

**ALEX C. WILLIAMS**  
*Computer Science, Ph.D Student*

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School of Computer Science  
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## RESEARCH STATEMENT

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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

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

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

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

## RESEARCH EXPERIENCE

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<b>University of Waterloo</b> , Waterloo, ON	09/15 – present
<i>Graduate Research Assistant, School of Computer Science</i>	
<b>Middle Tennessee State University</b> , Murfreesboro, TN	05/15 – 01/16
<i>Research Software Engineer, Center for Computational Science</i>	
<b>University of Oxford</b> , Oxford, UK	06/14 – 03/15
<i>Research Scientist, Faculty of Classics</i>	
<b>Oak Ridge National Laboratory</b> , Oak Ridge, TN	06/13 – 08/13
<i>Research Intern, Computational Sciences and Engineering Division</i>	
<b>Oak Ridge National Laboratory</b> , Oak Ridge, TN	06/12 – 08/12
<i>Research Intern, Computational Sciences and Engineering Division</i>	
<b>Middle Tennessee State University</b> , Murfreesboro, TN	01/12 – 05/13
<i>Research Assistant, Center for Computational Science</i>	

## TEACHING EXPERIENCE

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

- *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  
*Workshop Instructor, Digital Humanities Summer Institute*

06/16 – present

- *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  
*Graduate Teaching Assistant, Department of Computer Science*

08/13 – 05/15

- *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  
*Computer Science Tutor, Department of Computer Science*

01/12 – 05/13

## PUBLICATIONS

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### 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.

### REFEREED CONFERENCE AND WORKSHOP PAPERS

[2] **Alex C. Williams**, Charlie G. Willis, Joslin Goh, Charlie Davis, Aaron Ellison, and Edith Law. Deja Vu: Characterizing Worker Quality Using Task Consistency. *2017 CHI Conference on Human Factors in Computing*, 2017. (*Under Review*)

[3] Timmy Tse, Justin Salamon, **Alex C. Williams**, Helga Jiang, and Edith Law. Ensemble: A Hybrid Human-Machine System for Generating Melody Scores from Audio. *Conference for the International Society for Music Information Retrieval*, 2016.

[4] **Alex C. Williams**, Annapaola Santarsiero, Chiara Meccariello, Gertjan Verhasselt, Hyrum D. Carroll, John F. Wallin, Dirk Obbink, and James H. Brusuelas. Proteus: A Platform for Born Digital Editions of Literary Papyri. *International Congress on Digital Cultural Heritage*, 2015.

[5] **Alex C. Williams**, John F. Wallin, Haoyu Yu, Marco Perale, Hyrum D. Carroll, Anne-Francoise Lamblin, Lucy Fortson, Dirk Obbink, Chris J. Lintott, and James H. Brusuelas. A Computational Pipeline for Crowdsourced Transcriptions of Ancient Greek Papyrus Fragments. *Proceedings of the 2nd Workshop on Big Humanities Data*, 2014.

[6] **Alex C. Williams**, Hyrum D. Carroll, John F. Wallin, James Bruseulas, Lucy Fortson, Anne-Francoise Lamblin, and Haoyu Yu. Identification of Ancient Greek Papyrus Fragments Using Genetic Sequence Alignment Algorithms. *Proceedings of the 1st Workshop on Digital Humanities and e-Science*, 2014.

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

[8] **Alex C. Williams**, Austin Hitt, Sophie Viosin, and Georgia Tourassi. Automated Assessment of Bilateral Breast Volume Asymmetry as a Breast Cancer Biomarker during Mammographic Screening. *Proceedings of SPIE Medical Imaging*, 2013.

## POSITION PAPERS

[9] **Alex C. Williams**, Josh Bradshaw, Mike Schaekermann, Timmy Tse, William Callaghan, and Edith Law. The Big Picture: Preserving Context in the Decomposition of Complex Expert Tasks. *ACM Conference on Human Factors in Computing: Workshop on Microproductivity*, 2016.

[10] Mike Schaekermann, Edith Law, **Alex C. Williams**, and William 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

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<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*, Uni. of Waterloo (\$50,000.00/year; *TBA: March 2017*)

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

## MISCELLANEOUS

**Languages:** Native English Speaker

**Citizenship:** United States of America