Curriculum Vitae
Richard J. Anderson

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Current Position

Full Professor, Department of Computer Science and Engineering, University of Washington, since 1998.

Associate Chair, Department of Computer Science and Engineering, University of Washington, 2000-2001 (Associate Chair for Outreach), 2003-2009 (Associate Chair for Educational Programs).

Associate Professor, Department of Computer Science and Engineering, University of Washington, 1991–1998.

Assistant Professor, Department of Computer Science and Engineering, University of Washington, 1986–1991.

Education

Ph.D., Computer Science, Stanford University, January, 1986. Advisor: Prof. Ernst Mayr. Thesis title: *The Complexity of Parallel Algorithms*.

B.A., Mathematics, Reed College, Portland, Oregon, June, 1981.

Experience

Technology Advisor, PATH (Program for Appropriate Technology in Health), Seattle, Washington, 2014–2018

Visiting Computer Scientist, PATH (Program for Appropriate Technology in Health), Seattle, Washington 2009–2014

Visiting Researcher, Learning Sciences and Technology Group, Microsoft Research, Redmond, Washington. June 2001 - September 2002.

Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India. Visiting Professor of Computer Science, 1993-1994.

Mathematical Sciences Research Institute, Berkeley, California. Postdoctoral research fellow, 1985-1986.

Honors and Awards

2008 Premier Award for Excellence in Engineering Education Courseware for Classroom Presenter

University of Washington, College of Engineering, Faculty Innovator for Teaching Award, 2007.

Indo-American Fellowship, Indo-US Subcommission on Education and Culture, Award to support sabbatical visit to the Indian Institute of Science, Bangalore, India, 1993-1994.

NSF Presidential Young Investigator Award, 1987-1992.

Recent Grants

Digital Square, "Open Data Kit - ODK 2.0 Release," $300,000. June 1 2017 – Feb 28, 2018.

Digital Impact Alliance, "Open Source Tools," $100,000. Apr 1 2017 – May 31, 2018.

Bill and Melinda Gates Foundation, "UW Digital Financial Services Research Group," $2,096,380. Nov 13, 2015 – Dec 31, 2019.

Google, "CacheCourier: Enabling Minimally Configurable Sharing in Disconnected Networks," $123,744. Oct 15 2016 – Oct 14, 2017.

Bill and Melinda Gates Foundation, "Mobile Data Collection: Open Data Kit Support and Integration," $600,000. Aug 26, 2015 – Aug 31, 2017.

UC Berkeley/USAID HSEN, "Open Kit Data and Mezuri: Establishing Sustainable and Replicable Scale," $907,521, Sept 1, 2012 - Sept 30, 2017.

National Science Foundation "IIS-1111433, SHB: Large: Collaborative Research: From the Ground Up—Mobile Tools for Grassroots Programs in Public Health," $2,000,926 Sept 1, 2011–Aug 31, 2015.

NSF Advanced Learning Technologies, ALT-0633850 "Technologies for Cooperative Learning in Rural India," $395,000 over 3 years, Sept 2007 – September 2010.

Microsoft Research, "Center for Advanced Collaborative Technologies," $750,000 over 3 years, June 2007– June 2010.

Ph.D. Student Supervision

Aditya Vashistha, August 2019, "Social Computing for Social Good in Low-Resource Environments."

Trevor Perrier, June 2019, "Connecting End Users to Domain Experts With Universal Mobile Phone Services."

Fahad Pervaiz, June 2019, "Understanding Challenges in the Data Pipeline for Development Data."

Sam Sudar, August 2017, "Designing Technology for Existing Infrastructure in the Developing World."

Natalie Linnell, April 2011, "Technology for facilitated video."

Ken Yasuhara, July 2008, "Viewpoints from the Doorstep: Pre-major Interest in and Perceptions of Computer Science," (co-advised with Denise Wilson).

Valentin Razmov, Ph.D., October 2007, "Effective Feedback Approaches to Support Engineering Instruction and Training in Project Settings."

Ruth Anderson, Ph.D., October 2006, "Digital Ink and Interaction in the Classroom."

Steve Wolfman, Ph.D., July 2004, "Understanding and Promoting Interaction in the Classroom Through Computer-Mediated Communication in the Classroom Presenter System."

Brian Tjaden, Ph.D., May 2003, "Computational Methods for Transcriptional Analysis Using Oligonucleotide Micoroarrays."

Omid Madani, Ph.D., August 2000, "Markov Decision Processes."

William Chan, Ph.D., December 1999, "Symbolic Model Checking for Large Software Specifications," (co-advised with Paul Beame and David Notkin).

João Setubal, Ph.D., September, 1992, "Implementation of Parallel Network Flow Algorithms."

Simon Kahan, Ph.D., October, 1991, "Real-Time Processing of Moving Data." (Co-advised with Paul Beame.)

Erik Brisson, Ph.D., August, 1990, "Representation of d-Dimensional Geometric Objects."

Ph.D. Current Students

Waylon Brunette

Samia Ibtasam

Naveena Karusala

Phillip Garrison

Galen Weld

Matt Ziegler

Departmental and University Service (Last Five Years)

2018-2019 5th year Masters Program

2017-2018 Sabbatical Leave

2016-2017 5th year Masters Program

2015-2016 Professional Masters Program Committee, Peer Evaluation of Teaching

2014-2015 (Partial Leave), Peer Evaluation of Teaching

Teaching (Last Five Years)

2018-2019 CSE 490D ICTD (U), CSE 421, Algorithms (U), CSE 491 B ICTD Capstone (U)

2017-2018 Sabbatical Leave

2016-2017 CSE 421, Algorithms (U)

2015-2016 CSE 421, Algorithms (U), CSE 322, Data Structures (U)

2014-2015 (Partial Leave) CSEP 590b, Computing for Global Health, (P)

Educational Initiatives

Directing the Center for Collaborative Technologies which is overseeing development of distance learning technologies. (2006–2009)

Digital Study Hall Leadership Team (2005–2010)

Tutored Video Instruction course offering between University of Washington, and Beihang University, Beijing. Autumn 2006.

Developed Tablet PC based presentation tool (Classroom Presenter), and have been deploying it in classrooms at UW and other universities. www.cs.washington.edu/education/dl/presenter/

Professional Master's Program. Leader in initiating the program, faculty advisor for first four years.

Tutored Video Instruction. Developed and supervised TVI program to offer CSE 142/143 at Community Colleges.

Publications

Refereed Journals

Kumar, N., Brunette, W., Dell, N., Perrier, T., Kolko, B., Borriello, G., Anderson, R., Understanding sociotechnical implications of mobile health deployments in India, Kenya, and Zimbabwe, Information Technologies & International Development, 11(4), 2015

Ginsburg, A., Delarosa, J., Brunette, W., Levari, S., Sundt, M., Larson, C., Agyemang, C., Newton, S., Borriello, G., Anderson, R., mPneumonia: Development of an innovative mHealth Application for Diagnosing and Treating Childhood Pneumonia in Low-Resource Settings, *PLosOne* 2015 Oct 16:20(10)

Chaudhri, R. , Borriello, G., Anderson, R., Monitoring Vaccine Cold Chains in Developing Countries, *IEEE Pervasive Computing (special issue on Technologies for Development)*, p.26-33, vol. II.3, (2012).

Anderson, R. J., Anderson, R. E., Hoyer, C., Prince, C., Su, J., Videon, F., and Wolfman, S., "A Study of Diagrammatic Ink in Lecture," Computers and Graphics, 29, 2005, pp. 480–489.

Deibel, K., Anderson, R. J., and Anderson, R. E., "Using Edit Distance to Analyze Cardsorts," Expert Systems, 22 (3), 2005, pp. 129–138.

Anderson, R. J., "The Role of Experiment in the Theory of Algorithms,", *Dimacs Series in Discrete Mathematics and Theoretical Computer Science*, Vol 59, 2002, pp. 191–195.

Anderson, R. J., Kannan, S., Karloff, H., Ladner, R. E., "Thresholds and Optimal Binary Tree Comparison Search Trees," *Journal of Algorithms*, Vol. 44, 2002, 338-358. (Preliminary version in 21st Foundations of Software Technology and Theoretical Computer Science, Bangalore India, December 2001).

Anderson, R. J., "Tree data structures for N-body simulation," *SIAM Journal on Computing*, 28(6):1923–1940, 1999. (Preliminary version in *Proceedings of the 37th Annual Symposium on Foundations of Computer Science*, October, 1996, pp. 224–233.)

Chan, W., Anderson, R. J., Beame, P., Burns, S., Modugno, F., Notkin, D., Reese, J., "Model checking large software specifications," *IEEE Transactions on Software Engineering*, 24(7):498-520, July 1998. (Preliminary Version in *Proceedings of the Fourth ACM SIGSOFT Symposium on the Foundations of Software Engineering*, October, 1996, pp. 156–166. Invited paper to a special issue of *IEEE TSE*)

Anderson, R. J., Woll, H., "Algorithms for the certified write all problem," *SIAM Journal on Computing*, **26**, 5, October 1997, pp. 1277–1283.

Anderson, R. J., Beame, P., Brisson, E., "Parallel algorithms for arrangements," *Algorithmica*, **15** (2), 1996, pp. 104–125. (Preliminary version in *Proceedings of the 2nd Annual ACM Symposium on Parallel Algorithms and Architectures*, July, 1990, pp. 298–306.)

Anderson, R. J., Setubal, J. C., "A parallel implementation of the push-relabel algorithm for the maximum flow problem," *Journal of Parallel and Distributed Computing*, **29** (1), 1995, pp. 17–26. (Preliminary version in *Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures*, July 1992, pp. 168–177.)

Anderson, R. J., Simons, B., "A fast heuristic for loop parallelization," *Parallel Processing Letters*, **4** (3), 1994, pp. 281–299. (Preliminary Version: Anderson, R. J., Munshi, A. A., Simons, B., "A scheduling problem arising from loop parallelization on MIMD machines," *Proceedings of the 3rd Aegean Workshop on Computing*, July 1988, Springer-Verlag, pp. 124–133.)

Anderson, R. J., "Primitives for asynchronous list compression," *Mathematical Systems Theory*, **27**, 1994, pp. 453–470. (Preliminary version in *Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures*, July 1992, pp. 199–208.)

Anderson, R. J., Setubal, J. C., "Parallel and sequential implementations of maximum-flow algorithms" *Network Flows and Matching*, Johnson and McGeoch editors, AMS, 1993, pp. 1–18.

Anderson, R. J., Kahan, S., and Schlag, M., "Single-layer cylindrical compaction," *Algorithmica*, **9**, 1993, pp. 293–312. (Preliminary version: "An $O(n \log n)$ algorithm for 1-D tile compaction," *Proceedings of the International Conference on Computer-Aided Design*, Santa Clara, California, November 1989, pp 144–148.)

Anderson, R. J., Miller, G. L., "Deterministic parallel list ranking," *Algorithmica*, **6**, 1991, pp. 859–868. (Preliminary version in *Proceedings of the 3rd Aegean Workshop on Computing*, July 1988, Springer-Verlag, pp. 81–90.)

