), \$510,230
- [G.38] **Chorus: A Crowd-Powered Conversational Assistant that Automates Itself Over Time**
Yahoo! InMind
Project Lead, 2018, \$100,000.
- [G.37] **Expert Crowdsourcing for Semantic Annotation of Atmospheric Phenomena**
CMU Portugal
Co-Investigator, with Hugo Alexandre Paredes Guedes da Silva
December 2017. \$96,000.
- [G.36] **HCI Career Development Fellowship**
Human-Computer Interaction Institute
\$75,000

- [G.35] **Chorus: A Crowd-Powered Conversational Assistant that Automates Itself Over Time**
 Yahoo! InMind
Project Lead, 2017, \$100,000.
- [G.34] **Zensors**
 Bosch.
with Chris Harrison
 November 2017. \$45,000.
- [G.33] **Early Dyslexia Detection and Support at Scale to Help Students Succeed in School**
 National Science Foundation, #IIS-1618784
Principal Investigator, June 2016, \$500,000
with Maria Luz Rello Sánchez (co-PI)
- [G.32] **VizWiz**
 Microsoft Research
Principal Investigator, February 2016, \$50,000.
- [G.31] **The VizWiz Data Set: Driving Research in Visual Question Answering with a Large Data Set of Visual Questions and Answers from Blind People**
 Google Research Award
Principal Investigator, February 2016, \$100,000.
- [G.30] **Crowd and Cloud Game Design with Amazon and Twitch**
 Amazon.
Co-PI, January 2016, \$400,000.
with Jessica Hammer (PI), Drew Davidson (ETC), and Chris Klug (ETC)
- [G.29] **Chorus: Automating a Crowd-Powered Approach to Conversational Assistance with the Yahoo! Software Harness**
 Yahoo! InMind
Project Lead, 2015, \$100,000.
- [G.28] **Zensors.**
 Bosch.
with Chris Harrison and Aniket Kittur
 November 2015. \$50,000.
- [G.27] **SBIR Phase I: Exploring the Feasibility of Deployable Crowd-Powered Real-Time Captioning Supplemented with Automatic Speech Recognition**
 National Science Foundation.
Senior Personnel, November 2014, \$150,000.
with Principal Investigator Walter Lasecki (Legion Labs LLC).
- [G.26] **RERC on Information and Communication Technology**
 From Cloud to Smartphone: Empowering and Accessible Information and Communication Technology
Co-Director, September 2014, \$5,000,000.
with Bambang Parmanto (co-director), Jennifer Mankoff.
- [G.25] **Human-Assisted Real-Time Speech Recognition**
 Google Research Award
Principal Investigator, October 2014, \$100,000.
- [G.24] **Bootstrapping Academic Bootcamp**
 CMU ProSEED/Simon Initiative Seed Grant
with Emma Brunskill and Niki Kittur, July 2014, \$19,000.
- [G.23] **Chorus: Automating a Crowd-Powered Approach to Conversational Assistance with the Yahoo! Software Harness**
 Yahoo! InMind
Project Lead, 2014, \$100,000.
- [G.22] **Alfred P. Sloan Foundation Fellowship**
 Sloan Foundation
Principal Investigator, February 2014, \$50,000.

