

# Drew Williams | Curriculum vitae

✉ [drew@dmariw.me](mailto:drew@dmariw.me) • 🌐 <http://dmariw.me> • 🐦 [terminaltraces](#)

## Education

### Marquette University

Milwaukee, WI

*Doctor of Philosophy Degree in Computational Sciences, 3.72*

*Dec. 2018 [Expected]*

- Dissertation Title: "Developing Accessible Methods of Observational Data Representation"
- Research Directions: Human-Computer Interaction, Accessibility, Big Data
- Notable Courses Taken: Probability, Parallel and Distributed Computing, Simulation, Applied Linear Algebra, Applied Mathematical Analysis

### Marquette University

Milwaukee, WI

*Master of Science Degree in Computing, 3.83*

*June 2014*

- Thesis Title: "Designing Educational and Intelligent Human-Computer Interfaces for Older Adults"
- Research Directions: Human-Computer Interaction, Intelligent Interfaces, Accessibility
- Notable Courses Taken: Principles of Database Systems, Enterprise Architecture, Elements of Software Development, Human Factors Engineering

### University of Chicago

Chicago, IL

*Bachelor of Science Degree in Computer Science, 2.93*

*May 2012*

- Notable Courses Taken: Introduction to Formal Languages, Theory of Algorithms, Operating Systems, Advanced Distributed Systems

### Milwaukee High School of the Arts

Milwaukee, WI

*High School Diploma, 4.00*

*June 2007*

- Major: Creative Writing

## Experience

Research.....

### Marquette University

Milwaukee, WI

*Graduate Research and Teaching Assistant*

*May 2017–present*

- Act as current TA for students in Marquette University's COSMIC program (for students looking to change careers.) Provide moral support and assistance in learning Python and Java during the summer-long bootcamp and all classes beyond. Share applicable opportunities with students throughout the school year and provide regular office hours.

### University of Wisconsin-Milwaukee

Milwaukee, WI

*Web Developer/Research Assistant*

*January 2017–May 2017*

- Created an accessible archive website utilizing a modern JavaScript stack (React, Express, NodeJS, RethinkDB, etc.)
- Added search engine functionality via implementation of a Elasticsearch engine.

**Marquette University** **Milwaukee, WI**  
*Graduate Research Assistant* *August 2016–January 2017*

- Assist in community outreach for Computing Department, and provide in-person and document-based support for distance learning professors in Computing Department.

**Marquette University, UW-Milwaukee** **Milwaukee, WI**  
*Graduate Research Assistant and Web Developer* *July 2016–August 2016*

- Continuation of Summer Research Fellowship. Additionally, worked on a project involving an accessible archival website using NodeJS and React for R2D2 Center of UW-Milwaukee.

**Marquette University, UW-Milwaukee** **Milwaukee, WI**  
*Computational Sciences Summer Research Fellow* *May 2016–July 2016*

- Develop a cross-platform application for creating usable and accessible surveys as part of a research project with the University of Wisconsin-Milwaukee and Marquette University.

**Marquette University** **Milwaukee, WI**  
*Computing Department Research Assistant* *Aug. 2015–Dec. 2015*

- Wrote computer and software documentation for professors teaching distance learning classes under the supervision of Computing program director Dr. Kaczmarek.
- Acted as the distance learning support contact for professors after-hours.

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

- Managed Ubicomp Lab for a year (2014-2015) and oversaw general management of lab's 7+ grant-funded projects, in addition to maintaining lab's website and assisting lab director in various organizational tasks.
- Co-developed a slope measurement application, font measurement application, and access ratings tool application for accessibility ratings project in conjunction with UW-Milwaukee.
- Developed an android-based SMS server to send and receive text messages from a Microsoft Azure database of pre-created motivational SMS messages and phone numbers.
- Tested and co-developed an iPad app to help Smoking Cessation counselors conduct progress surveys.
- Designed guidelines for intelligent and interactive human-computer interfaces for elderly adults as part of Masters' Thesis work.
- Led team of students in developing a mobile camera-based and breathalyzer-based blood glucose monitor.

## Teaching.....

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

- Graded student assignments and exams for COSC 3100 (Data Structures 2) under guidance of the course professor, Dr. Niharika Jain.
- Provided office hours and on-demand help for about 30 high school and undergraduate students across two sections.

## Vocational.....

**Intel Corporation** **Hillsboro, OR**  
*Software Technology Intern* *May 2015–Aug. 2015*

- Co-developed a Commercial IoT demonstration with Intel's IoT Evangelism Team using the Intel Edison platform, MQTT, and NodeJS.
  - **Demo was presented at the 2015 Intel Developer Forum.**
- Assisted hackathon attendees with the Intel Edison platform at company-initiated hackathons.
- Assisted with editing documentation for the Intel Edison for hackathon attendees.
- Volunteered time to guide and inspire high school students working on projects built as part of Intel-sponsored mini-internships.

**iStream Financial Services**

**Brookfield, WI**

*QA/Documentation Intern*

*Oct. 2012–Apr. 2013*

- Tested and wrote documentation and test cases for check cashing software.
- Led company efforts in beginning the use of automation software in testing procedures.
- Assisted with fellow intern in quality assurance work, creating test cases in SpiraTest and executing said tests on the company website.
- Documented various processes and assisted with design of the upcoming company wiki.

