

Drew Williams

Curriculum Vitae

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Education

- December 2018 **Doctor of Philosophy in Computational Sciences**, *Marquette University*, Milwaukee, WI.
○ Dissertation Title: "Developing Accessible Collection and Presentation Methods for Observational Data" (Defended November 2018)
- May 2014 **Master of Science in Computing**, *Marquette University*, Milwaukee, WI.
○ Thesis Title: "Designing Educational and Intelligent Human-Computer Interfaces for Older Adults" (Defended April 2014)
- June 2012 **Bachelor of Science in Computer Science**, *University of Chicago*, Chicago, IL.

Experience

Vocational

- September 2019–Present **Software Engineer**, *T-Mobile*, Bellevue, WA.
○ Construct efficient, usable, modular and tested user interfaces for internal automation tools using Angular and TypeScript, saving network engineers thousands of engineering hours.
○ Deliver scalable APIs and backend infrastructure for internal automation tools supporting T-Mobile's network, using MongoDB, NodeJS and JavaScript, bringing tool success rate to 98
○ Recognized by teammates, manager and director for playing a critical role in transferring a project to a new team and dedication to keeping said project on-schedule throughout transfer.
- May 2015–Aug. 2015 **Software Technology Intern**, *Intel Corporation*, Hillsboro, OR.
○ Created a commercial IoT demo presented at the Intel Developer Forum, attended by 5,000+ people.
○ Guided hackathon attendees in using Intel Edison computers at hackathons of 20+ attendees via in-person support and editing available Intel Edison documentation.
○ Received an internal recognition for mentoring high school students designing projects as part of Intel-sponsored mini-internships.
- October 2012–April 2013 **QA/Documentation Intern**, *iStream Financial Services*, Brookfield, WI.
○ Composed test cases in SpiraTest to ensure stability of check cashing software used by 100+ stores.
○ Led company efforts in beginning the use of automation software (Selenium) in testing procedures.
○ Documented various processes and helped design the upcoming company wiki using Confluence.

- July 2012– **Geek Squad Advanced Repair Agent**, *Best Buy*, Greenfield, WI.
- October 2012
- Installed and repaired hardware and software for customers as one of a 6-person team.
 - Consulted with customers and answered hardware, software and operating systems questions.
- October 2011–June 2012 **Website Administrator**, *Hyde Park Languages*, Chicago, IL.
- Administered an HTML website for students interested in augmenting their knowledge of other languages.
- October 2009–June 2012 **Student Computing Assistant**, *University of Chicago*, Chicago, IL.
- Installed hardware and software, tuned up computers and removed malware/viruses from computers belonging to faculty and staff of the College of the University of Chicago.
 - Designed and released a department website for the Biological Sciences Collegiate Division using Drupal 6.0.
 - Performed preliminary set up and maintenance tasks for lab computers at the Biological Sciences Collegiate Division and new computers being given to professors and deans.
 - Consulted with advisers and deans regarding computer order pickup, computer-related questions, and general computer problems (applications behaving strangely, etc) - often requested directly.

Research

- August 2018–December 2018 **Graduate Research Assistant**, *Marquette University*, Milwaukee, WI.
- Resolved problems faced by professors when using department's 5 distance learning classrooms via in-person support and production of high-quality documentation for computers and software.
- January 2017–May 2017 **Graduate Research Assistant/Web Developer**, *University of Wisconsin-Milwaukee*, Milwaukee, WI.
- Led development on an accessible archival website using a modern JavaScript stack (React, Express, NodeJS, RethinkDB) handling archival of 300+ media items.
 - Devised an archive search engine via Elasticsearch which processed 1000+ text representations of archive media, improving searchability of the archives via use of enhanced accessibility.
- August 2016–December 2016 **Graduate Research Assistant**, *Marquette University*, Milwaukee, WI.
- Resolved problems faced by professors when using department's distance learning classrooms via in-person support and production of high-quality documentation for computers and software.
 - Founded department Cybersecurity Club and presented two talks on privacy and security to department students and faculty on data privacy and security.
- July 2016–August 2016 **Graduate Research Assistant and Web Developer**, *Marquette University, UW-Milwaukee*, Milwaukee, WI.
- Continued work revitalizing existing cross-platform application using legacy framework (Livecode) for creating usable assessments.
 - Implemented initial design of a website utilizing a modern JavaScript stack (React, Express, NodeJS, RethinkDB, etc.) for the accessible archival of 300+ media items.
- May 2016–June 2016 **Computational Sciences Summer Research Fellow**, *Marquette University, UW-Milwaukee*, Milwaukee, WI.
- Revitalized existing cross-platform application using legacy framework (Livecode) for creating usable and extensible assessments for occupational therapists.