- [G.21] **DRRP on Inclusive Cloud And Web Computing**
National Institute for Disability, Independent Living, and Rehabilitation Research (NDILRR)
Scientific Director, September 2013, \$3,750,000.
with Aaron Steinfeld (Director), John Zimmerman, Anthony Tomasic, and Charlie Garrod (CMU); Yang Wang and Yun Huang (Syracuse); Amy Hurst (UMBC)
- [G.20] **RERC on Physical Access and Transportation**
National Institute for Disability, Independent Living, and Rehabilitation Research (NDILRR)
Co-Investigator, September 2013, \$4,600,000.
with Aaron Steinfeld (Director, CMU), Edward Steinfeld (Buffalo), John Zimmerman, Anthony Tomasic, M. Bernadine Dias, Yun Huang, Christopher Mertz, Stephen Smith, Charlie Garrod, Victor Paquet, James A. Lenker, Jordana Maisel, Heamchand Subryan, and Jonathan White.
- [G.19] **Crowdsourcing Speech-to-Text in Less Than 5 Seconds**
Google Research Award
Principal Investigator, August 2013, \$78,315.
- [G.18] **National Federation of the Blind STEM-X – Computer Science Track**
AccessComputing
Principal Investigator, July 2013, \$1,570.
- [G.17] **A Ubiquitously Accessible Crowd-Powered World / QuiltView**
Google Glass Research Award
with Mahadev Satyanarayanan, August 2013, \$28,000 + 10 Google Glass devices (\$1,500.00 per)
- [G.16] **I-Corps: Real-Time Crowd Captioning**
National Science Foundation, I-Corps Program #1338678.
Principal Investigator, May 2013, \$50,000.
- [G.15] **Real-Time Captioning by Groups of Non-Experts for Deaf and Hard of Hearing Students**
National Science Foundation, #IIS-1218209
Principal Investigator, August 2012, \$500,000.
with Daniel Gildea (University of Rochester) and Raja Kushalnagar (Rochester Institute of Technology)
- [G.14] **Workshop: Doctoral Consortium for ASSETS 2012**
National Science Foundation, #IIS-1240198
Principal Investigator, July 2012, \$25,074.
- [G.13] **Human Computer Interaction (HCI) Principles for Mental Health Intervention with Emerging Adults and their Parents: An Interdisciplinary Tutorial**
Family Research Roundtable, University of Rochester, Committee on Interdisciplinary Studies
with Anthony R. Pisani, Ph.D., June 2012, \$2,500.
- [G.12] **CAREER: Closed-Loop Crowd Support for People with Disabilities**
National Science Foundation, #IIS-1149709.
Principal Investigator, February 2012, \$500,003.
REU Supplement, March 2012, \$12,800.
REU Supplement, May 2013, \$16,000.
REU Supplement, May 2014, \$16,000.
REU Supplement, June 2015, \$16,000.
RET Supplement, May 2016, \$10,000.
REU Supplement, June 2016, \$16,000.
- [G.11] **MobileAccessibility: Bridge to the World for Blind, Low-Vision, and Deaf-Blind People**
National Science Foundation, #IIS-1116051
Co-Investigator, September, 2011, \$516,000.
with Principal Investigator Richard E. Ladner (University of Washington).
- [G.10] **Combining Artificial and Human Intelligence for More Effective Access Technology**
Google Research Award
Principal Investigator, July, 2011, \$57,000.
- [G.9] **National Federation of the Blind Youth Slam – Computer Science Track**
AccessComputing Mini-Grant
Principal Investigator, May, 2011, \$4,800
- [G.8] **Quip! Enabling Location-Aware Connections Between Alumni and Current Students**
University of Rochester Provost's Office
May 2011, ~\$20,000 in equipment and student support.

- [G.7] **REU Support for Student with a Disability**
AccessComputing Summer Research Internship
Principal Investigator, May 2011, \$6,000.
- [G.6] **WebAnywhere: An Extensible Cloud Platform**
National Center on Disability and Rehabilitation Research
Subcontract from TRACE R&D CENTER, University of Wisconsin September, 2010, \$25,000.
- [G.5] **RCT of Primary Care-based Patient Navigation-Activation - Research on HIV/AIDS-Related Cancers Among Racial/Ethnic Minorities**
National Cancer Institute
Co-Investigator, October, 2010, \$200,000,
with Principal Investigator Kevin Fiscella (University of Rochester, Family Medicine).
- [G.4] **EAGER: VizWiz: Enabling Blind People to Answer Visual Questions On-the-Go with Remote Automatic and Human-Powered Services**
National Science Foundation, #IIS-1049080.
Principal Investigator, September 2010, \$49,999.
- [G.3] **REU Support for Student with a Disability**
AccessComputing Summer Research Internship
Principal Investigator, May 2010, \$6,000.
- [G.2] **Enabling More Effective Use of the Web Anywhere with WebAnywhere and TrailBlazer**
National Center on Technology Innovation
Principal Investigator, October 2009, \$15,000.
- [G.1] **WebAnywhere**
Andrew W. Mellon Foundation Award for Technology Collaboration (MATC)
Co-Investigator, December 2008, \$50,000,
with Principal Investigator Richard E. Ladner (University of Washington).

