

# Raymond PL Buse

Graduate Research Assistant

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[arrestedcomputing.com](http://arrestedcomputing.com)



Research Area: Program Understanding

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## EDUCATION

2007 – present **Ph.D. Dissertation Research**, *Department of Computer Science*, The University of Virginia, Charlottesville, VA  
<http://www.cs.virginia.edu>

advisor Westley Weimer

PROPOSED DISSERTATION

title *Automatically Describing Program Structure and Behavior*

url <http://arrestedcomputing.com/proposal>

description Professional software developers spend over 75% of their time trying to understand code, yet software comprehension is poorly understood by both researchers and practitioners. My research seeks to model aspects of program understandability and to generate documentation artifacts for the purposes of measuring and improving the quality of software. I couple programming language analysis techniques, such as dataflow analyses and symbolic execution, with statistical and machine learning techniques, such as regression and Bayesian inference, to form rich descriptive models of programs.

2007 **Master of Computer Science**, *Department of Computer Science*, The University of Virginia, Charlottesville, VA.

advisor Westley Weimer

MASTERS PROJECT

title *Automatic Documentation for Exceptions*

2006 **Bachelor of Computer Science**, *Department of Computer Science*, The Johns Hopkins University, Baltimore, MD  
<http://cs.jhu.edu>

advisor Yair Amir

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## INDUSTRY EXPERIENCE

2010 **Internship**, Microsoft Research, Redmond, WA  
<http://research.microsoft.com/>

mentor Thomas Zimmermann

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## Publications

Raymond P. L. Buse and Westley R. Weimer. Automatically documenting program changes. In *Conference on Automated Software Engineering (ASE) (Under Review)*, 2010.

Raymond P. L. Buse and Westley R. Weimer. Learning a metric for code readability. *IEEE Transactions on Software Engineering*, 99(PrePrints), 2009.

Raymond P. L. Buse and Westley R. Weimer. The road not taken: Estimating path execution frequency statically. In *International Conference on Software Engineering*, 2009.

Raymond P. L. Buse and Westley R. Weimer. Automatic documentation inference for exceptions. In *International Symposium on Software Testing and Analysis*, pages 273–282, 2008.

Raymond P. L. Buse and Westley R. Weimer. A metric for software readability. In *International Symposium on Software Testing and Analysis*, pages 121–130, 2008.

Jason Eisner, Michael Kornbluh, Gordon Woodhull, Raymond P.L. Buse, Samuel Huang, Constantinos Michael, and George Shafer. Visual navigation through large directed graphs and hypergraphs. In *Proceedings of the IEEE Symposium on Information Visualization (InfoVis'06), Poster/Demo Session*, pages 116–117, Baltimore, October 2006.

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## Teaching Experience

- 2009 **Guest Lecture**, *CS615: Graduate Programming Languages*, Introduction to Machine Learning for Programming Language research.
- 2008 **Tutor**, *CS220: Engineering Software*, Tutored a group of students at request of the faculty member teaching the course..
- 2007 **Teaching Assistant**, *CS410: Distributed Systems*, University of Virginia.
- 2006 **Teaching Assistant**, *CS414: Operating Systems*, University of Virginia.
- 2004 **Teaching Assistant**, *CS205: Data Structures*, Johns Hopkins University.

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## Activities

- 2008–present **Diversity Comittee Member**, *Department of Computer Science*, I work on projects related to promoting diversity in computer science..
- 2009–present **Publicity Chair**, *Association for Women in Computing, University of Virginia*, I promote events of the ACM-W who's primary goal is to encourage women to pursue an education and career in computer science., For example: <http://www.liskovatuva.com>.
- 2008–2010 **Theory Lunch Coordinator**, I solicited, organized, and promoted talks for a group of approximately 25 students and faculty members interesting in theoretical computer science.
- 2008–2009 **Graduate Student Representative**, *Department of Computer Science*, Elected by peers, Responsibilities included organizing graduate student orientation, graduate student liaison to faculty, etc.

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## Mentor Experience

- 2008–2009 **Mentored undergraduate student**, *Elizabeth Soechting*, Now studying Computer Science at The University of Wisconsin Madison.

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## Awards

- 2009 **Graduate Service Award**, *University of Virginia Department of Computer Science*, Voted on by the faculty.

- 2009 **Graduate Researcher of the Year**, *University of Virginia Department of Computer Science*, Voted on by the faculty.
- 2008 **ACM Distinguished Paper Award**, *International Symposium on Software Testing and Analysis*.
- 2002 **Bloomberg Scholarship**, *The Johns Hopkins University*.

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## Technical Presentations

- 2009 **Estimating Runtime Path Frequency Staticly**, *International Conference on Software Engineering*, Vancouver, Canada.
- 2009 **Modeling Non-Executable Program Artifacts**, *IBM Research*, Hawthorne, NY.
- 2008 **A Metric for Software Readability**, *International Symposium on Software Testing and Analysis*, Seattle, WA.
- 2008 **Automatic Documentation for Exceptions**, *International Symposium on Software Testing and Analysis*, Seattle, WA.