August 2015– **Computing Department Research Assistant**, *Marquette University*, Milwaukee, WI.
December 2015

- Resolved problems faced by professors when using department's distance learning classrooms via in-person support and production of high-quality documentation for computers and software.

May 2013–May 2015 **Grant Research Assistant/Lab Manager**, *Ubicomp Lab @ Marquette University*, Milwaukee, WI.

- Managed lab's 7+ grant-funded projects, maintained lab's website and assisted lab director with organizational tasks while continuing personal research.
- Overhauled 5 applications for an accessibility ratings project in conjunction with UW-Milwaukee.
- Developed and released a SMS server running on a Nexus 4 smartphone to send and receive text messages from a Microsoft Azure database of 90+ pre-created motivational SMS messages and phone numbers.
- Tested and co-developed an iPad app to help Smoking Cessation counselors conduct progress surveys with 250+ Native Americans in South Dakota.
- Led team of 7 undergraduate students creating an experiment exploring the viability of mobile cameras and breathalyzers in developing a smartphone-based blood glucose monitor.

Teaching

May 2017–August 2018 **Graduate Research and Teaching Assistant**, *Marquette University*, Milwaukee, WI.

- Taught an introductory course to programming using the Python and Java languages to cohorts of 7 (2017-2018) and 3 (summer of 2018) students in midst of a career change.
- Mentored students needing guidance throughout career change process, including job advice in addition to typical course help.

January 2016–May 2016 **Teaching Assistant**, *Marquette University*, Milwaukee, WI.

- Awarded a competitive department summer research fellowship of 4000 USD for summer work.
- Advised and graded student assignments and exams for COSC 3100 (Data Structures 2) for about 30 students across two sections.

Volunteer

December 2016–April 2018 **Technical Volunteer**, *Unity Church of Milwaukee*, Wauwatosa, WI.
Maintained website and administered Microsoft Powerpoint slides for services.

March 2016 **Technical Volunteer**, *Black Girls Code Chicago*, Chicago, IL.
Mentored young girls of color (ages 7-17) in building their own mobile applications.

August 2014–June 2015 **Web Chair**, *IEEE COMPSAC*, Taichung, Taiwan.
Managed web content, updated dates, found and presented venue information and photographs for website.

Other Notable Projects

- Raspberry Pi Cluster (2015)** Project undertaken as part of coursework towards Doctor of Philosophy Degree in Computational Sciences. Created a cluster from four Raspberry Pi 2 devices in a team, and benchmarked the speed improvement as a result of the clustering with the popular High Performance Linpack (HPL) set of tests.

- **PassPlay (2012)** Project undertaken as part of coursework towards Master of Science Degree in Computing. Created a proof-of-concept application for authenticating with an Android smartphone with a team. Application utilized a 3D model which a user would pose in a particular way in order to unlock a phone.
- **RoomGuard: Arduino-Based Personal Security System (2012).** Project undertaken as part of coursework towards Master of Science Degree in Computing. Created an Arduino configuration to capture light and motion data for a small room. Data was forwarded to ThingSpeak, a web service that monitors incoming data for numbers of interest. Push notifications enabled for Android devices and iOS devices for room entry. Implemented an Android application that allowed the data to be monitored continuously.
- **Arduino-Powered Furby Choreography (2011)** Project undertaken as part of coursework toward Bachelor of Science in Computer Science. Controlled the motor of a Hasbro Furby toy with an Arduino using an H-Bridge. Connected a new speaker to the Furby and played sine waves from the Arduino over the speaker, while controlling a choreographed motion.