INDUSTRY EXPERIENCE

Machine Learning Research Engineer, Apple, Inc. (2018 --)

Co-Founder and CEO, Legion Labs, Inc. (2013 – 2018)
Developing interactive systems powered by on-demand crowds and machine intelligence: <http://legionpowered.com>

Usability and Accessibility Consulting, Pittsburgh, PA (2008 –)
Work with large and small companies to develop innovative technological solutions primarily in the web and mobile domains to help improve or create accessible and usable customer experiences. Clients have included Adaptech Courseware, AiSquared, Inc., Don Johnston, Inc., Microsoft, and Second Avenue Learning.

Expert Witness (2013 –)
Areas of expertise include accessibility and assistive technology (screen readers, speech technology, captioning or subtitle technology, automatic speech recognition to provide access, Web accessibility), human computation and crowdsourcing (technology that works via human and machine cooperation, Amazon Mechanical Turk), and general human-computer interaction and computer science.

Consultant, Google[x], Mountain View, CA (2014)

Founding Chief Architect / Researcher, aiSquared, Manchester Center, VT (2012 – 2013)
Co-designed and developed prototype of what became *sitescues*, a web page add-on that adapts existing web pages to make them easier to see and hear. Project received funding from investment group. Developed and explored a number of forward-looking projects based on the core service. <http://www.sitescues.com>

Visiting Researcher, Microsoft Research, Seattle, WA (2012)
Host: Meredith Ringel Morris and Andy Wilson
Explored social incentives in social question answering and commenting. Worked toward developing a utility model to explain why people choose to respond to questions and status updates on social media.

Don Johnston, Inc., Volo, IL (2010 – 2011)
Adapted the WebAnywhere open source project for use in the reading tool Bookstream. A primary development challenge was to create per-word highlighting that could be delivered in a web-based architecture. Solution involved capturing and streaming word timing information along with audio files and syncing highlighting using Javascript.

Intern, USER Research Group, IBM Almaden Research Center, San Jose, CA (2008)
Mentor: Tessa Lau

Created TrailBlazer, a non-visual, programming-by-demonstration system that makes web tasks easier to complete with a screen reader by enabling users to record, playback and share scripts describing web tasks. Developed a novel, machine-learning technique that uses a user's history and a short task description to suggest a next step even when no script for the desired task exists. [C.19]

Summer Fellow, Benetech, Palo Alto, CA (2008)
Manager: Reuben Firmin

Worked with a team to improve the WebAnywhere web-based screen-reading web application. Put the initial release of WebAnywhere through formal quality assurance, adapted WebAnywhere for site-specific release, and made it easier for other developers to join the project.

Intern, Google Research, Mountain View, CA (2005)
Mentor: Marius Pasca

Tackled substantial quantitative and qualitative problems with the goal of automatically generating a million correct relational facts from unstructured web text starting with ten seed facts. Made improvements to both the scoring metrics used to evaluate facts and to the extraction mechanism used to extract facts. Adapted the extraction system to use the Map-Reduce paradigm so it could scale linearly and extract over a million facts. [C.3][C.4]

Research Intern, AT&T Shannon Labs, Florham Park, NJ (2003)
Advisors: Wen-Ling Hsu and Guy Jacobson

Tasked with improving the automatic classification and routing of email based on subject. Discovered that the categories currently in use overlapped and were often misunderstood by human representatives. Developed tools to identify problems in a supplied categorical hierarchy, suggest improved categories through iterative hierarchy improvement, and produce informative visualizations that illustrate confusion in a hierarchy.

Intern, Microsoft, Redmond, WA (2002)
Mentor: Adam Nathan

Developed an application designed to automatically generate test cases for the Interop area of the .NET Common Language Runtime. Using my program, logical representations of test cases were generated and executed in order to automatically test the entire Interop space, resulting in several new bugs being discovered automatically.

TEACHING

Human-AI Interaction (Fall 2018)

Created a new course designed to explore the tight connection between humans and AI, and how if we want to create useful impactful AI systems we need to deeply consider the people.

<http://www.humanaiclass.org>

Accessibility: A Guide to Building Future User Interfaces (Fall 2017)

Created a new course to teach accessibility through the lens of people with disabilities being early adopters of next-generation user interfaces.

<http://www.accessibilitycourse.com>

Accessibility Project Course (Spring 2018)

In this project-oriented course, students were paired with a client with a disability and a PhD student mentor. The semester was spent working to deliver a useful and usable solution for a problem that their client had identified.

<http://www.accessibilitycourse.com/project/>

Crowd Programming**(Spring 2014, 2015, 2016)***Carnegie Mellon University, Human-Computer Interaction Institute*

Created a new course on incorporating the crowd (broadly defined) into computer programs.

