

ALEX C. WILLIAMS

Computer Science, Ph.D Student

David R. Cheriton
School of Computer Science
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RESEARCH STATEMENT

My research focuses on designing, building, and studying interactive systems that guide work-related attention. My work takes inspiration from cognitive science, occupational health psychology, mixed-initiative systems, and human-computer interaction.

EDUCATION

University of Waterloo, 2020 (expected)

Doctor of Philosophy, Computer Science Thesis: *Systems for Guiding Work-Related Attention*
Supervisors: Edith Law, Ed Lank

Middle Tennessee State University, 2015

Master of Science, Computer Science Thesis: *Computationally Accelerated Papyrology*

Middle Tennessee State University, 2013

Bachelor of Science, Computer Science

RESEARCH EXPERIENCE

Microsoft Research, Redmond, WA

Research Intern, Knowledge Technologies and Intelligent Experiences Group
with: Ryen White

Summer 2019

Microsoft Research, Redmond, WA

Research Intern, Information and Data Sciences Group
with: Adam Fournery, Ryen White, Jaime Teevan, and Shamsi Iqbal

Summer 2018

Microsoft Research, Redmond, WA

Research Intern, AI + Microproductivity Research Group
with: Jaime Teevan and Shamsi Iqbal

Summer 2017

University of Oxford, Oxford, UK

Research Scientist, Faculty of Classics
with: James Brusuelas and Dirk Obbink

Summer 2014, Winter 2015

Oak Ridge National Laboratory, Oak Ridge, TN

Research Intern, Computational Sciences and Engineering Division
with: Georgia Tourassi

Summer 2013

Oak Ridge National Laboratory, Oak Ridge, TN

Research Intern, Computational Sciences and Engineering Division
with: Georgia Tourassi

Summer 2012

Middle Tennessee State University, Murfreesboro, TN

Research Assistant, Center for Computational Science

Fall 2013

PUBLICATIONS

REFEREED CONFERENCE PUBLICATIONS

[C.1] H. Kaur, A.C. Williams, A. Loomis-Thompson, W. Lasecki, S. Iqbal, and J. Teevan. Creating Better Action Plans for Writing Tasks via Vocabulary-Based Planning. In *Proceedings of the 21st ACM Conference on Computer Supported Cooperative Work & Social Computing*, 2018.

- [C.2] **A.C. Williams**, H. Kaur, G. Mark, A. Thompson, S. Iqbal and J. Teevan. Supporting Workplace Detachment and Reattachment with Conversational Intelligence. In *Proceedings of 2018 Conference on Human Factors in Computing (CHI 2018)*. Montreal, Canada.
- [C.3] **A.C. Williams**, J. Goh, C.G. Willis, J. Brusuelas, A. Ellison, C. Davis, and E. Law. Deja Vu: Characterizing Worker Consistency Using Task Consistency. In *Proceedings of the AAAI Conference on Human Computation (HCOMP 2017)*. Quebec City, Canada.
- [C.4] E. Law, K. Gajos, A. Wiggins, M. Gray, and **A.C. Williams**. Crowdsourcing as a Tool for Research : Implications of Uncertainty. In *Proceedings of the 20th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 2017.
- [C.5] T. Tse, J. Salamon, **A.C. Williams**, H. Jiang, and E. Law. Ensemble: A Hybrid Human-Machine System for Generating Melody Scores from Audio. *Conference for the International Society for Music Information Retrieval*, 2016.
- [C.6] **A.C. Williams**, A.Santarsiero, C.Meccariello, G. Verhasselt, H.D. Carroll, J.F. Wallin, D. Obbink, and J.H. Brusuelas. Proteus: A Platform for Born Digital Editions of Literary Papyri. In *Proceedings of the 2015 International Congress on Digital Cultural Heritage*, Grenada, Spain.
- [C.7] **A.C. Williams**, J.F. Wallin, H. Yu, M. Perale, H.D. Carroll, A. Lamblin, L. Fortson, D. Obbink, C.J. Lintott, and J.H. Brusuelas. A Computational Pipeline for Crowdsourced Transcriptions of Ancient Greek Papyrus Fragments. In *Proceedings of the 2014 IEEE International Conference on Big Data*, Washington D.C., USA.
- [C.8] **A.C. Williams**, H.D. Carroll, J.F. Wallin, J. Bruseulas, L. Fortson, A. Lamblin, and H. Yu. Identification of Ancient Greek Papyrus Fragments Using Genetic Sequence Alignment Algorithms. In *Proceedings of the 2014 IEEE International Conference on e-Science*, Guaruja, Brazil.
- [C.9] H.D. Carroll, **A.C. Williams**, A.G. Davis, and J.L. Spouge. False Discovery Rate for Homology Searches. In *Proceedings of the 8th Brazilian Symposium on Bioinformatics*, pp 194-201, 2013.
- [C.10] **A.C. Williams**, A. Hitt, S. Viosin, and G. Tourassi. Automated Assessment of Bilateral Breast Volume Asymmetry as a Breast Cancer Biomarker during Mammographic Screening. In *SPIE Medical Imaging*, 2013.

