Blair A. **Winograd**

Quantitative Researcher · Ph.D.
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Education

University of Michigan *Ann Arbor, Michigan*

Ph.D Candidate in Physical Chemistry *August 2014-Present*

- Graduate Certificate in Computational Design and Engineering
- **Skills:** Python, C++, Fortran, Bash, Mathematica, Matlab, OpenMP, MPI
- **Awards:** Michigan Institute for Computational Discovery and Engineering Fellowship ‖ Girl Develop It: Databases Scholarship ‖ Midwest Theoretical Conference Poster Award ‖ Department of Education Graduate Assistance in Areas of National Need (GAANN) Fellow ‖ American Association for the Advancement of Science/Science Program for Excellence in Science Award

Washington University in St. Louis *St. Louis, MO*

B.A. Chemistry (Minor in Drama) *2009-2013*

Experience

Towards Realistic Materials Studies via a Stochastic Evaluation of the Self-Energy *UofMichigan*

Graduate Researcher *Aug. 2014 - Present*

- Devised a method to solve for the second-order self-energy by way of monte-carlo simulation making use of importance sampling
- Parallelized the code by making use of shared and distributed memory systems
- Properly analyzed bias of the method via two non-parametric sampling techniques: Jackknife and Bootstrap Analysis
- **Publication:**

Compute-to-Learn *UofMichigan*

Team Lead *2015-Present*

- Created new curriculum designed to teach students how to code as well as improve student understanding of quantitative physical chemistry concepts.
- Taught over 50 students how to code. Helped develop over 30 published demonstrations to the Wolfram Demonstration's Page.
- **Publication:**

Development and Application of Massively Parallel GW *UofMichigan*

Student Researcher *Fall 2017*

- Devised a method to parallelize a density fitted GW algorithm
- Used density fitting methods and optimized algorithm to manage memory
- Studied and applied CPU vs GPU programming in the process of development

Graduate Student Mentor *UofMichigan*

Mentor and Data Analyst/Engineer *Spring 2015-Fall 2018*

- Led team of nine head teaching instructors in the Chemistry department. Organized mentorship training session
- Used python and bash scripting to analyze thousands of teaching assistant student evaluations

Workshops Led

Compute-To-Learn: Designing Interactive, Computer-Based Demonstrations of Quantitative Concept *Spelman College*

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Compute-To-Learn: Designing Interactive, Computer-Based Demonstrations of Quantitative Concepts *Ann Arbor, MI*

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UM Science for the Public Hands-On Museum *Ann Arbor, MI*

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Introduction to Scientific Computing annual workshop *UofMichigan*

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Exam-Writing 101 *UofMichigan*

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Extracurricular Activities

2017-2019 **Organizing Committee**, Chemistry Aligned with Life & Career *UofMichigan*

2018 **Competitor**, Terminal Coding Competition *UofMichigan*

2017 **Attendee**, Scientific Computing Club - Machine Learning Seminar Series *Ann Arbor*

2016 **Volunteer**, mirCORE - Computational Biology Camp *Ann Arbor*

2016-2017 **Volunteer**, Science Olympiad Coach - iCompute *Angell Elementary*