<http://www.programthecrowd.com>

Spring 2014 (overall teaching average) – 05499: 3.6/5.0 (14 students), 05899: 4.5/5.0 (7 students)

Spring 2015 (overall teaching average) – 05499: 4.3/5.0 (16 students), 05899: 4.4/5.0 (13 students)

Spring 2016 (overall teaching average) – 05499: 4.4/5.0 (16 students), 05899: 4.6/5.0 (8 students)

Social Web**(Fall 2014, 2015)***Carnegie Mellon University, Human-Computer Interaction Institute*<http://www.socialweb.io>

Fall 2014 (overall teaching average) – 05320: 4.2/5.0 (23 students), 05820: 4.4/5.0 (21 students)

Fall 2015 (overall teaching average) – 05320: 4.1/5.0 (30 students), 05820: 4.2/5.0 (10 students)

Web Accessibility (mini)**(Spring 2015)***Carnegie Mellon University, Human-Computer Interaction Institute*

Created new course (with Jen Mankoff) to introduce accessibility for people with disabilities as applied to the Web.

<http://www.accessibilitycourse.com>

Fall 2015 (overall teaching average) – 05897: 3.9/5.0 (5 students)

Introduction to Human-Computer Interaction (CSC 212/412)**(Fall 2010, 2011, 2012)***University of Rochester, Computer Science*

Developed a new course introducing computer science students to human-computer interaction.

Fall 2010: 4.7/5.0 average rating (35 students)

Fall 2011: 4.3/5.0 average rating (56 students)

Fall 2012: 4.0/5.0 average rating (47 students)

Web Programming (CSC 210)**(Spring 2010, 2011, 2012, 2013)***University of Rochester, Computer Science*

Developed and taught a popular undergraduate course on the technology and science of web programming.

Spring 2010: 4.4/5.0 average rating (46 students)

Spring 2011: 3.9/5.0 average rating (45 students)

Spring 2012: 4.7/5.0 average rating (51 students)

Spring 2013: 4.0/5.0 average rating (59 students)

National Federation of the Blind (NFB) Youth Slam**(August 2007, 2009, 2011, 2013)**

Led the development of the curriculum for the computer science track at the Youth Slam and used it as part of an intensive class for 15 blind high school students to introduce them to programming in one week. [C.9]

<http://webinsight.cs.washington.edu/nfbslam/>**Tutor, University of Washington****(Spring 2005, Fall 2005, Fall 2007)***Operating Systems (CSE 451), Artificial Intelligence (CSE 473)*

Held weekly tutoring sessions with groups of 1-3 students.

Teaching Assistant, University of Washington**(Fall 2003 – Winter 2006)***Computer Vision (CSE 455) with Steve Seitz, Cyber-Terrorism (CSEP 590TU) with Ed Lazowska, Machine Organization and Assembly Language Programming (CSE 378) with Jean-Loupe Baer, Artificial Intelligence (CSE 415) with Steve Tanimoto, Artificial Intelligence (CSE 473) with Henry Kautz*

Responsibilities included leading quiz sections, creating and grading assignments, and supporting students.

PROFESSIONAL SERVICE**Advisory Board**

IEEE Human Computation Journal

(2014 –)

Carnegie Mellon University

School of Computer Science Council

(2018 –)

HCII Ph.D. Director

(2017 –)

Ph.D. Admissions Committee (2014, 2015)
 Ph.D. Admissions Committee Chair (2016, 2018)
 HCII Relationships Committee (2013 – 2014)
 Crowdsourcing Lunch Seminar (co-organizer) (2013 –)
 Social Media Faculty Lead (2013 –)

University of Rochester

Department of Computer Science

Graduate Curriculum Committee (2010–2011)
 Graduate Student Admissions Committee (2010–2012)
 Faculty Search Committee (2011–2013)
 Colloquium Chair (2011–2012)
 Lab Committee (2011–2013)

College of Arts, Science and Engineering

Digital Media Studies Advisory Group (2011–2013)
 Educational Technology Committee (2012–2013)
 Spurrier Faculty Committee (developed new Digital Media Studies Major) (2010–2011)

Program Committee

(Senior Program Committee, Associate Chair)