Publications

Book Chapters

D. Williams, I. Addo, G. M. T. Ahsan, F. Rahman, C. Tamma, and S. I. Ahamed, "Privacy in Healthcare," in *Privacy in a Digital, Networked World*. Switzerland: Springer International Publishing, Oct. 2015, pp. 85–110.

D. Williams, M. O. Gani, I. Addo, C. P. Tamma, M.-T. Wang, C.-H. Chang, A. J. A. Majumder, and C.-C. Chu, "Challenges in Developing Applications for Aging Populations," in *Optimizing Assistive Technologies for Aging Populations*. Hershey, PN: IGI Global, Sep. 2015, pp. 1–21.

Journal Papers

M. Dignan, K. Jones, L. Burhansstipanov, S. Ahamed, L. Krebs, D. Williams, G. T. Ahsan, I. Addo, M. Sargent, K. Cina, K. Crawford, D. Thibeault, S. Bordeaux, S. Kanekar, and D. Petereit, "A randomized trial to reduce smoking among American Indians in South Dakota: The walking forward study," *Contemporary Clinical Trials*, vol. 81, pp. 28–33, April 2019.

L. Burhansstipanov, L. Krebs, D. Petereit, M. Dignan, S. Ahamed, M. Sargent, K. Cina, K. Crawford, D. Thibeault, S. Bordeaux, S. Kanekar, G. Ahsan, W. D., and A. I., "Reality Versus Grant Application Research "Plans"," *Health promotion practice*, vol. 19, no. 4, pp. 566–572, July 2018.

D. Williams, S. I. Ahamed, W. C.-C. Chu, M.-T. Wang, and C.-H. Chang, "Cloud-Based Synchronization for Interface Settings for Older Adults ," *International Journal of Hybrid Information Technology*, vol. 7, no. 4, pp. 29–42, Nov 2014.

Conference Papers

C. Regan, D. Williams, and R. O. Smith, "The symbiotic relationship between accessible features of information and effective research inquiry," in *2018 Rehabilitation Engineering and Assistive Technology Society of North America's National Conference*, Washington, DC, Jul. 2018.

D. Williams, H. Ding, J. Awebwa, D. Williams, S. I. Ahamed, R. Mendonca, and R. O. Smith, "MediRank: visualizing consumer needs and medical device accessibility features," in *2018 Rehabilitation Engineering and Assistive Technology Society of North America's National Conference*, Washington, DC, Jul. 2018.

D. Williams, G. M. T. Ahsan, I. Addo, S. I. Ahamed, D. Petereit, L. Burhansstipanov, L. U. Krebs, and M. Dignan, "Building a Tailored Text Messaging System for Smoking Cessation in Native American Populations," in *The 42nd IEEE Computer Society Signature Conference on Computers, Software & Applications*, Tokyo, Japan, Jul. 2018.

D. Williams, C. Regan, J. Skelton-Miller, J. McCall, C. Dobson, D. Tomashek, S. I. Ahamed, and R. O. Smith, "Developing an Accessible Archival Website," in *2017 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, New Orleans, LA, Jun. 2017.

M. O. Gani, G. M. T. Ahsan, D. Do, D. Williams, M. Balfas, S. I. Ahamed, and M. Arif, "An Approach to Localization in Crowded Area," in *2016 IEEE International Conference on e-Health Networking, Applications and Services*, Munich, Germany, Sep. 2016.

D. Williams, N. Johnson, A. S. Kumar, N. Spaeth, H. Domke, T. Snyder, D. Tomashek, S. I. Ahamed, and R. O. Smith, "xFACT: Developing Usable Surveys for Accessibility Purposes," in *2016 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, Washington, D.C., Jul. 2016.