Anderson, R. J., Snyder, L., "A comparison of shared and nonshared memory models of parallel computation," *Proceedings of the IEEE*, **79**, 4, April 1991, pp. 480–487.

Aggarwal, A., Anderson, R. J., Kao, M-Y., "Parallel depth-first search in general directed graphs," *SIAM Journal on Computing*, **19**, 2, April, 1990, pp. 397–409. (Preliminary version in *Proceedings of the Twenty First Annual ACM Symposium on the Theory of Computing*, 1989, pp. 297–308.)

Anderson, R. J., Miller, G. L., "A simple randomized parallel algorithm for list-ranking," *Information Processing Letters*, **33**, 10 January 1990, pp. 269–273.

Anderson, R. J., Mayr, E. W., Warmuth, M. K., "Parallel approximation algorithms for bin packing," *Information and Computing*, **82**, 3, September, 1989, pp. 262–277.

Anderson, R. J., Lovasz, L., Shor, P., Spencer, J., Tardos, E., Winograd, S., "Disks, balls, and walls: an analysis of a combinatorial game," *American Mathematical Monthly*, **96**, 6, June–July 1989, pp. 481–493.

Aggarwal, A., Anderson, R. J., "A random NC algorithm for depth first search," *Combinatorica*, **8**, 1, 1988, pp. 1–12. (Preliminary version in *Proceedings of the Nineteenth Annual ACM Symposium on the Theory of Computing*, 1987, pp. 325–334.)

Anderson, R. J., "A parallel algorithm for the maximal path problem," *Combinatorica*, **7**, 3, 1987, pp. 315–326. (Preliminary version in *Proceedings of the Seventeenth Annual ACM Symposium on the Theory of Computing*, 1985, pp. 33–37.)

Anderson, R. J., Mayr, E., "Parallelism and greedy algorithms," *Advances in Computing Research*, JAI Press, **4**, 1987, pp. 17–38.

Anderson, R. J., Mayr, E., "Parallelism and the maximal path problem," *Information Processing Letters*, **24**, 2, 1987, pp. 121–126.

Conference Publications

Aditya Vashistha, Richard Anderson, and Shrirang Mare. 2019. Examining the use and non-use of mobile payment systems for merchant payments in India. In Proceedings of the Conference on Computing & Sustainable Societies (COMPASS '19). ACM, New York, NY, USA, 1-12. DOI: https://doi.org/10.1145/3314344.333249

Fahad Pervaiz, Aditya Vashistha, and Richard Anderson. 2019. Examining the challenges in development data pipeline. In Proceedings of the Conference on Computing & Sustainable Societies (COMPASS '19). ACM, New York, NY, USA, 13-21. DOI: https://doi.org/10.1145/3314344.3332496

Fahad Pervaiz, Rai Shah Nawaz, Muhammad Umer Ramzan, Maryem Zafar Usmani, Shrirang Mare, Kurtis Heimerl, Faisal Kamiran, Richard Anderson, and Lubna Razaq. 2019. An assessment of SMS fraud in Pakistan. In Proceedings of the Conference on Computing & Sustainable Societies (COMPASS '19). ACM, New York, NY, USA, 195-205. DOI: https://doi.org/10.1145/3314344.3332500

Aditya Vashistha, Abhinav Garg, Richard Anderson, and Agha Ali Raza. 2019. Threats, Abuses, Flirting, and Blackmail: Gender Inequity in Social Media Voice Forums. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19). ACM, New York, NY, USA, Paper 72, 13 pages. DOI: https://doi.org/10.1145/3290605.3300302

Aditya Vashistha, Abhinav Garg, and Richard Anderson. 2019. ReCall: Crowdsourcing on Basic Phones to Financially Sustain Voice Forums. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19). ACM, New York, NY, USA, Paper 169, 13 pages. DOI: https://doi.org/10.1145/3290605.3300399

Maryam Mustafa, Noor Mazhar, Ayesha Asghar, Maryem Zafar Usmani, Lubna Razaq, and Richard Anderson. 2019. Digital Financial Needs of Micro-entrepreneur Women in Pakistan: Is Mobile Money The Answer?. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19). ACM, New York, NY, USA, Paper 260, 12 pages. DOI: https://doi.org/10.1145/3290605.3300490

Trevor Perrier, Elizabeth K. Harrington, Keshet Ronen, Daniel Matemo, John Kinuthia, Grace John-Stewart, Richard Anderson, and Jennifer A. Unger. 2018. Male Partner Engagement in Family Planning SMS Conversations at Kenyan Health Clinics. In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '18). ACM, New York, NY, USA, Article 3, 11 pages. DOI: https://doi.org/10.1145/3209811.3209857

Samuel Sudar, Matt Welsh, and Richard Anderson. 2018. Siskin: Leveraging the Browser to Share Web Content in Disconnected Environments. In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '18). ACM, New York, NY, USA, Article 18, 7 pages. DOI: https://doi.org/10.1145/3209811.3209820

Samia Ibtasam, Lubna Razaq, Haider W. Anwar, Hamid Mehmood, Kushal Shah, Jennifer Webster, Neha Kumar, and Richard Anderson. 2018. Knowledge, Access, and Decision-Making: Women's Financial Inclusion In Pakistan. In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '18). ACM, New York, NY, USA, Article 22, 12 pages. DOI: https://doi.org/10.1145/3209811.3209819

Aditya Vashistha, Richard Anderson, and Shrirang Mare. 2018. Examining Security and Privacy Research in Developing Regions. In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '18). ACM, New York, NY, USA, Article 25, 14 pages. DOI: https://doi.org/10.1145/3209811.3209818

Aditya Vashistha, Pooja Sethi, and Richard Anderson. 2018. BSpeak: An Accessible Voice-based Crowdsourcing Marketplace for Low-Income Blind People. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA, Paper 57, 13 pages. DOI: https://doi.org/10.1145/3173574.3173631

Galen Weld, Trevor Perrier, Jenny Aker, Joshua E. Blumenstock, Brian Dillon, Adalbertus Kamanzi, Editha Kokushubira, Jennifer Webster, and Richard J. Anderson. 2018. eKichabi: Information Access through Basic Mobile Phones in Rural Tanzania. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA, Paper 133, 12 pages. DOI: https://doi.org/10.1145/3173574.3173707

Aditya Vashistha, Fabian Okeke, Richard Anderson, and Nicola Dell. 2018. 'You Can Always Do Better!": The Impact of Social Proof on Participant Response Bias. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA, Paper 552, 13 pages. DOI: https://doi.org/10.1145/3173574.3174126

Samia Ibtasam, Hamid Mehmood, Lubna Razaq, Jennifer Webster, Sarah Yu, and Richard Anderson. 2017. An Exploration of Smartphone Based Mobile Money Applications in Pakistan. In Proceedings of the Ninth International Conference on Information and Communication Technologies and Development (ICTD '17). ACM, New York, NY, USA, Article 1, 11 pages. DOI: https://doi.org/10.1145/3136560.3136571

Waylon Brunette, Samuel Sudar, Mitchell Sundt, Clarice Larson, Jeffrey Beorse, and Richard Anderson. 2017. Open Data Kit 2.0: A Services-Based Application Framework for Disconnected Data Management. In Proceedings of the 15th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys '17). ACM, New York, NY, USA, 440-452. DOI: https://doi.org/10.1145/3081333.3081365

Aditya Vashistha, Neha Kumar, Anil Mishra, and Richard Anderson. 2017. Examining Localization Approaches for Community Health. In Proceedings of the 2017 Conference on Designing Interactive Systems (DIS '17). ACM, New York, NY, USA, 357-368. DOI: https://doi.org/10.1145/3064663.306475

Aditya Vashistha, Pooja Sethi, and Richard Anderson. 2017. Respeak: A Voice-based, Crowd-powered Speech Transcription System. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17). ACM, New York, NY, USA, 1855-1866. DOI: https://doi.org/10.1145/3025453.3025640

Sam Castle, Fahad Pervaiz, Galen Weld, Franziska Roesner, and Richard Anderson. 2016. Let's Talk Money: Evaluating the Security Challenges of Mobile Money in the Developing World. In Proceedings of the 7th Annual Symposium on Computing for Development (ACM DEV '16). ACM, New York, NY, USA, Article 4, 10 pages. DOI: https://doi.org/10.1145/3001913.3001919

Camille Cobb, Samuel Sudar, Nicholas Reiter, Richard Anderson, Franziska Roesner, and Tadayoshi Kohno. 2016. Computer Security for Data Collection Technologies. In Proceedings of the Eighth International Conference on Information and Communication Technologies and Development (ICTD '16). ACM, New York, NY, USA, Article 2, 11 pages. DOI: https://doi.org/10.1145/2909609.2909660

Aditya Vashistha, Neha Kumar, Anil Mishra, and Richard Anderson. 2016. Mobile Video Dissemination for Community Health. In Proceedings of the Eighth International Conference on Information and Communication Technologies and Development (ICTD '16). ACM, New York, NY, USA, Article 20, 11 pages. DOI: https://doi.org/10.1145/2909609.2909655

T. Perrier, B. DeRenzi, and R. Anderson, USSD: The Third Universal App, The sixth annual Symposium on Computing for Development, London, UK, 2015.

S. Sudar and R. Anderson, DUCES: A Framework for Characterizing and Simplifying Mobile Deployments in Low-Resource Settings, The sixth annual Symposium on Computing for Development, London, UK, 2015.

W. Brunette, M. Vigil, S. Levari, F. Pervaiz and R., Anderson, Optimizing Mobile Application Communication for Challenged Network Environments, The sixth annual Symposium on Computing for Development, London, UK, 2015.

Vashistha, A., Cutrell, E., Dell, N., and Anderson, R., Social Media Platforms for Low-Income Blind People in India, ASSETS 2015.

F. Pervaiz, S. Newland, and R. Anderson, Data Specification for Information Systems for the Immunization Cold Chain, Proceedings of the 13th International Conference on Social Implications of Computers in Developing Countries, Negombo, Sri Lanka, May 2015.

Kumar, N., Perrier, T., Desmond, M., Israel-Ballard, K., Mahapatra, S., Mishra, A., Agarwal, S., Gandhi, R., Lal, P., and Anderson, R., Projecting Health: Community-Led Video Education for Maternal Health, ICTD 2015.

Kumar, N., Anderson, R., Mobile Phones for Maternal Health in Rural India, CHI 2015.

Perrier, T., Dell, N., DeRenzi, B., Anderson, R., Kinuthia, J., Unger, J., John-Stewart, G., Engaging Pregnant Women in Kenya with a Hybrid Computer-Human SMS communication System, CHI 2015.

Anderson, R., Perrier, T., Pervaiz, F., et al., Supporting Immunization Programs with Improved Vaccine Cold Chain Information Systems, Institute of Electrical and Electronics Engineers (IEEE) Global Humanitarian Technology Conference (GHTC), San Jose, California, 2014.