AAAI: AAAI Conference on Artificial Intelligence (2011, 2012)
ASSETS: ACM Conference on Accessibility and Computing (2009–2017)
CHI: ACM Conference on Human Factors in Computing Systems (2011–2014, 2016)
CHI: ACM CHI: Work-In-Progress Track (2009)
CHI: ACM CHI: Student Research Competition (2013)
CSI-SE: International Workshop on Crowdsourcing in Software Engineering (2014–2015)
CSCW: ACM Conference on Computer-Supported Cooperative Work (2014–2015)
EMNLP: Conference on Empirical Methods in Natural Language Processing (2014)
GI: Graphics Interface (2016)
HCOMP: Human Computation Conference (2012–2014, 2016)
ICWSM: International Conference on Weblogs and Social Media (2013–2014)
IJCAI: International Joint Conference on Artificial Intelligence (2011)
UIST: ACM Symposium on User Interface Software and Technology (2011–2012, 2014–2015)
W4A: International Cross-Disciplinary Conference on Web Accessibility (2009–2014)
WWW: International World Wide Web Conference (2013–2014)

Organizing Committee

ASSETS: ACM Conference on Accessibility and Computing (2009–2015)

- General Chair (2019)
- Program Chair (2015)
- Registration Chair and Treasurer (2014)
- Doctoral Consortium Chair (2012)
- Doctoral Consortium Panelist (2011)
- Student Research Competition Chair (2010)
- Web Chair (2009)

CSCW: ACM Conference on Computer-Supported Cooperative Work (2016)

- Doctoral Consortium Panelist (2016)

CHI: ACM Conference on Human Factors in Computing Systems (2015-2018)

- Digital Accessibility Chair (2015)
- Doctoral Consortium Co-Chair (2017)
- Subcommittee Chair for Accessibility, Health, and Aging (2017, 2018)

CI: Collective Intelligence (2014)

- Proceedings Co-Chair (2014)

HCOMP: AAAI Conference on Human Computation	(2013 – 2015)
<ul style="list-style-type: none"> • Doctoral Consortium Panelist (2015) • General Co-Chair (2014) • Works-in-Progress and Demonstrations Chair (2013) 	
W4A: International Cross-Disciplinary Conference on Web Accessibility	(2011 – 2014)
<ul style="list-style-type: none"> • General Co-Chair (2014) • Program Co-Chair (2013) • Microsoft Accessibility Challenge Chair (2012) • Google Student Award Chair (2011) 	
WWW: World Wide Web Conference	(2015)
<ul style="list-style-type: none"> • Co-Chair of Crowdsourcing Systems and Social Media Track (2015) 	
<u>Workshop Organizer</u>	
Productivity Decomposed: Getting Big Things Done with Little Microtasks (CHI 2016) <i>w/ Jaime Teevan, Shamsi T. Iqbal, Carrie J. Cai, Michael Bernstein, Elizabeth Gerber.</i>	(2016)
CrowdCamp 2013: Rapidly Iterating Crowd Ideas (CSCW 2013) <i>w/ Lydia Chilton, Paul Andre, Mira Dontcheva, Elizabeth Gerber, and Eric Gilbert</i>	(2013)
The Theory and Practice of Social Machines <i>w/ Nigel Shadbolt, Dave De Roure, and Max van Kleek</i>	(2013)
Workshop on Mobile Accessibility (CHI 2013) <i>w/ Tiago Guerreiro, Shadi Abou-Zhara, Luis Carriço, Daniel Gonçalves, Yeliz Yesilada</i>	(2013)
Frontiers in Accessibility for Pervasive Computing (Pervasive 2012) <i>w/ Mario Romero, Tiago Guerreiro, Shaun Kane, Votis Konstantinos, Sergio Mascetti, Caleb Southern, and Gottfried Zimmerman</i>	(2012)
<u>Journal Reviewing</u>	
ACM Transactions on Accessible Computing (TACCESS) -- <i>Editorial Board</i>	(2013 – 2018)
ACM Transactions on Accessible Computing (TACCESS) -- <i>Associate Editor</i>	(2008 – 2013)
ACM Transactions on Computer-Human Interaction (TOCHI)	(2007 – 2014)
IBM Systems Journal	(2008)
<u>Reviewer of Conference Publications</u> (<i>not on Program Committee</i>)	
IJCAI: International Joint Conference on Artificial Intelligence	(2009)
CHI: ACM Conference on Human Factors in Computing Systems	(2007 – 2009)
CSCW: ACM Conference on Computer Supported Cooperative Work	2016
IUI: ACM Conference on Intelligent User Interfaces	(2009 – 2013)
SIGGRAPH: ACM Conference on Graphics and Interactive Techniques	(2013)
UBICOMP: Conference on Ubiquitous Computing	(2011 – 2016)
UIST: ACM Symposium on User Interface Software and Technology	(2007 – 2016)
<u>Grant Proposal Reviewer</u>	
National Science Foundation	(2011 – 2016)
Ohio Disability Services	(2010)
<u>Other</u>	
ACM SIGACCESS SIG: Information Director	(2011 – 2012)
ASSETS: ACM Student Research Competition Judge	(2009, 2011)
<u>Student Volunteer</u>	
ICWSM: ACM Conference on Weblogs and Social Media	(2008)
IUI: ACM Conference on Intelligent User Interfaces	(2008)
<u>Professional Memberships</u>	
AAAI: Association for the Advancement of Artificial Intelligence	(2008 –)
ACM: Association for Computing Machinery	(2008 –)
SIGACCESS: ACM Special Interest Group on Accessibility	(2008 –)
SIGCHI: ACM Special Interest Group on Human-Computer Interaction	(2013 –)