**Best Buy**

**Greenfield, WI**

*Geek Squad Advanced Repair Agent*

*July 2012–Oct. 2012*

- Installed and repaired hardware and software for customers.
- Tuned up computers and removed errant programs (i.e. malware (rootkits, etc) and viruses).
- Consulted with customers and answered Mac OS and Windows questions.

**Hyde Park Languages**

**Chicago, IL**

*Website Administrator*

*Oct. 2011–June 2012*

- Performed tasks related to maintaining and updating an HTML website.

**University of Chicago**

**Chicago, IL**

*Student Computing Assistant*

*Oct. 2009–June 2012*

- Installed hardware and software, tuned up computers and removed malware/viruses from dean/counselor's computers.
- Designed a department website for the Biological Sciences Collegiate Division using Drupal 6.0.
- Performed preliminary set up tasks and maintenance tasks for labs at the Biological Sciences Collegiate Division and new computers within the College.
- Acted as contact for advisers and deans regarding computer order pickup, computer-related questions, and general computer problems (applications behaving strangely, etc).

**Roundy's Supermarkets, Inc**

**Oak Creek, WI**

*Utility Clerk/Produce Clerk*

*Aug. 2007–June 2008*

- Bagged groceries, performed general cleaning duties and retrieved carts as a Utility Clerk.
  - Recognized for outstanding customer service by the store in this role.
- Cleaned the salad bar, cut and arranged fruit for the floor as a Produce Clerk.
- Performed cashiering duties when needed.

**Volunteer.....**

**Unity Church of Milwaukee**

**Wauwatosa, WI**

*Technical Volunteer*

*Mar. 2016–present*

Maintain website and administer Microsoft Powerpoint slides for services.

**Black Girls Code Chicago**

**Chicago, IL**

*Technical Volunteer*

*Mar. 2016*

Assisted in teaching young girls of color (ages 7-17) how to build their own mobile applications.

## IEEE COMPSAC

Web Chair

Assisted in managing web content, updating dates, finding venue information and photographs for website.

Taichung, Taiwan

Aug. 2014–June 2015

## Other Notable Projects

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- **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. Developed 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.

## Research Interests

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**Human-Computer Interaction:** Maximizing usability of different computer interfaces.

**Accessibility and Universal Design:** Designing interfaces that can be used by the largest number of people.

**Intelligent and Adaptive Interfaces:** Developing interfaces that adapt to a user's needs.

**Internet of Things:** Using internet-connected systems of devices to solve problems.

**Security and Privacy:** Issues of security and privacy in personalization of interface design, IoT systems, mobile health systems.

## Publications

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### 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.....

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*, jul 2017.

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. Awabwa, 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**

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- **July 14th, 2018 – 2018 Rehabilitation Engineering and Assistive Technology Society of North America National Conference – Washington, DV**  
Presenting the paper "The symbiotic relationship between accessible features of information and effective research inquiry," **winner of an honorable mention in the 2018 Student Scientific Paper Awards.**
- **June 28th, 2017 – 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 – 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**

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- **April 27th, 2018 – Ethics of Big Data Symposium – Milwaukee, WI**  
Speaker during the "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.
- **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

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- **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."
- **2016 Social Innovation Grant – November 2016**  
Awarded during the Marquette University Forward Thinking Poster Session, along with a **\$1000 grant**.
- **Grace Hopper Conference Scholarship – May 2016**  
Awarded for travel to the yearly Grace Hopper conference in Houston, TX. Competitive.
- **Graduate School Travel Grant for RESNA 2016 – May 2016**  
Awarded for travel to present a poster at RESNA/NCART 2016.
- **Computational Sciences Summer Research Fellowship Award – April 2016**  
Competitive award given to fund 8 weeks of personal research during the summer.
- **CRA-W Grad Cohort Workshop Travel and Accommodation 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 Accommodation 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] – October 2014 – May 2015**  
Very competitive scholarship 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 UBICOMP 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.
- **A.T. Anderson Memorial Scholarship – November 2013 – May 2014**  
Competitive scholarship awarded for tuition and books.



- **Best Poster Award in International Research Poster Session, Marquette University – December 2013**  
Awarded for merit of poster submitted to the International Research Poster Session.
- **Merit Scholarship, University of Chicago – August 2008 - June 2012**  
Awarded for academic achievement during High School.

## Languages

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**English:** Native Speaker

**Spanish:** Beginner+

**Japanese:** Beginner

## Professional Organizations/Affiliations

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- Intel Innovator [IoT/Intel Edison]
- American Indian Science and Engineering Society [**Sequoyah Fellow**]
- Society of Women Engineers - Student Member
- Institute of Electrical and Electronics Engineers - Student Member
- Association for Computing Machinery - Student Member

## Computer skills

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**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

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**Illustration:** Painting, drawing, comic creation

**Writing:** Fiction, non-fiction, blogging

**Maker Projects:** Arduino, Raspberry Pi, microcontrollers, soldering.

**Music:** Vocals, music production, mixing, piano