

ALEX C. WILLIAMS

Computer Science, Ph.D Student

David R. Cheriton
School of Computer Science
University of Waterloo

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RESEARCH STATEMENT

My research focuses on understanding how social and behavioral aspects of intelligent pedagogical agents can be operationalized to motivate and sustain public participation in citizen science.

Areas: Human computation, crowdsourcing, human-computer interaction, citizen science, crowd-supported cooperative work, intelligent user interfaces, artificial intelligence.

EDUCATION

University of Waterloo, 2020 (expected) GPA
Doctor of Philosophy, Computer Science 92.0/100.0
Supervisors: Edith Law, Ed Lank

Middle Tennessee State University, 2015 4.0/4.0
Master of Science, Computer Science
Thesis: *Computationally Accelerated Papyrology*
Supervisors: Hyrum Carroll, John Wallin

Middle Tennessee State University, 2013 3.3/4.0 (Major: 3.5/4.0)
Bachelor of Science, Computer Science

RESEARCH EXPERIENCE

Microsoft Research, Redmond, WA 05/17 – present
Research Intern, CLUES Research Group

Middle Tennessee State University, Murfreesboro, TN 05/15 – 01/16
Research Software Engineer, Center for Computational Science

University of Oxford, Oxford, UK 06/14 – 03/15
Research Scientist, Faculty of Classics

Oak Ridge National Laboratory, Oak Ridge, TN 06/13 – 08/13
Research Intern, Computational Sciences and Engineering Division

Oak Ridge National Laboratory, Oak Ridge, TN 06/12 – 08/12
Research Intern, Computational Sciences and Engineering Division

Middle Tennessee State University, Murfreesboro, TN 01/12 – 05/13
Research Assistant, Center for Computational Science

TEACHING EXPERIENCE

University of Waterloo, Waterloo, ON 09/15 – present
Graduate Teaching Assistant, School of Computer Science

- *Sessional Instructor*, CS349: User Interfaces (Winter 2016)
- *Instructional Apprentice*, CS349: User Interfaces (Fall 2016)
- *Teaching Assistant*, CS349: User Interfaces (Winter 2016; Spring 2016)
- *Teaching Assistant*, CS330: Information Management Systems (Fall 2015)

University of Victoria, Victoria, BC

06/16 – present

Workshop Instructor, Digital Humanities Summer Institute

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

Middle Tennessee State University, Murfreesboro, TN

08/13 – 05/15

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

01/12 – 05/13

Computer Science Tutor, Department of Computer Science

PUBLICATIONS

JOURNAL PAPERS

[1] Hyrum D. Carroll, **Alex C. Williams**, Anthony G. Davis, and John L. Spouge. Improving retrieval efficacy in homology search using the false discovery rate. *ACM/IEEE Transactions on Computational Biology and Bioinformatics*, 2014.

[2] 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.)

REFEREED CONFERENCE AND WORKSHOP PAPERS

[3] E. Law, K. Gajos, A. Wiggins, M. Gray, and **A.C. Williams**. Crowdsourcing as a Tool for Research : Implications of Uncertainty. *Proceedings of the 20th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 2017.

[4] 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.

[5] **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. *International Congress on Digital Cultural Heritage*, 2015.

[6] **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. *Proceedings of the 2nd Workshop on Big Humanities Data*, 2014.

[7] **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. *Proceedings of the 1st Workshop on Digital Humanities and e-Science*, 2014.

[8] H.D. Carroll, **A.C. Williams**, A.G. Davis, and J.L. Spouge. False Discovery Rate for Homology Searches. *Proceedings of the 8th Brazilian Symposium on Bioinformatics*, pp 194-201, 2013.

[9] **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. *Proceedings of*

SPIE Medical Imaging, 2013.

POSITION PAPERS

[10] **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. *ACM Conference on Human Factors in Computing: Workshop on Microproductivity*, 2016.

[11] M. Schaekermann, E. Law, **A.C. Williams**, and W. Callaghan. Resolvable vs. Irresolvable Ambiguity: A New Hybrid Framework for Dealing with Uncertain Ground Truth. *ACM Conference on Human Factors in Computing: Workshop on Human-Centered Machine Learning*, 2016.

RELEVANT COURSEWORK

<i>University of Waterloo</i>	
Human-Computer Interaction	Artificial Intelligence
CS 889: Human-in-the-Loop Systems	CS 886: Trust and Online Social Networks
CS 889: Replication Studies	CS 886: Intelligent User Interfaces

<i>Middle Tennessee State University</i>	
Methods and Analysis	Intelligent Computing Architecture
CSCI 6620: Research Methods in Comp. Science	CSCI 4360: Intelligent Robot Systems
MATH 2050: Probability and Statistics	CSCI 5560: Advanced Web Technology
MATH 2010: Data Analysis	CSCI 6700: Software Architecture Research

SERVICE

Session Chair. HCOMP 2015

Reviewer. CHI 2016, CHI 2017, Citizen Science Association 2017

President. MTSU Association for Computing Machinery Student Chapter 2012 – 2014

Member. ACM, IEEE, AAAI

FUNDING

Waterloo Citizen Science Laboratory: Infrastructure Project Funding (2016)

Co-authored with Edith Law. *\$144,703 submitted to 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*

HONORS and AWARDS

2016 – Vanier Graduate Scholarship, *Finalist*

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

2015 – GO-Bell Scholarship, University of Waterloo (\$10,000.00/year)

2015 – International Doctoral Student Award, University of Waterloo (\$13,800.00/year)

2015 – Paul Hutcheson Outstanding Graduate Student Scholarship, MTSU (\$500.00 to one student)

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

2008 - 2015 – MTSU Department of Computer Science Student Advisory Board