STUDENTS AND POSTDOCTORAL FELLOWS

Current Postdoctoral Fellows

- Amy Pavel (2018 -)
- Cynthia Bennett (2019 -)

Postdoctoral Fellows Supervised

- Patrick Carrington (2017 - 2019)
First position as Assistant Profess in the Human-Computer Interaction Institute at Carnegie Mellon University
- Kotaro Hara (2016 – 2017)
First position as Assistant Professor in the School of Information Systems at Singapore Management University
- Luz Rello (2014 – 2016)
First position as System Scientist at Carnegie Mellon University

Current Ph.D. Students

- Cole Gleason (Carnegie Mellon University – HCII)
 - Co-advised with Kris Kitani (Robotics)
- Anhong Guo (Carnegie Mellon University – HCII)
- Prakhhar Gupta (Carnegie Mellon University – LTI)
- Kundan Krishna (Carnegie Mellon University – LTI)
 - Co-advised with Zach Lipton (Tepper & MLD)
- Sujeath Paredy (Carnegie Mellon University – HCII)
- Stephanie Valencia-Valencia (Carnegie Mellon University – HCII)
 - Co-advised with Henny Admoni (Robotics)
- Jason Wu (Carnegie Mellon University – HCII)

Ph.D. Graduates

- Ting-Hao Kenneth Huang (Carnegie Mellon University - LTI), 2018
“A Crowd-Powered Conversational Assistant That Automates Itself Over Time”
First Position as Assistant Professor in the College of Information Sciences and Technology (IST) at Pennsylvania State University
- Erin Brady (University of Rochester), 2015.
“Social Microvolunteering: Quick, Free Answers to Visual Questions from Blind People”
First Position as Assistant Professor in the School of Informatics and Computing Indiana University Purdue University Indianapolis
- Walter Lasecki (University of Rochester), 2015.
“Crowd Agents: Interactive Intelligent Systems Powered by the Crowd”
First Position as Assistant Professor of Electrical Engineering and Computer Science University of Michigan
- Yu Zhong (University of Rochester), 2015.
“Enhancing Access to Complex and Spatial Information for Blind Users of Mobile Devices”
First Position as Software Engineer in Accessibility Engineering Google Research

Ph.D. Committee Member

- Anna Michele Kasunic Das (Carnegie Mellon University), 2019.
“Research through Evocative Play: Play-based Methods for Drawing out Contextual Complexities and Understanding Power.”
- Andrii Soviak (Stony Brook University), 2018.
“FeelX: a Next Generation Haptic Device for Semantic Web Browsing”
First Position at Charmtech Labs, LLC.
- David Mark Swallow (University of York), 2017.
“Understanding and Supporting Web Developers: Working Practices and Resources for the Creation and Evaluation of Accessible Websites”