D. Williams, N. Johnson, A. S. Kumar, N. Spaeth, H. Domke, D. Tomashek, S. I. Ahamed, and R. O. Smith, "Access Ruler: An Accessible Measurement Application for Determining Accessibility in the Built Environment," in *2016 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, Washington, D.C., Jul. 2016.

N. Johnson, P. Saxena, D. Williams, O. C. Bangole, M. K. Hasan, S. I. Ahamed, R. O. Smith, and D. Tomashek, "Smartphone-Based Light and Sound Intensity Calculation Application for Accessibility Measurement," in *2015 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, Denver, CO, Jun. 2015.

D. Williams, N. Johnson, O. C. Bangole, M. K. Hasan, D. Tomashek, S. I. Ahamed, and R. O. Smith, "Access Tools," in *2015 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, Denver, CO, Jun. 2015.

W. C.-C. Chu, C.-H. Chang, C.-H. Chang, T.-C. Hsu, F. Kawsar, N. Johnson, P. Saxena, D. Williams, S. I. Ahamed, and C.-Y. Tsao, "A Novel Light Weight Balance Monitoring Tool for Elderly Care," in *2014 International Computer Symposium*, Taichung City, Taiwan, Dec. 2014.

D. Williams, S. I. Ahamed, and W. C.-C. Chu, "Use of Cloud-Synchronized Settings in Intelligent Applications for the Elderly," in *Cloud and Super Computing 2014*, Taichung City, Taiwan, Dec. 2014.

D. Williams, S. I. Ahamed, and W. Chu, "Designing Interpersonal Communication Software for the Abilities of Elderly Users," in *2014 IEEE 38th International Computer Software and Applications Conference Workshops (COMPSACW)*, Vasteras, Sweden, Jul. 2014.

D. Williams, M.-T. Wang, C.-H. Chang, S. I. Ahamed, and W. Chu, "ShowMeHow: Using Smart, Interactive Tutorials in Elderly Software Development," in *2014 International Conference on Smart Homes and Health Telematics*, Denver, CO, Jun. 2015.

D. Williams, M.-T. Wang, C.-H. Chang, S. I. Ahamed, and W. Chu, "Agile Development for the Creation of Proper Human-Computer Interfaces for the Elderly," in *2014 International Conference on Smart Homes and Health Telematics*, Denver, CO, Jun. 2014.

G. M. T. Ahsan, D. Williams, I. Addo, S. I. Ahamed, D. Petereit, L. Burhansstipanov, L. U. Krebs, and M. Dignan, "A Mobile Survey Tool for Smoking Dependency Among Native Americans," in *2014 International Conference on Smart Homes and Health Telematics*, Denver, CO, Jun. 2014.

N. Negar, D. Williams, J. Schwartz, S. I. Ahamed, and R. O. Smith, "Smartphone-Based Light Intensity Calculation Application For Accessibility Measurement," in *2014 Rehabilitation Engineering and Assistive Technology Society of North America National Conference*, Indianapolis, IN, Jun. 2014.

F. Rahman, D. Williams, S. I. Ahamed, J.-J. Yang, and Q. Wang, "PriDaC: Privacy Preserving Data Collection in Sensor Enabled RFID Based Healthcare Services," in *Ninth IEEE International Symposium on High-Assurance Systems Engineering (HASE'05)*, Miami Beach, FL, Aug. 2014.

D. Williams, M. A. U. Alam, S. I. Ahamed, and W. Chu, "Considerations in Designing Human-Computer Interfaces for Elderly People," in *13th International Conference on Quality Software*, Nanjing, China, Jul. 2013.

Posters

D. Williams, A. S. Kumar, N. Spaeth, D. Tomashek, S. I. Ahamed, and R. O. Smith, "An Interface for Making Decisions for Accessibility Purposes," in *2016 Forward Thinking Poster Session*, Milwaukee, WI, Nov. 2016.

D. Williams, A. S. Kumar, H. Domke, N. Spaeth, D. Tomashek, S. I. Ahamed, and R. O. Smith, "A Mobile Method for Determining Access Ratings for the Built Environment," in *2016 Forward Thinking Poster Session*, Milwaukee, WI, Nov. 2016.

