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Ethan J. Fast

Research Interests

My interests center upon the application of techniques from A.I. and adaptive computation to software engineering.

Education

The University of Virginia

- B.A. Computer Science, 2011 (expected)
- GPA 3.7
- Echols Scholar
- Intermediate Honors, Deans List

James Madison HS, 2007

Research Experience

Automatic Program Repair using Genetic Algorithms

- With Westley Weimer, Claire Le Goues, and Stephanie Forrest, I investigated a new program repair fitness function by using dynamic predicates. We demonstrated significant improvements in fitness distance correlation, and smoother evolution of repairs.
- With Westley Weimer, I developed a new program repair fitness function using correctness-preserving test suite reduction. The technique lowers repair costs by 81%, fixing programs with hundreds of test cases. It thus eliminates a key performance bottleneck, while allowing for additional correctness guarantees.

Teaching Experience

CS150: *From Quantum Computing to the World Wide Web*, Fall 2009

- As a TA for Professor David Evans, my responsibilities included: providing guidance for student problem sets, helping to conduct exam review sessions, and participating in the development of course material for the students' final project.

Awards

2011 CRA Outstanding Undergraduate Research Award, Honorable Mention

Papers

Ethan Fast, Westley Weimer, Claire Le Goues, Stephanie Forrest. "Designing better *fitness functions for automated program repair*." (In submission: The Genetic and Evolutionary Computation Conference, 2010)

Projects/Tools

Created the Clojure framework, 2009

- An open source tool for quickly developing genetic algorithms in Clojure

Created Cloggy, 2009

- An experimental open source blogging platform, written in Clojure.

Work Experience

Instructor for Fairfax Collegiate, 2009

- Taught *Robotics Engineering* and *Introduction to Robotics*

Web Developer

- U.Va. School of Engineering and Applied Science, 2007-2008