- *First Position as Accessibility Engineer at The Paciello Group.*
- Sauvik Das (Carnegie Mellon University, HCII), 2017.
“Social Cybersecurity: Reshaping Security Through An Empirical Understanding of Human Social Behavior”
First Position as Assistant Professor, Georgie Institute of Technology
- Amal Fahad. (University of Rochester, Computer Science), 2014.
“System- and Application-Level Techniques for Limited Resources Environments.”
First Position at Microsoft.
- Yury Puzis (Stony Brook University, Computer Science), 2013.
“Accessible Web Automation”
First Position at Charmtech Labs, LLC.
- Surjya Sarathi Ray (University of Rochester, Electrical and Computer Engineering), 2013.
“Advertisement-Based Energy Efficient Medium Access Protocols for Wireless Sensor Networks”
First Position as Post-Doctorate Researcher at the Rochester Institute of Technology
- Adam Sadilek (University of Rochester, Computer Science), 2013
“Modeling Human Behavior at a Large Scale”
First Position as Data Scientist at Google
- Chen-Hsiang Feng (University of Rochester, Electrical and Computer Engineering), 2013.
“Stack Architectures and Protocols for Emerging Wireless Networks”
First Position as Software Engineer at Intel Corporation
- Faisal Ahmed (Stony Brook University, Computer Science), 2012
“Algorithms and Interfaces for Automated Non-Visual Skimming”
First Position at NetApp
- Naushad UzZaman (University of Rochester, Computer Science), 2012.
“Interpreting the Temporal Aspects of Language.”
First Position as Research Scientist at Nuance Communications.
- John Magee (Boston University, Computer Science), 2011.
“Adaptable Interfaces for People with Motion Disabilities.”
First Position as Visiting Professor at Clark University.

Masters Students Supervised

- Juhon Kong
- Yashesh Gaur, *First Position at Baidu Research*
- Anna Loparev, *Phd Student at University of Rochester Computer Science*
- Phyoo Thihia, *Phd Student at University of Rochester Computer Science*
- Julia Ferraioli, *First Position at Google*
- Hanjie Ji, *First Position at Qwiki*

Undergraduate Research Assistants

- Stephanie Wang (2018)
- Caroline Anderson (2018)
- Adrian Jenkins (2018)
- Cameron Cassidy (2017 – 2018)
- Judy Kong (2017 -)
- Lucas Rosenblatt (2017)
- Irene Lin (2016 –)
- Jessi Li (2016)
- Joshua Churchin (2016)
- Ronnie Ghose (2016), *First Position at Salesforce*
- Summer Kitahara (2016)
- Nila Banerjee (2016)
- Bram Adams (2015)
- Sarah Chen (2015)
- Mitchell Gordon (2015), *First Position at Stanford Ph.D. Program*
- Sara Lickers (2014)

- Jennifer Godzicki (2014)
- Grant He (2014)
- Chris Miller (2014)
- Matthew Murphy (2014)
- Dan Scarafoni (2014), *First Position at MIT Lincoln Labs*
- Rachel Wesley (2013), *First Position at Brand Networks*
- Bradley Halpern (2013), *First Position at Skoll Foundation*
- Emily Danchik (2013), *First Position in Masters Program, CMU HCII*
- Donato Borrello (2012), *First Position at FactSet Research Systems, Inc.*
- Kyle Murray (2012), *First Position as Ph.D. Student at MIT CSAIL*
- Preet Singh (2012), *First Position as Ph.D. Student at Northwestern*
- Samuel White (2012), *First Position at Apple*
- Michael Leezenbaum (2011), *First Position at Pioneering Evolution LLC*
- Sara Melnick (2011), *First Position as Ph.D. Student at Washington University (St. Louis)*
- Robin Miller (2011), *First Position at Microsoft*

OTHER PROFESSIONAL ACTIVITIES

ChangeDyslexia Advisory Board (<i>changedyslexia.org</i>)	(2015 –)
Project Possibility Advisory Board (<i>projectpossibility.org</i>)	(2015 –)
National Science Foundation Innovation Corps – Principal Investigator	(2013)
National Federation of the Blind, Youth Slam – <i>Computer Science Track Instructor</i>	(2007, 2009, 2011, 2013)
University of Rochester – Digital Media Studies – <i>Founding Faculty Representative</i>	(2010 – 2013)
Global Public Inclusive Infrastructure (<i>gpii.org</i>) – <i>Architecture Committee Member</i>	(2010 – 2011)
Raising the Floor Initiative (<i>raisingthefloor.org</i>) – <i>Member</i>	(2009 –)
WebAnywhere Web-Based Screen Reader Open Source Project [C.10][C.11]	(2007 –)