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## RESEARCH INTERESTS

I am broadly interested in software quality. I am particularly concerned with preventing, finding, understanding, predicting, mitigating, and above all fixing real bugs in real software.

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## EDUCATION

2013 (expected) **Ph.D.**, *Computer Science*, University of Virginia, Charlottesville, VA.

Advisor Westley Weimer

Thesis Automatic, Efficient, and General Repair of Software Defects

2009 **M.S.**, *Computer Science*, University of Virginia, Charlottesville, VA.

Advisor Westley Weimer

Thesis Specification Mining With Few False Positives

2006 **B.A.**, *Computer Science*, Harvard University, Cambridge, MA.

Advisor Greg Morrisett

Thesis Algebraic Type Isomorphisms

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## AWARDS

2012 **Featured Paper**, *IEEE Transactions on Software Engineering*.

2009 **Gold**, “*Humies*” for Human-Competitive Results Produced by Genetic and Evolutionary Computation, Genetic and Evolutionary Computation Conference.

2009 **IFIP TC2 Manfred Paul Award**, *International Conference on Software Engineering*.

2009 **ACM Distinguished Paper Award**, *International Conference on Software Engineering*.

2009 **Best Short Paper**, *Workshop on Search-Based Software Testing*.

2009–2012 **Graduate Fellowship**, *National Science Foundation*.

2008–2009 **Graduate Teaching Award**, *University of Virginia Department of Computer Science*, Voted on by the faculty. Awarded to the student with the most outstanding teaching record that year. Given to 1 of approximately 100 graduate students.

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## PEER-REVIEWED PUBLICATIONS

ICSE '12 **Claire Le Goues**, Michael Dewey-Vogt, Stephanie Forrest and Westley Weimer. A Systematic Study of Automated Program Repair: Fixing 55 out of 105 bugs for \$8 Each, *International Conference on Software Engineering*, Zurich, Switzerland 2012 (to appear).

- TSE '12 **Featured Paper** **Claire Le Goues**, ThanhVu Nguyen, Stephanie Forrest and Westley Weimer. GenProg: A Generic Method for Automatic Software Repair, in *IEEE Transactions on Software Engineering*, vol. 38, no. 1, pp. 54-72, 2012.
- TSE '12 **Claire Le Goues** and Westley Weimer. Measuring Code Quality to Improve Specification Mining, in *IEEE Transactions on Software Engineering*, vol. 38, no. 1, pp. 175-190, 2012.
- SEFM '11 **Claire Le Goues**, K. Rustan M. Leino and Michal Moskal. The Boogie Verification Debugger (Tool Paper), *Software Engineering and Formal Methods*, pp. 407-414, Montevideo, Uruguay, 2011.
- FoSER '10 **Claire Le Goues**, Stephanie Forrest and Westley Weimer. The Case for Software Evolution, in *FSE Working Conference on the Future of Software Engineering*, pp. 205-210, Santa Fe, NM, USA, 2010.
- CACM '10 **Invited** Westley Weimer, Stephanie Forrest, **Claire Le Goues** and ThanhVu Nguyen. Automatic Repair with Evolutionary Computation, in *Communications of the ACM*, vol. 53, no. 5, pp. 109-116, May 2010.
- GECCO '10 Ethan Fast, **Claire Le Goues**, Stephanie Forrest and Westley Weimer. Designing Better Fitness Functions for Automated Program Repair, in *Genetic and Evolutionary Computation Conference*, pp. 965-972, Portland, OR, 2010.
- GECCO '09 **Best Paper** Stephanie Forrest, Westley Weimer, ThanhVu Nguyen and **Claire Le Goues**. A Genetic Programming Approach to Automatic Program Repair, in *Genetic and Evolutionary Computation Conference*, pp. 947-954, Montreal, QC, Canada, 2009.
- ICSE '09 **Distinguished Paper**  
**Manfred Paul Award** Westley Weimer, ThanhVu Nguyen, **Claire Le Goues** and Stephanie Forrest. Automatically Finding Patches Using Genetic Programming, in *International Conference on Software Engineering*, pp. 364-374, Vancouver, BC, Canada, 2009.
- SBST '09 **Best Short Paper** ThanhVu Nguyen, Westley Weimer, **Claire Le Goues** and Stephanie Forrest. Extended Abstract: Using Execution Paths to Evolve Software Patches, in *Search-Based Software Testing*, pp. 152-153, Denver, CO, USA, 2009.
- TACAS '09 **Claire Le Goues** and Westley Weimer. Specification Mining With Few False Positives, in *Tools and Algorithms for the Construction and Analysis of Systems*, pp. 292-306, York, UK, 2009.

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## INDUSTRY EXPERIENCE

**Research Intern**, Microsoft Research, Redmond, WA.

2009

Mentor

K. Rustan M. Leino

Description

Graduate research intern with the Research in Software Engineering (RiSE) group. Researched techniques to visualize formal program verification to enable effective adoption of verification technology. Produced a prototype tool in C# for visualization of verification failures in VerifiedC and Dafny. The codebase has since been released on Microsoft's open-source hosting site. Published a paper with collaborators.

- 2006-2007 **Software Engineer**, IBM Research, Cambridge, MA.  
Description Software Engineer with XML Technologies/Compiler group. Developed and maintained the Datapower SOA appliance, which facilitates rapid and secure processing of XML on large networks. Worked with a six-man team to design and implement an internal language/representation to substantially rewrite a portion of the appliance's XML compiler.
- 2005 **Research Intern**, IBM Research, Cambridge, MA.  
Description Undergraduate Research Intern with the Collaborative User Experience (CUE) group. Developed a working prototype in Java for a rapid, collaborative tool to allow users to share their work and screen share in the open source Open Office application.
- 2004 **Research Intern**, IBM Research, Hawthorne, NY.  
Description Undergraduate Research Intern with the Architect's Workbench group. Programmed in Java while working with a team that seeks to develop a tool to assist IT architects in the design of large systems. Added a number of UI features to an extensive existent code base.

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## TEACHING EXPERIENCE

- 2011 **Guest Lecture**, *CS6610: Graduate Programming Languages*, University of Virginia, Dependent types and data abstraction.
- 2010 **Guest Lecture**, *CS1120: From Ada and Euclid to Quantum Computing and the World Wide Web*, University of Virginia, Implementing Interpreters and Charms.
- 2007-2008 **Teaching Assistant**, *CS210: Software Development Methods*, University of Virginia, Functional programming.
- 2008 **Teaching Assistant**, *CS415: Undergraduate Programming Languages*, University of Virginia, Led test review review and weekly section.

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## MISCELLANEOUS

- Languages Natively fluent in English and French, written and spoken.
- Citizenship Dual US-French/EU citizen.