JOURNAL PUBLICATIONS

- [J.1] C. Willis, E. Law, **A.C. Williams**, B. Franzone, R. Bernardos, L. Bruno, C. Hopkins, C. Schorn, E. Weber, D. Park and C. Davis. CrowdCurio: an online crowdsourcing platform to facilitate climate change studies using herbarium specimens. *New Phytologist*. 2017.
- [J.2] H.D. Carroll, **A.C. Williams**, A.G. Davis, and J.L. Spouge. Improving retrieval efficacy in homology search using the false discovery rate. In *ACM/IEEE Transactions on Computational Biology and Bioinformatics*. 2014.

WORKSHOP & POSITION PAPERS

- [P.1] **A.C. Williams**, H. Kaur, E. Lank, E. Law. Guiding Attention with Tasks and Emotions in Conversational Agents. In "Conversational Agents: Constructing Action Plans from a Wave of Research and Development" at the 2019 ACM Conference on Human Factors in Computing (CHI). 2019.
- [P.2] H. Kaur, **A.C. Williams**, W. Lasecki. Building Shared Mental Models between Humans and AI for Effective Collaboration. In "Where is the Human? Bridging the Gap Between AI and HCI" at the 2019 ACM Conference on Human Factors in Computing (CHI). 2019.
- [P.3] **A.C. Williams**, A. Vtyurina, E. Lank, and E. Law. Designing Voice Interfaces for Accessible Crowdwork. *The 1st Workshop on Accessible Voice Interfaces at the 21st ACM Conference on Computer Supported Cooperative Work & Social Computing*. 2018.

[P.4] **A.C. Williams**, J. Bradshaw, M. Schaekermann, T. Tse, W. Callaghan, and E. Law. The Big Picture: Preserving Context in the Decomposition of Complex Expert Tasks. *The 1st Workshop on Microproductivity at the 2016 ACM Conference on Human Factors in Computing (CHI'16)*, 2016.

[P.5] M. Schaekermann, E. Law, **A.C. Williams**, and W. Callaghan. Resolvable vs. Irresolvable Ambiguity: A New Hybrid Framework for Dealing with Uncertain Ground Truth. *The 1st Workshop on Human-Centered Machine Learning at the 2016 ACM Conference on Human Factors in Computing (CHI'16)*, 2016.

TEACHING EXPERIENCE

University of Waterloo, Waterloo, ON 2015 – present

Graduate Teaching Assistant, School of Computer Science

- *Instructor*: CS349: User Interfaces (Winter 2017)
- *Instructor*: CS798: AI, Law, and Policy (Fall 2017; Fall 2018)
- *Instructional Apprentice*: CS349: User Interfaces (Fall 2016; Winter 2019)
- *Teaching Assistant*: CS349: User Interfaces (Winter 2016; Spring 2016)

University of Victoria, Victoria, BC 2016 – present

Workshop Instructor, Digital Humanities Summer Institute

- *Instructor*, Crowdsourcing as a Tool for Research and Public Engagement (Summer 2016; 2017)

Middle Tennessee State University, Murfreesboro, TN 2013 – 2015

Graduate Teaching Assistant, Department of Computer Science

- *Instructor*, CSCI 1150: Computer Science Orientation (Spring 2015)
- *Instructor*, CSCI 3130: Introduction to Computer Architecture (Fall 2013; Spring 2014)
- *Grader*, CSCI 3160: Introduction to Assembly Language (Fall 2013)

Middle Tennessee State University, Murfreesboro, TN 2012 – 2013

Computer Science Tutor, Department of Computer Science

HONORS, AWARDS, and ACHIEVEMENTS

2017 – **Cheriton Type II Scholarship**, School of Computer Science, University of Waterloo

2016 – **Vanier Graduate Scholarship Competition**, *National Finalist*

2016 – **CSST Summer Research Institute**, *Selected Ph.D. Participant*

2015 – **GO-Bell Scholarship**, School of Computer Science, University of Waterloo

2015 – **International Doctoral Student Award**, School of Computer Science, University of Waterloo

2015 – **Paul Hutcheson Outstanding Graduate Student Scholarship**, MTSU

2013 – **Chester and Mary Martin Graduate Scholarship**, MTSU (\$500.00)

2013 – **1st Place**, Deloitte's iOS and Android Mobile Application Design Competition (\$3000.00)

2013 – **3rd Place**, MTSU ACM Programming Competition

2013 – **3rd Place**, MTSU Scholar's Week Poster Session

SERVICE

Session Chair. HCOMP 2015

Program Committee. HCOMP 2017; GroupSight 2017

Reviewer. CHI 2016, 2017, 2018, 2019; CSCW 2018, 2019; Citizen Science Association 2017

FUNDING

Waterloo Citizen Science Laboratory: Infrastructure Project Funding (2016)

Co-authored with E. Law & M. Schaekermann. \$144,703 awarded via Canadian Foundation for Innovation

Fragmentary Papyrus Identification Using Genetic Sequence Alignment Algorithms (2013)

Co-authored with Hyrum Carroll. \$7,800 awarded via Middle Tennessee State University FRCAC Grant

DEPARTMENTAL SERVICE

2018 – *Graduate Rep.*, School Advisory Committee on Appointments (SACA), University of Waterloo

2013 – *Undergraduate Rep.*, Student Advisory Board, MTSU Department of Computer Science