Fiore-Silfvast, B., Hartung., C., Iyengar, K., Iyengar, S., Israel-Ballard, K., Perin, N., Anderson, R., Mobile Video for Patient Education: The Midwives' Perspective, DEV 2013.

Brunette, W., Sudar, S., Worden, N., Price, D., Anderson, R., and Borriello, G., ODK tables: building easily customizable information applications on Android devices. Association for ACM DEV, 2013.

Anderson, R., Roberston, C., Nabi, E., Sahni, S., and Setia, T., Facilitated Video Instruction in Low Resource Schools, ICTD 2012.

Linnell, N., Anderson, R., Bordelon, G., Gandhi, R., Hemingway, B., Nadagouda, S.B., Toyama, K. Context-Aware Technology for Improving Interaction in Video-Based Agricultural Extension. India HCI 2011.

Chaudhri, R., Borriello, G., Anderson, R., McGuire, S., and O'Rourke, E., FoneAstra: Enabling remote monitoring of vaccine cold-chains using commodity mobile phones. ACM DEV Conference, 2010.

Linnell, N., Anderson, R., and Prey, J., "Cross-Cultural Issues in a Tutored Video Instruction Course," 39th ACM SIGCSE Technical Symposium on Computer Science Education, 2008.

Liao, C., Guimbretiere, F., Anderson, R., Linnell, N., Prince, N., Razmov, V., "PaperCP: Exploring the Integration of Physical and Digital Affordances for Active Learning," Interact 2007, Rio De Janeiro, Brasil.

Linnell, N., Anderson, R., Fridley, J., Hinckley, T., and Razmov, V., Supporting Classroom Discussion with Technology: A Case Study in Enviromental Science, ASEE/IEEE Frontiers in Education, 2007.

Anderson, R., Chen, J., Ji, L., Jie, L., Li, N., Linnell, N., Razmov, V., and Videon, F., Supporting an Interactive Classroom Environment in a Cross-Cultural Course, ASEE/IEEE Frontiers in Education, 2007.

Anderson, R., Anderson, R., Davis, K., Linnell, N., Prince, C., and Razmov, V., Supporting Active Learning and Example Based Instruction with Classroom Technology, 38th ACM SIGCSE Technical Symposium on Computer Science Education, 2007, pp. 69-73.

Razmov, V., and Anderson, R., "Experiences with Agile Teaching in Project-based Courses," ASEE Annual Conference, 2006.

Anderson, R. et al., "Classroom Presenter – A Classroom Interaction System for Active and Collaborative Learning," Workshop on the Impact of Pen-based Technology on Education, 2006, pp. 21–30.

Razmov, V., and Anderson, R., "Pedagogical techniques supported by the use of student devices in teaching software engineering," 37th ACM SIGCSE Technical Symposium on Computer Science Education, 2006, pp. 344-348.

Ginat, D., Anderson, R., Garcia, D. D., and Rasala, R., "Randomness and Probability in the Early CS Courses," Thirty-sixth SIGCSE Technical Symposium on Computer Science Education, pp. 556-557.

Anderson, R. J., Anderson, R. E., Hoyer, C., Prince, C., Su, J., Videon, F., and Wolfman, S., "Understanding Diagrammatic Ink in Lecture," Computers and Graphics, AAAI Workshop on Ink Understanding.

Anderson, R. J., Hoyer, C., Prince, C., Su, J., Videon, F., and Wolfman, S., "Speech, Ink, and Slides: The Interaction of Content Channels", ACM Multimedia 2004, pp. 796–803.

Anderson, R. J., Anderson, R., Hoyer, C., and Wolfman, S. A., "A Study of Digital Ink in Lecture Presentation," CHI 2004: Conference on Human Factors in Computing, pp. 567-574, 2004.

Anderson, R. J., Anderson, R., Simon, B., Wolfman, S. A., VanDeGrift, T., and Yasuhara, K., "Experiences with a Tablet PC Based Lecture Presentation System in Computer Science Courses," *SIGCSE 2004: Technical Symposium on Computer Science Education*, pp. 56-60, March 2004.

Anderson, R. J., Beavers, J., VanDeGrift, T., and Videon, F., "Videoconferencing and Presentation Support for Synchronous Distance Learning," 33rd ASEE/IEEE Frontiers in Education Conference, Boulder, Colorado, 2003.

Anderson, R. J., Anderson, R., VanDeGrift, T., Wolfman, S. A., and Yasuhara, K., "Promoting Interaction in Large Classes with Computer Mediated Feedback," CSCL 2003: Computer Supported Collaborative Learning, pp. 119-123, Bergen, Norway, 2003.

Anderson, R., J., Anderson, R., Hoyer, C., Simon, B., Videon, F., and Wolfman, S., "Lecture Presentation from the Tablet PC", WACE 2003, Workshop on Advanced Collaborative Environments, Seattle, June 2003.

Simon, B., Anderson, R. J., and Wolfman, S., "Activating Computer Architecture with Classroom Presenter,", WCAE 2003: Workshop on Computer Architecture Education, San Diego, June 2003.

Anderson, R. J., Anderson, R., VanDeGrift, T., Wolfman, S. A., and Yasuhara, K., "Interaction Patterns with a Classroom Feedback System: Making Time for Feedback," CHI 2003, Interactive Poster. Conference on Human Factors in Computing.

VanDeGrift, T., and Anderson, R. J., "Learning to Support the Instructor: Classroom Assessment Tools as Discussion Frameworks in CS 1," Proceedings of the 7th Annual Conference on Innovation and Technology in Computer Science Education, 2002, pp. 19–23.

Anderson, R. J., Dickey, M., Perkins, P., "Experiences with Tutored Video Instruction for Introductory Programming Courses", *SIGCSE Technical Symposium on Computer Science Education, 2001, pp. 347–351.*

Anderson, R. J., Tjaden, B. C., "Inverse nearest neighbors", *12th Annual ACM-SIAM Symposium on Discrete Algorithms* January 2001.

Anderson, R. J., Chan, W., Beame, P., Notkin, D. "Experiences with the Application of Symbolic Model Checking to the Analysis of Software Specifications," *Proceedings of the Andrei Ershov Third International Conference on Perspectives of System Informatics*, Novosibirsk, Russia, pp. 355-361, July, 1999.

Anderson, R. J., Sobti, S., "The table layout problem," *COMPGEOM '99. Proceedings of the 15th ACM Symposium on Computational Geometry*, pp. 115–123, 1999.

Chan, W., Anderson, R. J., Beame, P., Jones, D. H., Notkin, D., and Warner, W. E., "Decoupling synchronization from local control for efficient symbolic model checking of statecharts," *Proceedings of the 1999 International Conference on Software Engineering*, pp. 142-151, May, 1999.

Chan, W., Anderson, R. J., Beame, P., Notkin, D., "Improving efficiency of symbolic model checking for state-based system requirements," *1998 ACM SIGSOFT Symposium on Software Testing and Analysis*, pp. 102–112, March, 1998.

Chan, W., Anderson, R. J., Beame, P., Notkin, D., "Combining constraint solving and symbolic model checking for a class of systems with non-linear constraints," *Computer Aided Verification, 9th International Conference, CAV'97*, June, 1997, pp. 316–327.

Borning, A., Anderson, R. J., and Freeman-Benson, B., "Indigo: a local propagation algorithm for inequality constraints," *Proceedings of the 1996 ACM Symposium on User Interface Software and Technology*, November 1996, pages 129–136. Best Paper Award. (Expanded version: University of Washington Technical Report UW-CSE-96-05-01.)

Anderson, R. J., Beame, P., Burns, S., Chan, W., Modugno, F., Notkin, D., Reese, J., "Model checking large software specifications," *Proceedings of the Fourth ACM SIGSOFT Symposium on the Foundations of Software Engineering*, October, 1996, pp. 156–166. Invited to a special issue of IEEE Transactions on Software Engineering. Submitted for journal publication.

Anderson, R. J., "Tree data structures for N-body simulation," *Proceedings of the 37th Annual Symposium on Foundations of Computer Science*, October, 1996, pp. 224–233. Submitted for journal publication.

Anderson, R. J., "Computer science problems in astrophysical simulation," *Proceedings of the Silver Jubilee Workshop on Computing and Intelligent Systems*, December, 1993, Indian Institute of Science. Tata McGraw-Hill Publishing Company Limited, New Delhi, pp. 48–61.

Anderson, R. J., Setubal, J. C., "A parallel implementation of the push-relabel algorithm for the maximum flow problem," *Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures*, July 1992, pp. 168–177. (Journal version appeared in *Journal of Parallel and Distributed Computing*.)

Anderson, R. J., "Primitives for asynchronous list compression," *Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures*, July 1992, pp. 199–208. (Journal version appeared in *Mathematical Systems Theory*.)

Anderson, R. J., Woll, H., "Wait-free parallel algorithms for the union-find problem," Proceedings of the Twenty Third Annual ACM Symposium on the Theory of Computing, May, 1991, pp. 370–380.

Anderson, R. J., "Parallel algorithms for generating random permutations on a shared memory machine," *Proceedings of the 2nd Annual ACM Symposium on Parallel Algorithms and Architectures*, July, 1990, pp. 95–102.

Anderson, R. J., Beame, P., Brisson, E., "Parallel algorithms for arrangements," *Proceedings of the 2nd Annual ACM Symposium on Parallel Algorithms and Architectures*, July, 1990, pp. 298–306. (Journal version appeared in *Algorithmica*.)

Anderson, R. J., Beame, P., Ruzzo, W. L., "Low overhead parallel schedules for task graphs," *Proceedings of the 2nd Annual ACM Symposium on Parallel Algorithms and Architectures*, July, 1990, pp. 66–75.

Anderson, R. J., Kahan, S., and Schlag, M., "An $O(n \log n)$ algorithm for 1-D tile compaction," *Proceedings of the International Conference on Computer-Aided Design*, Santa Clara, California, November 1989, pp 144–148. (Journal version appeared in *Algorithmica*.)

Almquist, K., Anderson, R. J., Lazowska, E., "The measured performance of parallel dynamic programming implementations," *Proceedings of the 1989 International Conference on Parallel Processing*, Volume 3, pp. 76–79.

Anderson, R. J., Miller, G. L., "Deterministic parallel list ranking," *Proceedings of the 3rd Aegean Workshop on Computing*, July 1988, Springer-Verlag, pp. 81–90. (Journal version appeared in *Algorithmica*.)

Anderson, R. J., Munshi, A. A., Simons, B., "A scheduling problem arising from loop parallelization on MIMD machines," *Proceedings of the 3rd Aegean Workshop on Computing*, July 1988, Springer-Verlag, pp. 124–133. (Journal version appeared in *Parallel Processing Letters*.)

Aggarwal, A., Anderson, R. J., Kao, M-Y., "Parallel depth-first search in general directed graphs." *Proceedings of the Twenty First Annual ACM Symposium on the Theory of Computing*, 1989, pp. 297–308. (Journal version appeared in *SIAM Journal on Computing*.)

Aggarwal, A., Anderson, R. J., "A random NC algorithm for depth first search," *Proceedings of the Nineteenth Annual ACM Symposium on the Theory of Computing*, 1987, pp. 325–334. (Journal version appeared in *Combinatorica*.)