D. Williams, A. S. Kumar, S. I. Ahamed, D. Tomashek, and R. O. Smith, "Condensing Accessibility Information for the Built Environment via a Usable Mobile Application," in *2016 Grace Hopper Celebration of Women in Computing*, Houston, TX, Oct. 2016.

D. Williams, N. Johnson, A. S. Kumar, D. Tomashek, S. I. Ahamed, and R. O. Smith, "Designing a Usable Survey for Assessing the Built Environment," in *2016 CRA-W Graduate Cohort*, San Diego, CA, Apr. 2016.

D. Williams, N. Johnson, O. C. Bangole, M. K. Hasan, D. Tomashek, S. I. Ahamed, and R. O. Smith, "Towards a Usable Smartphone-Based Application to Determine Building Access Levels," in *2015 CRA-W Graduate Cohort*, San Francisco, CA, Apr. 2015.

M. O. Gani, D. Do, D. Williams, G. M. T. Ahsan, M. Balfas, S. I. Ahamed, M. A. S. Hamid, and A. J. Kattan, "Ubitrack," in *2014 Forward Thinking/International Poster Session*, Milwaukee, WI, Dec. 2014.

D. Williams, N. Negar, Y. Zhou, D. Tomashek, J. Schwartz, S. I. Ahamed, and R. O. Smith, "Developing a Smartphone-Based Tool to Assess Building Accessibility," in *Broadening Participation Workshop @ Ubicomp 2014*, Bellevue, WA, Sep. 2014.

D. Williams, M. A. U. Alam, S. I. Ahamed, and W. C.-C. Chu, "Designing Human-Computer Interfaces for Elderly People in Taiwan," in *2013 Forward Thinking/International Poster Session*, Milwaukee, WI, Dec. 2013.

G. M. T. Ahsan, D. Williams, I. Addo, S. I. Ahamed, D. Petereit, S. Kanekar, L. Burhansstipanov, L. U. Krebs, and M. Dignan, "Utilization of a SMS-Based Support System for American Indian Smoking Cessation," in *2013 Forward Thinking/International Poster Session*, Milwaukee, WI, Dec. 2013.

Presentations

- **June 28th, 2017 – Rehabilitation Engineering and Assistive Technology Society of North America National Conference – New Orleans, LA**
Presented the paper "Developing an Accessible Archival Website."
- **June 21st, 2013 – Rehabilitation Engineering and Assistive Technology Society of North American National Conference – Bellevue, WA**
Presented the paper "Measuring Font Signage with a Smartphone Application for ADAAG Compliance Assessment."

Talks and Panels

- **April 27th, 2018 – Ethics of Big Data Symposium – Milwaukee, WI**
"Data Science Oath" Presentation. Discussed bias in data collection.
- **April 19th, 2018 – Milwaukee High School of the Arts Career Day – Milwaukee, WI**
Alumni speaker, discussed potential careers for art students in STEM.
- **January 30th, 2017 – Data Privacy Day at Marquette University – Milwaukee, WI**
Discussed why one should prioritize data privacy and steps one can take to ensure that data is kept private.
- **November 30th, 2016 – Online Holiday Shopping Talk at Marquette University – Milwaukee, WI**
Discussed methods that attackers use to target online shoppers, best practices for strong passwords, and ways to protect yourself from and deal with identity theft.
- **June 15th, 2016 – Write/Speak/Code 2016 – Chicago, IL**
Panelist on the "Writing for Developers" Panel. Discussed writing tips and strategies for female developers.

Awards and Achievements

- **2018 AISES/Intel "Growing the Legacy" Scholarship – August 2018**
Awarded \$10,000 toward tuition and books for the 2018/2019 school year.
- **2018 RESNA Student Scientific Paper Awards (Honorable Mention) – July 2018**
Awarded for research merit of the paper, "The symbiotic relationship between accessible features of information and effective research inquiry." Included registration for conference and a year of RESNA membership.
- **2018 AISES Leadership Summit Travel Grant Scholarship – March 2018**
Awarded for travel to the American Indian Science and Engineering Society's yearly Leadership Summit.
- **2016 Social Innovation Grant – November 2016**
Awarded during the Marquette University Forward Thinking Poster Session, along with a **\$1000 grant**.

