

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 intelligent agents can improve self-efficacy and productivity through conversation. I'm specifically interested in studying such agents both in the context of web-based citizen science, online crowdwork and the physical workplace.

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
Thesis: *Computationally Accelerated Papyrology*
Master of Science, Computer Science
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 Summer 2017
Research Intern, AI + Microproductivity Research Group

University of Oxford, Oxford, UK Summer 2014, Winter 2015
Research Scientist, Faculty of Classics

Oak Ridge National Laboratory, Oak Ridge, TN Summer 2013
Research Intern, Computational Sciences and Engineering Division

Oak Ridge National Laboratory, Oak Ridge, TN Summer 2012
Research Intern, Computational Sciences and Engineering Division

Middle Tennessee State University, Murfreesboro, TN Fall 2013
Research Assistant, Center for Computational Science

TEACHING EXPERIENCE

University of Waterloo, Waterloo, ON 2015 – present
Graduate Teaching Assistant, School of Computer Science

- *Teaching Assistant*, CS785: AI, Law, and Policy (Fall 2017)
- *Sessional Instructor*, CS349: User Interfaces (Winter 2017)
- *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 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

PUBLICATIONS

JOURNAL PAPERS

[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.

[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.

REFEREED CONFERENCE AND WORKSHOP PAPERS

[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.

[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.

[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.

[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.

[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.

[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*, Guarujá, Brazil.

[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.

[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 *Proceedings of SPIE Medical Imaging*, 2013.

POSITION PAPERS

[11] **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.

[12] 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.

SERVICE

Session Chair. HCOMP 2015

Program Committee. HCOMP 2017; GroupSight 2017

Reviewer. CHI 2016, 2017, 2018; CSCW 2018; 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 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*

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

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

REFERENCES

Edith Law (Supervisor)

Assistant Professor

School of Computer Science

University of Waterloo

edith.law@uwaterloo.ca

Jaime Teevan (Intern Host)

Principal Researcher

AI + Productivity

Microsoft Research

teevan@microsoft.com

Shamsi Iqbal (Intern Host)

Researcher

AI + Productivity

Microsoft Research

shamsi@microsoft.com

James Brusuelas (Research Host)

Postdoctoral Researcher

Faculty of Classics

University of Oxford

james.brusuelasclassics.ox.ac.uk

Hyrum Carroll (MS Supervisor)

Assistant Professor

School of Computer Science

Columbus State University

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