Anderson, R. J., "A parallel algorithm for the maximal path problem," *Proceedings of the Seventeenth Annual ACM Symposium on the Theory of Computing*, 1985, pp. 33–37. (Journal version appeared in *Combinatorica*.)

Articles

Anderson, R. J., Anderson, R., Davis, P., Linnell, N., Prince, C., Razmov, V., and Videon, F., "Classroom Presenter: Enhancing Interactive Education with Digital Ink," IEEE Computer, September 2997, pp. 56-61.

Anderson, R. J. "Beyond PowerPoint: Building a New Classroom Presenter," Syllabus Magazine, June, 2004.

Lubna Razaq
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lubna.razaq@gmail.com; lubna.razaq@itu.edu.pk
www.fintechcenter.pk

Experience

Director, FinTech Research Center **Dec 2016 – Present**
Information Technology University, Lahore

- Research collaborations with Digital Financial Services Research Group at University of Washington, Seattle
- Project management including allocation and management of human resources, project funds and logistics such as participant recruitment, data collection activities
- Provide domain expertise and thought leadership on the Digital Financial Services for all research projects and publications
- Management of the research center including management of DFS research projects in the areas of ***Women's Financial Inclusion, Human Centered Design, HCI, Security, Data Science***
- Lead collaborations with industry players for collaboration on research and translation to industry, lead and manage co-pilots, procuring data for research, conducting workshops, conferences and industry engagement activities

Projects

- Improving digital lending collection strategies through qualitative assessment of User Experience
- Mobile Wallet Iconography for Oral and Innumerate Users in Pakistan (Partner: The Oral Village, Canada)
- JazzCash Guddi Baji Pilot Assessment for Women's World Banking
- Human Centered Design of Digital Rotating and Savings Credit Associations in Pakistan
- Understanding the needs for micro entrepreneur women in Pakistan for DFS design
- Classifier for detection of fraudulent SMS in Digital Financial Services in Pakistan

Consultant **Oct 2015 – Present**
FinSurgents PTE – Singapore, Lahore

Lead Author - Seeding Innovation study for rooting FinTechs in Pakistan for Karandaaz Pakistan

- Seeding Innovation was a study on the Financial Technology ecosystems around the world and Pakistan to propose:
    i. Roadmap for developing the FinTech Ecosystem in Pakistan
    ii. Investment framework for investing into the FinTech startups in Pakistan

Consultant - Bridging the Policy Gaps for Enhancing E-Commerce in Pakistan (Study) for Centre for International Private Enterprise

- Recommendations to formulate consumer protection laws to increase consumer confidence, form an industry association to lobby for favorable taxation policies, create escrow services to promote digital payments and reduce dependence on cash-on-delivery

Consultative White Papers for the State Bank of Pakistan

- Digitizing Payments and Harnessing the potential of FinTechs in Pakistan
- Making Pakistan a cash-lite society
- P2P lending and Digital Payment regulations in China and India
- Approaches towards creating Regulatory FinTech Sandboxes around the globe

Business and Product Development Manager **Sept 2013 – Oct 2015**
Vopium A/S – Copenhagen, Lahore

Product Development Lead – Mobile International Remittance platform

- Defined complete business requirements for app (*End user) a*nd backend (*KYC, payment, settlement, reporting, monitoring, money transfer, fraud prevention modules)*

- Lead user experience definition and Risk based policy design for KYC

Business Development and Partnerships - VoIP and International Remittance

- Successfully completing PRI registration with State Bank of Pakistan and cash out partnership with Telenor Easypaisa
- Negotiated with leading MTOs, banks, international remittance hubs, MNOs for Remittance solution pilot Research, Analysis and Business cases
- Carried out lead generation for strategic partnerships at Mobile World Congress 2014
- Led Huawei CaaS-Vopium platform sharing analysis for Vopium middle ware

Business Development Executive **Mar 2013 - Aug 2013**
Vopium A/S – Copenhagen, Lahore

- Assisted Director Partnerships (business cases, proposals) and carrying out lead generation market research for Europe and Middle East region

Marketing Consultant **Dec 2012 – Mar 2013**
Sudhaar *(Non-Government Organization)*

Education

Lahore University of Management Sciences **2012**
Master's in business administration

University of Engineering and Technology **2008**
BSc Electrical Engineering (Telecom & Electronics)

Certifications

The Fletcher School of Law and Diplomacy, TUFTS University **2017**
Digital Money Certification, Digital Financial Services

Massachusetts Institute of Technology **2016**
FinTech Future Commerce Course

Publications

1. Hamid Mehmood, Tallal Ahmed, **Lubna Razaq**, Shrirang Mare, Maryem Usmani, Richard Anderson, Agha Ali Raza. ***"Towards Digitization of Collaborative Savings Among Low-Income Groups"*** accepted to be published in the proceedings of the 22nd ACM Conference on Computer-Supported Cooperative Work and Social Computing (ACMCSCW) to be held at Austin Texas between November 9th-13th 2019
2. Samia Ibtasam, **Lubna Razaq,** Maryam Ayub, Jennifer Webster, Ishtiaque Ahmed, Richard Anderson ***"My cousin bought the phone for me. I never go to mobile shops": The Role of Family in Women's Technological Inclusion in Islamic Culture"*** accepted to be published in the proceedings of the 22nd ACM Conference on Computer-Supported Cooperative Work and Social Computing (ACMCSCW) to be held at Austin Texas between November 9th-13th 2019
3. Pervaiz, Rai Shah Nawaz, Muhammad Umer Ramzan, Maryem Zafar Usmani, Shrirang Mare, Kurtis Heimerl, Faisal Kamiran, Richard Anderson, **Lubna Razaq** ***"An Assessment of SMS Fraud in Pakistan"*** in the proceedings of the 2nd ACM SIGCAS Conference on Computing and Sustainable Societies (ACM COMPASS 2019), JULY 3 - 5, 2019, Accra, Ghana.
4. Maryam Mustafa, Noor Mazhar, Ayesha Asghar, Maryem Zafar Usmani, **Lubna Razaq**, Richard Anderson. ***"Digital Financial Needs of Micro-entrepreneur Women in Pakistan: Is Mobile Money the Answer?"*** in the International Conference on Human Factors in Computing (CHI). May 4 – 9, 2019, Glasgow, UK.
5. Samia Ibtasam, Hamid Mehmood, **Lubna Razaq**, Jennifer Webster, Sarah Yu, Richard Anderson***, "An Exploration of Smartphone Based Mobile Money Applications in Pakistan",*** in 9th International ICTD Conference, 16 – 19 November 2017, Lahore, Pakistan

6. Samia Ibtasam, **Lubna Razaq**, Haider W. Anwar, Hamid Mehmood, Kushal Shah, Jennifer Webster, Neha Kumar, Richard Anderson. ***"Knowledge, Access and Decision-Making: Women's Financial Inclusion in Pakistan"*** in proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies (ACM COMPASS 2018), San Jose and Menlo Park, CA, USA

7. Hamid Mehmood, **Lubna Razaq**, Jennifer Webster, Amna Batool, Maryam Mustafa, Agha Ali Raza, Richard Anderson. ***"Save My Money: Digitizing Informal Savings in Pakistan"*** In HCI Across Borders Symposium at Conference on Human Factors in Computing Systems. Apr 21-26, 2018, Montreal, Canada (Extended Abstract)

8. Samia Ibtasam, **Lubna Razaq**, Sam Castle, ***"Finding and Bridging the Gender Divide in Financial Inclusion and Financial Services"*** In HCI Across Borders Symposium at Conference on Human Factors in Computing Systems. Apr 21-26, 2018, Montreal, Canada. (Extended Abstract)

9. Qasif Shahid, **Lubna Razaq**. ***"Demonetization for Changing Behavior and Building Platforms",*** published in the Journal of Payments and Strategy, Vol 2 2017. https://finja.pk/blogDetail/3

10. Qasif Shahid, **Lubna Razaq**, Ahsan Mughal, Mahrukh Imtiaz, Myra Piracha, and Omar Shahid. "**SEEDING INNOVATION: A framework for rooting FinTechs in Pakistan**". Technical report, FinSurgents. URL: http://www.karandaaz.com.pk/wp-content/uploads/2017/01/Seeding-Innovation.pdf.

Workshops

Workshop on **Digital Financial Services** at the *9th International Conference for Information Communication Technology for Development in collaboration with DFSRG* (https://fintech2017.cs.washington.edu)

Courses Taught

- Introduction to Digital Financial Services (Winter 2018 & Winter 2019)
- Entrepreneurship and Professional Practices (Spring 2019)
- Research Methods (Spring 2019)

Student Research Advisor

- Learnability of Smartphone based Mobile Money Applications (Masters Computer Science Thesis)
- Improving digital lending collection strategies through algorithmic predictions (Masters Data Science Thesis)
- Digitization of Informal Retail Merchants in Pakistan (Undergraduate Senior Year Project)
- Digitization of Religious and Charity payments in Pakistan (Undergraduate Senior Year Project)
- Maternal Health Financing needs of low-income groups in Pakistan (Masters Thesis)
- Exploration of Money Management needs of middle-income salaried individuals in Urban Pakistan (Undergraduate Senior Year Project)

Tools

- Advanced MS Excel, PowerPoint and Office
- NVivo

Samia Ibtasam (Samia Razaq)

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PROFILE:

Over 10 years of research experience in Computing for Development; 4 years of teaching experience; Ph.D. Student in CSE, University of Washington (ICTD Group); Master's in Computer Science and Undergraduate *summa cum laude* in Computer Science

RESEARCH OBJECTIVE:

Working for Technologies for Emerging Markets with experience in design, and implementation of speech-based interfaces for low-literate users, designing Human-Centred products, conducting HCI user research. Expertise in voice-based systems, visual and textual interfaces. Researcher, Practitioner, and Instructor.

AWARDS:

- **Google Women TechMaker Scholar 2019 (previously called Google Anita B Scholarship)**
  Awarded the Google Women TechMaker Scholarship for 2019-2020 (North America Scholarship)
- **Marilyn Fries Endowed Regental Fellowship – 2016-2017**
  Awarded the Fries Fellowship for 2016-2017 for the 1st year of my Ph.D. at Paul G. Allen School of Computer Science and Engineering, University of Washington.
- **Author, Technical Product Lead, Research Grant – "Har Zindagi": funding by DFID of GBP 250,000 for 2 years**
  Har Zindagi meaning 'every life' in Urdu is a project to redesign the Immunization cards, information system, and management in two districts of Punjab to increase retention and coverage; using machine-readable cards and uniquely identifying each baby throughout the province. 'Every life matters' is the inspiration behind the name.
- **Acumen Regional Fellow for Pakistan – 2015**
  Selected as Regional Fellow from Pakistan by Acumen Fund as one of the future leaders who can change how the world tackles poverty and change agents for tomorrow. The fellowship is a one year five session to program to impart the skills and thinking needed for long-term change at scale.
- **Co-author and Jr. Product Lead, Research grant – "Hello Rozgar": funding by GIZ of USD 1.1 Million for 2 years**
  Hello-Rozgar is speech-based service to expand the information dissemination to informal blue-collar job seekers and job providers, training seekers in blue-collar jobs and training providers.
- **Best Engineering Project (Robotics) year 2009**
  Won the best engineering project award for building a dual control (manual and automatic) exploration robot.
- **Highest CGPA Summa cum Laude**
  Maintained the CGPA of 4 for consecutive 6 semesters and maintained the highest CGPA of 3.92/4.00 in my batch and highest to be maintained by any Undergraduate in Computer Science program in its 10 years' history.

