

Ed Zulkoski

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Software engineer and developer with a strong educational background in both computer science and mathematics. Capable of working on challenging problems independently while effectively meeting the needs of the team.

Education

2008–2012 **B.S.**, Wilkes University, Pennsylvania, USA.
Mathematics and Computer Science, Adviser: Dr. Fred Sullivan
GPA – 3.86/4.00, *Summa Cum Laude*

2012–Present **Ph.D. Student**, University of Waterloo, Ontario, Canada.
Computer Science, Advisers: Vijay Ganesh and Krzysztof Czarnecki
GPA – 92.6/100
Research Focus: Applications and extensions of SAT/SMT

Experience

2012–Present **Research Assistant**, GSD LAB, University of Waterloo.
Supervisors: Vijay Ganesh and Krzysztof Czarnecki
Publications available upon request.
Projects:

- *ClafersMT*. Designed, implemented, and tested a full translation of the relational-logic modeling language *Clafers* to the Z3 SMT solver. Implemented in Python.
- *Improved arithmetic in Kodkod*. Incorporated formula-rewrite techniques into the constraint solver Kodkod for improved performance. Required extensive modification to a medium-sized Java project.
- *MathCheck*. Designed and implemented a constraint programming system that combines SAT solvers with computer-algebra systems. Extended known results on two conjectures related to hypercubes.

2008–2012 **Senior Systems Administrator**, MATH/CS DEPT., Wilkes University.
Supervisor: Dr. Fred Sullivan
Overview: Maintained computer labs (Linux, Mac, Windows) and Linux servers.

Summer 2016 **Research Intern**, Microsoft Research.
Supervisor: Dr. Christoph Wintersteiger
Overview: Lifted the notion of SAT solving backdoors to the SMT bit-vector domain.

Awards

2014–Present Ph.D. Fellowship, IBM Canada Centers for Advanced Studies Research
May 2012 Outstanding Graduate of the College of Science & Engineering, Wilkes University
May 2012 Outstanding Graduate in Computer Science, Wilkes University
May 2012 James Decosmo Memorial Mathematics Award, Wilkes University
May 2012 Scholar-Athlete of the Year, Wilkes University

Computer Languages & Skill Areas

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|-------------|--------------------------|-------|---------------------|
| Experienced | PYTHON, JAVA | Logic | SMT, SAT, Z3, ALLOY |
| Basic | ANDROID, HASKELL, C++, C | Other | Linux, BASH, SAGE |