- **Grace Hopper Conference Scholarship – October 2016**
Awarded for travel to the yearly Grace Hopper conference in Houston, TX. Competitive.
- **Graduate School Travel Grant for RESNA 2016 – July 2016**
Department award given for travel to present a poster at RESNA/NCART 2016.
- **Computational Sciences Summer Research Fellowship Grant– May 2016**
Competitive award of \$4000 given to fund 8 weeks of personal research during the summer.
- **CRA-W Grad Cohort Workshop Travel and Accomodation Grant – April 2016**
Awarded for travel to the CRA-W Graduate Cohort for women in computing majors.
- **AISES National Conference ASSIST Grant [NSF-Funded] – November 2015**
Awarded for travel to the American Indian Science and Engineering Society's National Conference.
- **Intel Employee Recognition – August 2015**
Awarded in recognition of time volunteered to help high school students with mini-internships.
- **Intel Employee Recognition – July 2015**
Awarded in recognition of efforts/weekend work put forth to finish IDF demo on time.
- **CRA-W Grad Cohort Workshop Travel and Accomodation Grant – April 2015**
Awarded for travel to the CRA-W Graduate Cohort for women in computing majors.
- **AISES Leadership Summit Travel Grant – March 2015**
Awarded for travel to the American Indian Science and Engineering Society's yearly Leadership Summit.
- **AISES/Intel Foundation Scholarship [Intel Scholar] – September 2014**
Very competitive scholarship of \$10,000 awarded for tuition and books.
- **Broadening Participation Workshop (UBICOMP 2014) Travel Grant – September 2014**
Awarded for travel to attend the 2014 Broadening Participation Workshop at UBI-COMP 2014, in addition to conference attendance.
- **Graduate School Travel Grant for RESNA 2014 – May 2014**
Awarded for travel to present a poster at RESNA/NCART 2016.
- **Best Poster Award in International Research Poster Session, Marquette University – December 2013**
Awarded for merit of poster submitted to the International Research Poster Session.
- **A.T. Anderson Memorial Scholarship – November 2013**
Competitive scholarship of \$2,000 awarded for tuition and books.
- **Merit Scholarship, University of Chicago – August 2008 - June 2012**
Awarded for academic achievement during High School.

Languages

English Native Speaker
Spanish Intermediate
Japanese Beginner

Professional Organizations/Affiliations

- o Intel Innovator [IoT/Intel Edison]
- o American Indian Science and Engineering Society [**Sequoyah Fellow**]
- o Society of Women Engineers - Student Member
- o Institute of Electrical and Electronics Engineers - Student Member
- o Association for Computing Machinery - Student Member
- o National Society of Black Engineers - Student Member
- o Rehabilitation and Assistive Technology Society of North America - Student Member
- o International Association of Accessibility Professionals - Student Member

Computer skills

Programming	Node.JS, Javascript, C/C++, Objective C, Java, MySQL, HTML/HTML5, CSS/CSS3, Python	IDEs	Android Studio, Xcode, Eclipse, Canopy, Texmaker, Matlab, Mathematica, Visual Studio, LiveCode
Applications	Microsoft Office, Adobe Photoshop, Selenium, SpiraTest, Basecamp, Trello	Technical Skills	Video Editing, Image Editing, Troubleshooting, Hardware and Software Repair
Operating Systems	Mac, Windows, Linux (Ubuntu/Fedora/Arch)	Platforms	Arduino, Raspberry Pi, Intel Edison, iOS, Android

Hobbies

Illustration Painting, drawing, comic creation
Writing Fiction, non-fiction, blogging
Maker Arduino, Raspberry Pi, microcontrollers, soldering.
Projects
Music Vocals, music production, mixing, piano