PUBLICATIONS:

1. **"My cousin bought the phone for me. I never go to mobile shops.": The Role of Family in Women's Technological Inclusion in Islamic Culture** *Accepted in ACM Conference on Computer-Supported Cooperative Work – CSCW 2019, Austin, TX, USA*. **Samia Ibtasam,** Lubna Razaq, Maryam Ayub, Jennifer Webster, Syed Ishtiaque Ahmed, Richard Anderson.

2. **Knowledge, Access, and Decision-Making: Women's Financial Inclusion in Pakistan.** *In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies – COMPASS '18, Menlo Park and, San Jose, CA, USA.* **Samia Ibtasam**, Lubna Razaq, Haider Anwar, Hamid Mehmood, Kushal Shah, Jennifer Webster, Neha Kumar, and Richard Anderson**.**

3. **A Qualitative Exploration of Mobile Money in Ghana.** *In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies – COMPASS '18, Menlo Park and, San Jose, CA, USA.* Sarah Yu and **Samia Ibtasam.**

4. **Scaling Mobile Applications Using Interactive-Device User Training.** *In Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies – COMPASS '18, Menlo Park and, San Jose, CA, USA.* Hamid Mehmood, Sameea Ashraf, Ali Imran, and **Samia Ibtasam.**

5. **Computer Security and Privacy for Refugees in the United States**. *In Proceedings of 2018 IEEE Symposium on Security and Privacy (SP), San Francisco, CA, USA.* Lucy Simko, Ada Lerner**, Samia Ibtasam,** Franziska Roesner, and Tadayoshi Kohno.

6. **An Exploration of Smartphone-Based Mobile Money Applications in Pakistan**. *In the Proceedings of 9th International Conference on Information and Communication Technologies and Development - ICTD 2017, Lahore, Pakistan.* **Samia Ibtasam**, Hamid Mehmood, Lubna Razaq, Jennifer Webster, Sarah Yu, and Richard Anderson.

7. **Maternal Complications: Nuances in Mobile Interventions**. *In the Proceedings of 9th International Conference on Information and Communication Technologies and Development - ICTD 2017, Lahore, Pakistan.* Amna Batool, **Samia Razaq**, Maham Javaid, Beenish Fatimah, and Kentaro Toyama**.**

8. **Scrolling, Navigation, and Selection: How New Smartphone Users Discover it**. *In the Proceedings of 9th International Conference on Information and Communication Technologies and Development - ICTD 2017, Lahore, Pakistan.* Tallal Ahmad, Amna Batool, Muhammad Salman Khalid, and **Samia Ibtasam**.
9. **Iterative Design of an Immunization Information System in Pakistan.** *In the Proceedings of the 7th Annual Symposium on Computing for Development - DEV 2016, Nairobi, Kenya.* **Samia Razaq**, Amna Batool, Umair Ali, Muhammad Salman, Umar Saif, and Mustafa Naseem**.**
10. **Real-time Automated Surveys among Low-literate Masses using Voice-based Telephone Services** *In the Proceedings of the 7th Annual Symposium on Computing for Development - DEV 2016, Nairobi, Kenya.* Agha Ali Raza, **Samia Razaq,** Amna Raja, Rizwan Naru, Ali Gibran, Abdullah Sabri, Haroon Niaz, Muhammad Bilal Saleem, Umar Saif.
11. **Child Immunization Health Card Redesign: An Iterative, User-Centered Approach.** *In Proceedings of the 8th International Conference on Information and Communication Technologies and Development, (ICTD 2016), Ann Arbor, MI.* Amna Batool, Umair Ali, **Samia Razaq**, and Mustafa Naseem.
12. **Bridging Educational Gaps through Volunteers; Implementation, Problems and Their Solutions.** *In Proceedings of the 8th International Conference on Information and Communication Technologies and Development (ICTD 2016),* Ann Arbor, MI. Tabish Manzoor, Waleed Iqbal, Eisha Tir Razia, and **Samia Razaq**.
13. **An Investigation into ICT-Addressable Causes of Maternal Mortality in Pakistan.** In *Proceedings of the 2015 Annual Symposium on Computing for Development* (DEV 2015), London, UK. Amna Batool, **Samia Razaq**, and Kentaro Toyama.
14. **Understanding the Needs of Pakistani Farmers and the Prospects of an ICT Intervention.** In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*, (CHI 2015). Omar Mubin, Joshua Tubb, Mauricio Novoa, Mustafa Naseem, and **Samia Razaq**.
15. **Job opportunities through entertainment: Virally spread speech-based services for low-literate users**. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, (CHI 2013), Paris, France. **[Best Paper Award].** Agha Ali Raza, Farhan Ul Haq, Zain Tariq, Mansoor Pervaiz, **Samia Razaq**, Umar Saif, and Roni Rosenfeld.
16. **Viral entertainment as a vehicle for disseminating speech-based services to low-literate users.** In *Proceedings of the 5th International Conference on Information and Communication Technologies and Development* (ICTD 2013). Raza, Agha Ali, Mansoor Pervaiz, Christina Milo, **Samia Razaq,** Guy Alster, Jahanzeb Sherwani, Umar Saif, and Roni Rosenfeld.

- **Master's Thesis:** Finding Key Ingredients & Speech Interfaces for the adoption of Voice-Based Telephone Services in low literate users
- **Undergraduate Senior Year Project:** Dual control exploration and Rescue Robot with obstacle detection, collision avoidance, and finding the shortest path after scanning a room in the shortest time and battery consumption

SKILLS:

User Research: Observational studies, questionnaire, focus groups, usability testing, A/B testing, fieldwork, surveys, qualitative user interviews; Ethnography, Design Thinking, affinity mapping, personas & scenarios, participant observation, stakeholder maps, participatory research, role-playing, wizard of Oz, storyboards, Human-Centered Design.
Programming: Python, C/C++ ,C# (*Advanced*), LUA, Ruby, GW/Visual Basic, Java (*Intermediate*), Php, Assembly (*Beginner*)
Databases: Microsoft SQL Server, MySQL, Oracle
Web Frameworks: Ruby on Rails (using Rails 3), Basic (HTML & Aspx.net with C#), Web Testing (WebTest & JMeter)
Telephony Software & Programming: Tropo by Voxeo, Asterisk, and FreeSwitch
Systems Programming: Linux Kernel Development and Datacenter Server installation, running and maintenance
Hardware Programming: Programming microcontrollers, Motors (DC, Servo, etc.), Sensors, Wireless Modules
Technical Writing: Quotations, RFQs, User Manuals, Applications, Letters, Affidavits, Agreements etc.
Prototyping: paper, medium and high-fidelity prototyping, sketching, wireframes

WORK EXPERIENCE:

ICTD Lab, University of Washington, Seattle

Graduate Research Assistant **Sept 2016 till date**

- Finding gendered barriers and opportunities for financial inclusion in Pakistan
- Working on use of technology to enable users to self-learnable interactions
- Designing the framework for gender's impact on technology knowledge, access, and usage for women
- Creating tools and application to improve gendered interactions with technology
- Writing scholarly articles including research papers, articles, and proposals

Teaching Assistant

- **CSE490C - Information and Communication Technologies for Development** **Sept 2018 to Dec 2018**
- **CSE331 – Software Design and Implementation** **April 2019 to June 2019**
- **TECHIN540 – GIX MSTI Integrated Launch Studio 1** **June 2019 to Aug 2019**
- **TECHIN542 - GIX MSTI Integrated Launch Studio 2** **Sept 2019 till Date**

Creating and grading instruments (homework, programming assignments)
Designing and leading tutorials and lab sessions
Supporting GIX teams in Launch projects – ideating, prototyping, research instruments

Information Technology University

Founding Co-Director, Innovations for Poverty Alleviation (Research) Lab - IPAL **Oct 2013 to Aug 2016**

- Writing and managing research grants for the lab;
- Technically leading the research projects for the lab;
- Training Computer Science Engineers to come up with technological solutions for the bottom of the pyramid;
- Leading a team of Research Assistants (RAs) including 10 students and 30 projects based to conduct Research on ICT for Development (ICTD);
- Forming the research thesis for the lab & recruitment of personnel and procurement of equipment for labs;

Product Manager, Technical Lead, Author Research grant – "Har Zindagi": funded by DFID (GBP 250,000)

- Recruited technical team members including developers, designers, QA and researchers for the project
- Conducted field visits and stakeholder interviews to redesign the Immunization cards to machine-readable cards
- Ideated, and led the implementation of the Immunization information system and vaccinator mobile application
- Led the technical design of the Android-based mobile application to issue, scan, search and update card entries
- Led the design for data-driven dashboards to show retention and coverage to district officials
- Published research papers on the outcomes of the new card, mobile application, and system

Jr. Product Manager, Co-Technical Lead, Co-author Research grant – "Hello Rozgar": funded by GIZ ($1.1 Million)

- Recruited technical and administrative team for the project
- Designed the system design, call tree design and server architecture
- Ideated and designed the dashboard for corporate firms to list their job listings and system portal for the IVR postings
- Created and presented quarterly technical implementation reports for the funding organization

Faculty Member, Department of Computer Science **Jan 2013 to Aug 2016**

- Designing curriculum & leading the courses teaching about Global Development and Design for Development; Design Thinking & Human Centred Design (HCD) using IDEO's HCD toolkit and UCD guidelines; Qualitative/Quantitative research methods
- Mentorship program & weekly modules to discuss locally relevant ICTD problems
- Mentoring Women students - being the only woman faculty member in the CS Department
- Supervised 7 Masters of Computer Science students in their master's research dissertation
- Member Admission Committee for the year 2012, 2013, 2014 and 2015;

Punjab Information Technology Board (PITB)

Project Coordinator, e-Governance **May 2012 to Dec 2012**

- Liaise with different government departments; Research for the government technology initiatives;
- Innovation Punjab Project: Policy meetings and policy draft to highlight innovation in Pakistan and to create the environment for more innovations; Working in collaboration with Google team (project supporter); Discussing areas of concern and possible interventions; Arranging two Working groups for public feedback on the drafts; Managing event highlighting Innovation Heroes & announcing policy draft

Lahore University of Management Sciences (LUMS)

Graduate Research Assistant –

Neighbourhood for Emerging World Technologists (NEWT) **Dec 2010 to May 2012**

- Worked on Research projects from ICTD & Language technologies
- Worked on the IVR design, Development of IVR systems using Tropo and FreeSwitch, Scripts and Prompts design and translations, Conducting Focus Groups, Transcribing of Data and Analysis of Audios.
- Data analysis and co-author on Research papers with the team.
- Local deployment, service and maintaince of servers hosted in Pakistan
- Polly - Viral Entertainment Speech Based Interface for Low literate users - a telephone-based system for reaching low-literate populations via a simple voice-based game, then providing them with development-related voice-based services. The project was done in collaboration with the Language Technologies Institute (LTI) at CMU.

