

# Nathan Rosenblum

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## Research Interests

Dissertation focuses on the intersection of *computer security*, *program analysis*, and *statistical machine learning* in binary analysis tools and software forensics. Specifically:

- Recovery of *program provenance* from program binaries or other binary code artifacts
- Software forensics and program authorship attribution
- Efficient algorithms for approximate inference and constrained clustering

Further interests include virtualization, binary instrumentation, and binary parsing and representations to support static program rewriting.

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## Education

- 2011 **PhD (Computer Science)**, *University of Wisconsin–Madison*.
- 2007 **MS (Computer Science)**, *University of Wisconsin–Madison*.
- 2002 **BS (Computer Science)**, *University of Idaho*.

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## Publications

### Refereed Articles

Nathan Rosenblum, Xiaojin Zhu, and Barton P. Miller. Who Wrote This Code? Identifying the Authors of Binary Programs. In *Proceedings of the 16th European Symposium on Research in Computer Security (ESORICS)*. September 2011.

Emily Jacobson, Nathan Rosenblum, and Barton P. Miller. Labeling Library Functions in Stripped Binaries. In *Proceedings of the 10th ACM SIGPLAN-SIGSOFT workshop on Program Analysis for Software Tools and Engineering (PASTE)*. September 2011.

Nathan Rosenblum, Barton P. Miller, and Xiaojin Zhu. Recovering the Toolchain Provenance of Binary Code. In *Proceedings of the 19th International Symposium on Software Testing And Analysis (ISSTA)*. July 2011.

Nathan Rosenblum and Xiaojin Zhu and Barton P. Miller. Extracting Compiler Provenance from Program Binaries. In *Proceedings of the 9th ACM SIGPLAN-SIGSOFT workshop on Program Analysis for Software Tools and Engineering (PASTE)*. June 2010.

Nathan Rosenblum and Xiaojin Zhu and Barton P. Miller and Karen Hunt. Learning to Analyze Binary Computer Code. In *Proceedings of the 23rd Conference on Artificial Intelligence (AAAI)*. July 2008.

Nathan Rosenblum and Gregory Cooksey and Barton P. Miller. Virtual machine-provided context sensitive page mappings. In *Proceedings of the 4th International conference on Virtual execution environments (VEE)*. March 2008.

Nathan Rosenblum, Xiaojin Zhu, Barton P. Miller and Karen Hunt. Machine learning-assisted binary code analysis. *NIPS 2007 Workshop on Machine Learning in Adversarial Environments for Computer Security*. December 2007.

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## Select Presentations

“Extracting Compiler Provenance from Program Binaries.” Workshop on Program Analysis for Software Tools and Engineering. June 5th, 2010.

“Implementing Paging-based Virtual Memory on x86 Platforms.” Advanced Operating Systems guest lecture. April 30th, 2010.

“Virtual machine-provided Context Sensitive Page Mappings.” University of Wisconsin Systems Seminar. February 28, 2008.

“Machine learning-assisted Binary Code Analysis.” NIPS 2007 Workshop on Machine Learning in Adversarial Environments for Computer Security. December 8, 2007.

“Parsing and Analysis of Unconventional Code Constructs.” Bowie, Maryland. December 20, 2005.

## Poster Presentations

“Learning to Analyze Binary Computer Code”. AAAI-08, July 2008.

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## Academic Employment

2005 – 2011 **Research Assistant**, *Computer Sciences Department, University of Wisconsin–Madison.*

2001 – 2002 **Teaching Assistant**, *Department of Computer Science, University of Idaho.*

2000 – 2002 **Research Assistant**, *Center for Secure and Dependable Software, Moscow, Idaho.*

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## Industry Employment

2006 – 2010 **Research Adjunct**, *IDA Center for Computing Sciences, Bowie, Maryland.*  
Conducted classified research.

2005 **Research Intern**, *IDA Center for Computing Sciences, Bowie, Maryland.*  
Participated in “SCAMP” summer intern program conducting classified research.

2002 – 2005 **Software Developer**, *Wright Business Graphics, Portland, Oregon.*  
Developed custom data processing and print process workflow management software for a printing firm. Designed and developed an integrated warehousing and procurement system for the company’s fulfillment division. Created web-based solutions for customer ordering and order management. Responsible for evaluating and recommending hardware and software purchases in support of large-scale print and mail operations.

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## Awards and Honors

2009 **Cisco Systems Distinguished Graduate Fellowship**, *University of Wisconsin–Madison.*

2007 **NIPS Travel Grant.**

Awarded a grant to present at the NIPS Workshop on Machine Learning in Adversarial Environments for Computer Security in Vancouver, BC.

2002 **Graduating Senior of the Year Award**, *University of Idaho.*

Recognized as outstanding graduating senior undergraduate in the Department of Computer Science.

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## Service

### Reviews and Committees

Reviewer, *ACM Transactions on Information and System Security (TISSEC)*

Reviewer, *ACM Transactions on Architecture and Code Optimization (TACO)*

Reviewer, *IEEE International Parallel & Distributed Processing Symposium*, May 2009

Member, technical papers program committee, *2007 International Conference for High Performance Computing, Networking, Storage, and Analysis (SCo7)*, November 2007

### Other Service

2007 – 2009 **Student ACM Social Chair.**

Responsible for planning and coordinating Student ACM–sponsored social activities, including department picnics and incoming graduate student receptions.

2006 **Graduate Student Visit Weekend Coordinator.**

Organized the visit weekend for prospective graduate students. Arranged for housing, meals, transportation and activities for visiting prospective students. Coordinated visit day activities, including faculty talks.

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## Professional Affiliations

Member, *Association for Computing Machinery*.

Member, *Association for the Advancement of Artificial Intelligence*.