COURSES TAUGHT:

- D-Lab 1: Lab for Design, Development, and Dissemination (Spring 2013)
- Design Thinking for Development (Fall 2013)
- Global Development (Fall 2013)
- Product Design for Development (Fall 2014)
- Technology for Development (Fall 2015)
- Design for Global Development using HCD (Spring 2016)

Topics at a Glance:

Global Development |Design for Development| Technology for Development| Human Centred Design| Qualitative and Quantitative Research | Fieldwork methods| Stakeholder Analysis| Ideation| Empathizing| Prototyping| Health| Agriculture| Microfinance| Education| | Human-Computer Interaction| Usability |Beginners' Mind| Problem Solving Methods| ICTD| Design Thinking | Personas & Scenarios | Product Development | Design for Modularity, Scale & Failure

ADVISED RESEARCH PROJECTS:

- **Technology to reduce Maternal Mortality in Pakistan (co-supervisor: Kentaro Toyama)**
  Learning about maternal mortality, its reasons in Pakistan, finding ICT addressable causes, designing information system customized to females' need in collaboration with a public hospital 'Lady Willingdon Hospital' serving low-income communities in Lahore.
- **Android Application Development of the IMCI Protocol (co-supervisor: Kentaro Toyama)**
  Based upon learnings from e-IMCI research, we developed an Android IMCI application to test the adherence and usefulness of such an application by doctors vs. paper-based IMCI protocol
- **Identifying Delayed Children by Episodic Memory Test (co-supervisor: Usman Hamdani, M.D.)**
  One of the Episodic Memory tests (under Cognitive Development tests by NIH) was developed into an Android-based game where children (3 to 6) were asked to arrange images in a previously shown sequence, testing their memory.
- **Designing a text-dependent Speaker Identification system in Urdu (Supervisor: Suleman Mazhar)**
  Designing a text-dependent speaker identification (1-to-n matching) to identify speakers while speaking Urdu. The project resulted in sub-optimal results using multiple classifiers.
- **Information Messages for Infant's care to mothers (co-supervisors: Haroon Hamid, M.D.; Mubeen Nazar M.D.; Khalida Amir M.D)**
  Following the uptake of our maternal information system (prenatal care), mothers requested information for post-natal care. A two-way messaging system was designed to inform about infant health, nutrition, care, and warning signs.

EDUCATION WITH COURSES TAKEN:

Ph.D. in Computer Science – Current CGPA: 3.93/4.00 **September 2016 till date**
University of Washington, Seattle, WA, USA

- Introduction to Computer Systems Research
- Artificial Intelligence
- Advanced Topics in HCI
- Software Engineering
- Computer Security and Privacy
- Technology and Gender
- Research Methods

Masters in Computer Science – CGPA: 3.5/4.00 **August 2010 – May 2012**
Lahore University of Management Science (LUMS), School of Science & Engineering (SSE), Lahore, Pakistan

Advanced Operating Systems	Pervasive Computing	Research Topics in Systems
Advanced Algorithms (Graduate)	Operations Research	Distributed Software Systems
Computer Architecture	Intelligent Computing	Development (DSSD)

Bachelors in Computer Science (Honors) – CGPA: 3.92/4.00 (*summa cum laude*) **September 2006 to June 2010**
Kinnaird College for Women, Lahore, Pakistan

Computer Science

Web Engineering	Programming Fundamentals	Software Development Tools
Data Structures	Object Oriented Programming	and Processes
Analysis of Algorithms	Digital Logic Design	Network Security
Databases	Software Engineering	Artificial Intelligence
Operating Systems	Discrete Mathematics	Software Quality and Testing
Computer Architecture	Computer Graphics	Theory of Automata

Business Studies – Major 2

Financial Accounting	Human Resource Management	Accounting & Finance
Macro Economics	Principles of Management	Principles of Marketing
Micro-Economics		

PRESS

- Closing the Digital Divide – How one Pakistani Woman is tackling Poverty
- Tackling Poverty with Technology – Samia Razaq
- Design for Development workshop arranged by IPAL at ITU
- Silly Phone game provides Job opportunities
- ELAN – Electronic Cash Transfer Learning Action Network – April 2018 – Ask The Experts
- Samia Ibtasam from UW CSE receives Google Techmaker Scholarship 2019

INVITED TALKS:

- Pakistani Women Entrepreneurs and Financial Inclusion: 3rd Digital Financial Services (DFS) Workshop at UW, Seattle
- Panel on Gender and Financial Inclusion: 2nd Digital Financial Services (DFS) Workshop at ICTD 2017 Pakistan
- Panel on Gender and Financial Inclusion: 1st Digital Financial Services (DFS) Workshop at UW, Seattle
- Maternal and Child Health Projects in Pakistan, Change Seminar, University of Washington,
- Guest lecture: Developing Countries & ICTD at University of Michigan, Ann Arbor, MI
- Acumen Fellowship Workshop – Why you can be the next Acumen fellow?
- Panelist, ICTs for Good Governance: E-Health Panel on use of technology for health initiatives
- Gender Empowerment on the Campus: Women's Day Session

SERVICES FOR THE FIELD:

- **Co-Founder IPAL (Innovations for Poverty Alleviation Lab):** Established a research lab in the field of ICT4D
- Advised 7 students for their Master's dissertations in ICT4D
- **Reviewer:** for ACM DEV 2015 and ACM DEV 2016, ICTD 2017 (Short papers), CHI 2019, HCI Across Borders 2019, CSCW2019, CHI 2020
- Organizer Change Seminar, Paul G. Allen School of Computer Science & Engineering, University of Washington
- Participant, Conference on "Policy and Sustainability of Local Language Computing in Developing Asia" in conjunction with Regional Training on "Localization of Mobile Platform"
- Organizer, International Design and Development Summit (IDDS), Lahore; Communications & Design Chair, Compass'19

REFERENCES:

Richard Anderson, Ph.D.
Professor, University of Washington
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anderson@cs.washington.edu

Kurtis Heimerl, Ph.D.
Assistant Professor, University of Washington
+1.206.659.5878
kheimerl@cs.washington.edu

Isaac Holeman

Curriculum Vitae

iholeman@uw.edu
http://isaacholeman.org
+1 (206) 407-9384

June 2019

KEY POSITIONS

Clinical Assistant Professor of Global Health, **The University of Washington**. 2019 to present.

Co-founder and Chief Research Officer, **Medic Mobile**. 2008 to present.

EDUCATION

PhD **The University of Cambridge**, Gates Cambridge Scholar, interdisciplinary program in Information Systems, Strategy, and Organization Studies (2017). Dissertation title: *Sensemaking and Human-Centered Design: A Practice Perspective*. https://doi.org/10.17863/CAM.13738

MPhil **The University of Cambridge**, Department of Sociology (2013).

BA **Lewis & Clark College**, Liberal Arts, departmental honors in Biochemistry & Molecular Biology (2009).

HONORS, FELLOWSHIPS, AND AWARDS

Honors

2018 Best note award for, *The Case for Community Health Innovation Networks*, at COMPASS '18, the ACM Symposium on Computing and Sustainable Societies.

2015 Medic Mobile receives $1.25 million USD Skoll Award at the annual Skoll World Forum on Social Entrepreneurship.

2015 Best student paper award for *Coordinating the Vaccine Cold Chain: Technology Design Practices and Global Health Care Delivery*, at European Group for Organization Studies annual conference.

2014 Young Alum of the Year, Lewis & Clark College.

2013 Listed among top 30 social entrepreneurs under 30 by Forbes Magazine for the second time.

2012 Tech & Innovation delegate to the Academy of Achievement.

2012 Inducted to Better World By Design Hall of Fame.

2012 Listed among top 30 social entrepreneurs under 30 by Forbes Magazine.

2011 Named mHealth innovator of the year by Rockefeller Foundation and mHealth Alliance.

2008 Phi Beta Kappa, one of four juniors at Lewis & Clark College elected that year.

Fellowships

2014 Fellow, Global Health Academy, University of Edinburgh.

2013 Gates Cambridge Scholar, ($152k) for PhD study (2013-2017) at the University of Cambridge. 1 of 90 awarded from over 3,000 applicants.

2010 Echoing Green Fellowship, ($90k) for social entrepreneurship. 1 of 25 awarded from over 3,500 applicants.

2009 Compton Mentor Fellow, ($36k) one-year stipend supports graduating seniors at select liberal arts colleges who show promise of creative and compassionate achievement.

2006 Pamplin Society of Fellows, (full tuition scholarship) awarded to seven students annually, this is the highest honor bestowed by Lewis & Clark College on its students.

Grants Awarded

As a co-founder, board member, and research lead at the non-profit organization Medic Mobile, I share responsibility for managing a $7.9 million USD budget in 2019. While the following grants are driven by a research agenda, the organization's work as a whole is closely tied to my research strategy. A comprehensive list of major funders is available here: http://medicmobile.org/funders

2017 Launching a Community Health Innovation Network in Kenya. $4,781,021 USD over 36 months from The Bill and Melinda Gates Foundation under grant number OPP1181202.

2017 Community Health Care Worker Tools and System Innovation. $1,275, 295 USD over 24 months from The Bill and Melinda Gates Foundation under grant number OPP1183755.

2017 Reducing Provider Workload While Preserving Patient Safety: A 2-Way Texting Intervention in Zimbabwe's Voluntary Medical Male Circumcision Program. Funded by National Institutes of Health PAR-16-292 Mobile Health: Technology and Outcomes in Low and Middle Income Countries (R21). As co-investigator, I work with PI Caryl Feldacker, University of Washington Department of Global Health.

2015 Project Grant, ($12,680), from the United States Agency for International Development, Leadership, Management and Governance Project to study digital technology for good governance of health systems in low-income countries, March 2015 – March 2016.

PUBLICATIONS

Refereed Journal Articles

2019 I. Holeman and D. Kane. Human-Centered Design for Global Health Equity. *Information Technology for Development*, forthcoming.

2018 C. Whidden, K. Kayentao, J. Liu, S. Lee, Y. Keita, D. Daikité, A. Keita, S. Diarra, J. Edwards, A. Yembrick, I. Holeman, S. Samaké, B. Plea, M. Coumaré, and A. Johnson. Improving Community Health Worker Performance by Using a Personalized Feedback Dashboard for Supervision: A Randomized Controlled Trial. *Journal of Global Health* 8, 2, 1-13. https://doi.org/10.7189/jogh.08.020418

2018 I. Holeman. 2018. Room for Silence: Ebola Research, Pluralism and the Pragmatic Study of Sociomaterial Practices. *Computer Supported Cooperative Work (CSCW)* 27, 3, 389-425. https://doi.org/10.1007/s10606-018-9329-x

2017 I. Holeman, and M Barrett. 2017. Insights from an ICT4D Initiative in Kenya's Immunization Program: Designing for the Emergence of Sociomaterial Practices. *Journal of the Association for Information Systems* 18, 12, 900-930. https://aisel.aisnet.org/jais/vol18/iss12/2/

2017 C. Oliver-Williams, E. Brown, S. Devereux, C. Fairhead, and I. Holeman. 2017. Using mobile phones to improve vaccination uptake in 21 low- and middle-income countries: A systematic review. JMIR mHealth and uHealth 5, 10, e148. https://doi.org/10.2196/mhealth.7792

2016 I. Holeman, T.P. Cookson, and C. Pagliari. 2016. Digital technology for health sector governance in low and middle income countries: a scoping review. *Journal of Global Health* 6, 2 (Dec. 2016), 1–11. https://doi.org/10.7189/jogh.06.020408

2014 I. Holeman, J. Evans, D. Kane, L. Grant, C. Pagliari, and D. Weller. 2014. Mobile health for cancer in low to middle income countries: priorities for research and development. *European Journal of Cancer Care* 23, 6 (Oct. 2014), 750-756. https://doi.org/10.1111/ecc.12250

2013 N. Mahmud, I. Holeman, K. Puk, R. Lam, and D. Lee. 2013. The Cell Phone Recycling Problem/Solution. *Journal of Environmental Health* 76, 6 (2013), 140–144.

2010 I. Holeman and J. Nesbit. 2010. mHealth Basics and Human Scalability. *Harvard Global Health Review* 2, 1 (2010), 40–43.

Refereed Conference Proceedings

2019 F. Okeke, L. Nene, A. Muthee, S. Odindo, D. Kane, I. Holeman, N. Dell. Opportunities and Challenges in Connecting Care Recipients to the Community Health Feedback Loop. In Proceedings of The Tenth International Conference on Information and Communication Technologies and Development (ICTD '19). https://doi.org/10.1145/3287098.3287111

2018 I. Holeman, A. Johnson, K. Kayentao, Y. Keita, S. Odindo, and C. Whidden. The Case for Community Health Innovation Networks. In *Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies* (COMPASS '18). https://doi.org/10.1145/3209811.3212705

2017 I. Holeman, M. Molapo, I. Medhi Thies, F. Ssozi, M. Densmore. Co-Design Across Borders. In *the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (CHI '17). https://doi.org/10.1145/3027063.3049288

2016 I. Holeman et al. 2016. Design and Implementation of an Open Source 'Thin SIM' System for Collecting Data & Supporting Global Health Care. In *Proceedings of the 7th ACM Symposium on Computing for Development* (ACM DEV '16). ACM Press, New York, NY, 1–10. https://doi.org/10.1145/3001913.3001923

Articles under review

M. deRond, I. Holeman, and J. Howard-Grenville. How to Not Get Killed on the Amazon: Sensemaking in the Flesh (revise & resubmit).

N. Karusala, I. Holeman, and R. Anderson. The Artful Integration of Digital Payment into Public Health Organizations in Rural Kenya (submitted).

Manuscripts in Preparation

I. Holeman, D. Kane, M. Abbyad, J. Nesbit. Design and Implementation of an Open Source Software Toolkit for Community Health (in preparation).

I. Holeman. Precision Community Health: A Conceptual Framework (in preparation).

Technical Reports and Public Commentary

2018 M. Ballard, M. Bonds, J. Burey, H.S.F. Dini, J. Foth, R. Furth, K. Fiori, I. Holeman, T. Jacobs, A. Johnson, N. Kureshy, J. Lyons, S. Malaba, D, Palazuelos, M. Raghavan, A. Rogers, R. Schwarz, J. Zambrun. CHW AIM: Updated Program Functionality Matrix for Optimizing Community Health Programs. https://doi.org/10.13140/RG.2.2.27361.76644

2018 How Living Goods and Medic Mobile integrated the EquityTool into a mobile application to measure and improve health service delivery. http://bit.ly/2RQbCJ0

2018 Overview of Research at Medic Mobile. Feb. 1st. https://medicmobile.org/research-impact-reports

2016 Is the mHealth Industry Facing a Skills Shortage? An edited interview in the Journal of mHealth. July 25. http://bit.ly/2gNPT2a

2016 Tech Talk: The King's Student Whose Apps are Revolutionising Medical Care in Hard-To-Reach Communities. An edited interview in King's Parade, the magazine for members and friends of King's College, Cambridge. Summer 2016. http://bit.ly/2fVPgiV

2016 Transforming Delivery: Learning the Fundamentals of mHealth Intervention. An edited interview in the Journal of mHealth. May 10. http://bit.ly/2gxgzUu

2016 Isaac Holeman, Tara Cookson, Claudia Pagliari. 2016. Digital Technology for Health Sector Governance: Key Findings from a Scoping Review. A Technical Report for USAID's Leadership, Management and Governance Project. Washington D.C., USA. http://bit.ly/2gxnKfb

2014 Preferential Software for the Poor. University of Edinburgh, Global Health Academy. March 24. http://bit.ly/1MEwW8u

2014 Don't Start with Technology, Start with People. A podcast with Cambridge JBS Insights. http://bit.ly/1xiz6EW

2012 Hacking for Health: Working with Technology to Improve Healthcare in Malawi. In National Geographic Online's Digital Diversity series. June 20. http://bit.ly/1Nw60dv

INVITED TALKS

2018 Research at Medic Mobile: Reflections on a Decade of Open Source Digital Health Projects, and a Scientific Agenda for the Next Decade. For the *Crucible Research Network* annual meeting, Ifanadiana, Madagascar, May 13th.

2018 Medic Mobile's Open Source Health Equity Analytics: A Case Study in Human-Centered Design. Invited Speaker and Panelist for the annual *Unite for Sight Global Health Innovation Conference*, New Haven, April 14th.

2018 The Path to Scale for Precision Community Health: Key Technologies, Design Opportunities, and Implementation Insights from Leading Community Health Programs. For the Maternal and Child Health Unit of *The Bill and Melinda Gates Foundation*, Seattle, March 6th.

2017 Designing Human-Centered Beneficiary Feedback Systems for Community Health: Technical, Implementation and Ethical Challenges. For the mHealth Global research group, *The University of Washington*, Seattle, Dec. 8th.

2017 Designing an Internet of Things Device to Monitor Vaccine Storage Temperatures in Kenya: A Case Study in Human-Centered Design for Global Health Equity. Change Seminar, *The University of Washington*, Seattle, February 21st.

2016 Digital Tools for Social Good. Lecture followed by design workshop at the *10th Annual GlobeMed Summit*. Chicago, April 2.

2015 Redesigning Global Health: Looking Beyond Human Error. *TEDxThessaloniki*. http://bit.ly/1IaMMTz. Thessaloniki, Greece, May 23.

2015 UX and Systems Thinking: Let's Stop Blaming the Victim. *ThoughtWorks* UX Seminar. London, May 15.

2015 Innovation as a Strategy for Global Health. Keynote for the annual Impact Conference, hosted by the *Huston Global Health Collaborative*. Huston, March 20.

2015 Human-Centered Design & Global Health Equity. Lecture for *Catalyst, the University of Cambridge's Annual Social Enterprise Conference*. Cambridge, UK, Jan. 31.

2014 Hacking for Global Health Equity. Opening keynote for a hackathon hosted by *Digital Health Oxford*, University of Oxford. Oxford, UK, Nov. 15.

2014 A Designer's Process for Reshaping Medical Culture. Keynote for annual *DAPS International Summit on Quality and Safety*. Nottingham, UK, Nov. 14.

2014 Social Entrepreneurship & Innovation at the Edge. Keynote for *CLF Labs* launch event, Singapore. Oct. 4.

2014 A Phone in the Hand of Every Health Worker. *TEDxBerlin*. http://bit.ly/1mzlh3z. Sept. 6.

2014 Global Health, Design Thinking & Social Justice. *TEDxCambridge University*. http://bit.ly/1lEFqhO. March 8.

2014 Digital Innovation & Social Entrepreneurship. Outstanding Young Alum Lecture, *Lewis & Clark College*. Portland, Feb. 21.

2013 mHealth & Design Thinking: Medic Mobile's Story. Global eHealth Seminar Series, *The University of Edinburgh*. Edinburgh, Nov. 19.

CONFERENCE ACTIVITY

2017 Working Paper Presentation: Ranju Sharma, Isaac Holeman. Designing for coordination: Lessons from the scale-up of a mobile messaging initiative with female volunteer health workers in rural Nepal. For the HCI Across Borders symposium. In *the 2017 CHI Conference on Human Factors in Computing Systems* (CHI '17).

2017 Working Paper Presentation: Isaac Holeman. Room for Silence: Pluralism, Finitude and the Pragmatic Study of Sociomaterial Practices. For the workshop, Theory Transfers? Social Theory and CSCW Research. In *the 20th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (CSCW '17).

2016 Panel Discussion: Research, Practice and Entrepreneurship in ICT4D. The 7th ACM

Symposium on Computing for Development (ACM DEV '16). Nairobi, Nov 18-20.

2016 Workshop Facilitation: Design for Social Innovation, an Introduction to the Community of Practice. Annual Echoing Green conference on social entrepreneurship. Atlanta, Oct 5.

2016 Panel Discussion: Can Social Finance Meet Social Need? The Gates Cambridge Scholar's Biennial Event. Cambridge, UK, July 16.

2015 Workshop Facilitation: Human-Centered Design: Decoration Station or Strategic Priority? Annual Echoing Green conference on social entrepreneurship. Johannesburg, Nov 5.

2015 Panel Discussion: Enhancing Society Through Social Entrepreneurship. The Council of Independent Colleges Symposium on the Liberal Arts in Action. Washington D.C., Sept. 17.

2015 Panel Discussion: Chasing Currents on the Amazon: Discussing Insider-Outsider Approaches to Video Ethnography. 75th Annual Meeting of the Academy of Management. Vancouver, Canada, Aug. 7-11.

2015 Working Paper Presentation: Coordinating the Vaccine Cold Chain: Technology Design Practices and Global Health Care Delivery. The 33rd Colloquium of the European Group for Organization Studies. Athens, July 2-4.

2015 Working Paper Presentation: Chasing Currents: Organizing Around Uncertainty. Seventh International Symposium on Process Organization Studies. Kos, Greece, June 24-27.

2015 Workshop Facilitation: The Global mHypertension Workshop, convening leadership from the World Health Organization, the International Telecommunications Union and industry partners at the University of Oxford. Oxford, UK, Jan. 12-14.

2014 Panel Discussion: Reconceptualising Profit. Global Scholars Symposium, University of Oxford. Oxford, UK, May 17.

2014 Working Paper Presentation: Theories of Change and the Scholarly Imaginary: Design Researchers and Public Intellectuals. The 9th Annual Symposium on Ethnographic Research in the Social and Management Sciences. Ipswich, UK, Aug. 27-29.

TEACHING EXPERIENCE

The University of Washington

Navigating Design in Organizational Contexts, HCD&E 503 (Winter 2019). Support lecturer with professor Beth Kolko. This course addresses how design functions as one element of solution-building within an organization. We use healthcare as our topic of inquiry, with time split between considering design innovations in the context of US healthcare, and in the context of Global Health.

The University of Edinburgh

mHealth in High and Low Resource Settings (Spring 2015, 2016, 2017, 2018). Lead instructor for a 5 week course (10 weeks in 2015-2016) offered online as part of an MSc in Global eHealth. Developed curriculum and reading assignments, facilitated course discussions, graded written assignments. 2016 teaching evaluations: 100% of students 'strongly agreed' that it was intellectually stimulating and 100% 'agreed' or 'strongly agreed' that they were satisfied with overall quality. 2018 teaching evaluations: 100% of students 'definitely agreed' that it was intellectually challenging and 100% 'definitely agreed' or 'mostly agreed' that they were satisfied with the overall quality of the course.

The University of Cambridge

Innovation in a Digital Age (2015). This course was the introduction to information systems for the management studies tripos (a one year masters program for Cambridge BA graduates). Delivered lecture on social innovation, provided three rounds of essay supervision to four groups of students in Cambridge's traditional small-group tutorial format.

A Crash Course in Human-Centered Design (2015). A full-day workshop for the Gates Cambridge Scholarship's Learning for Purpose program.

Global Public Health (Spring 2013, Spring 2014, Spring 2015). Delivered lecture for masters in public health students on global health technologies and human-centered design.

UNICEF Senior Leadership Development Programme (Summer 2013, Summer 2014). Annual lecture on global health and human-centered design for executive education short course.

Service Design and Innovation (Spring, 2013). Lecture on design for social innovation for an MBA course.

Sketches as Field Notes, Sketches as Prototypes (Summer 2014). A lecture & hands-on workshop for the Cambridge Development Initiative.

The Institute for Technology and Social Change

TC309: Mobile Phones for Public Health (Winter 2012). Wrote a human-centered design case study, led sketching & prototyping exercise and facilitated course discussions for a four-week course.

UNIVERSITY SERVICE

External Officer. Gates Cambridge Scholars Council (2013-2014). Elected position.

Founding member of the organizing committee. Learning for Purpose, University of Cambridge

(2013-15). The program is now foundational to the Gates Cambridge Scholarship.

Vice-Chancellors Circle. Speaking at a private fundraising event with the University of Cambridge's largest donors.

Social Innovation and the JBS PhD. A private presentation for one of the Cambridge Judge Business School's largest donors.

LANGUAGES

English (fluent)

Spanish (literate and conversational)

Dutch (literate and conversational)

PROFESSIONAL AFFILIATIONS

Association for Computing Machinery (2016-)

Royal Society of Arts, Manufactures and Commerce (2015-)

REFERENCES

Michael Barrett
Cambridge Judge Business School, University of Cambridge
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e-mail: m.barrett@jbs.cam.ac.uk

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Cambridge Judge Business School, University of Cambridge
Trumpington Street, Cambridge, UK, CB2 1AG
e-mail: mejd3@cam.ac.uk

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Information and Computer Science, Cornell Tech
2 West Loop Road, New York, NY, 10044
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Richard Anderson
Paul G. Allen School of Computer Science & Engineering, University of Washington
185 E Stevens Way NE, Seattle, WA 98195
e-mail: anderson@cs.washington.edu

Martha Choe
Former Chief Administrative Officer, The Bill and Melinda Gates Foundation
(contact information available upon request)

JENNIFER ROSE WEBSTER

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EDUCATION

Ph.D., University of Washington. Department of History March 2015
Dissertation: "Toward a Sacred Topography of Central Asia: Shrines, Pilgrimage, and Gender in Kyrgyzstan," directed by Professors Glennys Young and Joel Walker

M.A.I.S., University of Washington. Jackson School of International Studies, June 2006
Comparative Religion

B.A., Reed College. Department of Biology May 2002
Thesis: "Mr. Toad Goes for a Ride: Amphibian Decline, Its Causes, and Solutions through Management and Conservation," directed by Professor Robert Kaplan

FELLOWSHIPS & AWARDS

2012-2013	Roshan Cultural Heritage Institute Graduate Fellowship in Persian Studies
2012	International Research & Exchange Board (IREX) Individual Advanced Research Opportunity Fellowship in Kyrgyzstan and Tajikistan
2011	Chester A. Fritz Fellowship for research in Kyrgyzstan
2011	Maurice and Lois Schwartz Fellowship for research in Central Asia
2010	Maurice and Lois Schwartz Fellowship for research in Central Asia
2009	Maurice and Lois Schwartz Fellowship for research in Central Asia
2009-2010	Foreign Language and Area Studies Fellowship, summer and academic year Russian
2008-2009	Foreign Language and Area Studies Fellowship, summer and academic year Persian
2008	INSER Language and Cultural Exposure Travel Award
2005-2006	Foreign Language and Area Studies Fellowship, academic year Uzbek
2004-2005	Foreign Language and Area Studies Fellowship, academic year Arabic
2004	Social Science Research Council Fellowship for Uzbek language study

PUBLICATIONS

In print:

"'My Cousin Bought the Phone for Me. I Never Go to Mobile Shops.': The Role of Family in Women's Technological Inclusion in Islamic Culture." *Computer Supported Cooperative Work* (2019).

"ThinSIM-Based Attacks on Mobile Money Systems." *Computing and Sustainable Societies* (2018).

"Knowledge, Access, and Decision Making: Women's Financial Inclusion in Pakistan." *Computing and Sustainable Societies* (2018).

"eKichabi: Information Access through Basic Mobile Phones in Rural Tanzania." *Human Factors in Computing Systems* (2018).

"An Exploration of Smartphone Based Mobile Money Applications in Pakistan." *Information and Communication Technologies for Development* (2017).

"New Research on Sacred Places in Central Asia." *The Silk Road* 11 (2013): 215-6.

"New Turns on the Silk Road." *The Silk Road* 9 (2011): 154-5.

In preparation:

"Conflicts of Healing: Medical Resorts, Pilgrimage, and Shrines in the Ferghana Valley"

"Memory, Modernity, and Islam in the Ferghana Valley: the Shrine of Takht-i-Sulaiman"

"Muslim Women in Soviet Central Asia." Oxford Research Encyclopedia of Asian History

CONFERENCE PRESENTATIONS

2017 "The Second Meccas of Kyrgyzstan: Sacred Topography, Prophets, and Authority in Islam" *Authority in Islam: Dialectics of Fragmentation & Plurality*, Bloomington, IN, March 24-25.

2016 "Baqshys and Biomedicine: The Balance of Healing in Central Asia" Central Eurasian Studies Society Annual Meeting, Princeton, NJ, November 4.

2016 "Bountiful Forest: The Fruits of Heaven at Arslanbob Ata" International Symposium on the Environmental Archive of Central Asia, Tashkent, April 18-19.

2015 "Resort or Shrine? Medicine, Tourism, and Pilgrimage in Kyrgyzstan" Central Eurasian Studies Society Annual Meeting, Washington D.C., October 17.

2015 "Becoming a Baqshy: Indigenous Healers in Rural Kyrgyzstan" Russia, East Europe, and Central Asian Studies NW Conference, Seattle, WA, May 2.

2015 "Locating the Past: The Case of Takht-i Sulaiman" American Historical Association Annual Meeting, New York, NY, January 3.

2011 "Sacred Space in the Pamirs through the Eyes of European Travelers" Russia, East Europe, and Central Asian Studies NW Conference, Seattle, WA, April 16.

2004 "Apocryphal Texts and Their Communities: Authority in the Scripture on the Ten Kings" Western Conference of the Association of Asian Studies, Seattle, WA, September 10.

LECTURES & DISCUSSIONS

2017 "Burial Traditions and Cultural Identity in Central Asia," Discussant Central Eurasian Studies Society Annual Meeting, Seattle, WA, October 6.

2017 "Gender and Financial Inclusion," UW Digital Financial Services Research Group Workshop, Seattle, WA, October 5.

2015 "In the Archives," UW Digital History Colloquium, Seattle, WA, May 12.

2014 "Shrines and Healing in Contemporary Kyrgyzstan and Tajikistan," The Persian and Iranian Studies Program, Seattle, WA January 28.

2014 "Shrines and Pilgrimage: The Case of Takht-i Sulaiman," UW History Department Colloquium, Seattle, WA, January 31.

2012 "Pilgrimage and Shrines in Central Asia," IREX, Dushanbe, Tajikistan, July 12.

2012 "Negotiating Modernity: Places and Objects in the Context of Kyrgyzstan," Research Seminar, Tian Shan Policy Center, American University of Central Asia, Bishkek, Kyrgyzstan, June 12.

WORKSHOP ORGANIZATION

2017 *FinTech Workshop*, Lahore, November 15-16.

2017 *Digital Financial Services Workshop*, Seattle, October 5.

LANGUAGES

Spanish, Russian, Persian (Farsi and Tajiki), Uzbek, Kyrgyz, Arabic (proficient)
French, German, Coptic (reading)

TEACHING EXPERIENCE

Lecturer, University of Washington, Department of History
2018 Gender in ICTD and HCI Research

2017 History of the Islamic Middle East, 600-1800 CE

2016 The Silk Road: Travel, Exchange, and Culture in Eurasia

2015 The Muslim Near East: From Late Antiquity to the Present

Lecturer, Western Washington University, Department of Liberal Studies
2017 Islamic Civilization

Visiting Assistant Professor, The Evergreen State College
2016 Russia and the Forging of Empires: Vikings, Mongols, and Slavs

2016 Beginning Russian Language

Adjunct Faculty, Seattle University, Department of International Studies
2015 East Meets West: A History of Travel Writers to and from the Islamic World

Pre-doctoral Instructor, University of Washington
2013/ 2014/ 2015 Middle Eastern History, 1453-1800

2011/ 2014 The Silk Road: Travel, Exchange, and Culture in Eurasia

2013 Teaching History (graduate seminar for new teaching assistants)

2011 Pilgrimage and Shrines in the Islamic World

2010 History of the Middle East: 1258-1798

Teaching Assistant, University of Washington
2014 African History: 1000-1880

2008/ 2011/ 2012/ 2014 The History of Christianity

2011 American Civilization: The First Century of American Independence

2009 The Ancient World

2008 War and Society in the Modern Middle East

2008 Iran, Afghanistan, and Central Asia, 1750-2001

2007 The Medieval Middle East

2007/ 2008 Environmental Studies: Interdisciplinary Foundations

2003/ 2006 The World of Late Antiquity

2004 Western Religions

SERVICE

2013 Lead Teaching Assistant, History Department, University of Washington

2010-2011 Graduate Liaison Committee, History Department, University of Washington

2009 Discussion Facilitator, American Councils for International Education – National Security Language Initiative for Youth, Dushanbe, Tajikistan