

Yin Liu

Basic Information:

Gender: Female
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Research Interests:

Software engineering, compilers, programming languages, static and dynamic program analysis, software security, software testing, software comprehension, and software verification.

Education:

Ph.D	Computer Science	08/2004-05/2010
	Rensselaer Polytechnic Institute, Troy, NY	GPA: 4.0
	Thesis Advisor: Prof. Ana Milanova	
	Thesis: <i>Practical Static Analysis for Inference of Security-Related Program Properties</i>	
B.S	Computer Science&Technology	09/1999-07/2003
	Peking University(PKU), Beijing, China	Grade: 87/100 (TOP 15%)

Research and Teaching Experience:

May 2005-Present	Graduate Research Assistant, Rensselaer Polytechnic Institute, Software Engineering Group.
Jan 2005-May 2005	Graduate Teaching Assistant, Rensselaer Polytechnic Institute, Undergraduate course "Computer Science II"
Aug 2004-Jan 2005	Graduate Teaching Assistant, Rensselaer Polytechnic Institute, Undergraduate course "Models of Computation"
Mar 2002-Feb 2004	Research Assistant, Peking University, Software Engineering Lab.

Thesis Research:

- Designed and developed a static analysis framework for reasoning about program security-related properties. The security-related properties include ownership, immutability and information flow.
 - I. Ownership and immutability help reason about object encapsulation and object mutation.
 - II. Information flow helps reason about data confidentiality and data integrity.
- Studied applications of static information flow analysis: security violation detection, type inference, and a study of the effect of thread-shared variables on thread-local variables. Performed a study of the impact of implicit flow versus explicit flow on each of these applications.

Non-thesis Research:

- Worked on a new static inference analysis which identifies different object sharing patterns, and developed an object race detection analysis based on the sharing patterns.
- Worked on static analyses for ownership inference which infer different object encapsulations according to two known protocols.
- Worked on software metrics, and implemented a new approach for the computation of dynamic coupling measures.
- Participated in designing a tool with information retrieval technology to reveal the connections between program features and computational units in source code.

- Participated in implementing a commercial software metrics tool which retrieves information from C++ and Java programs.

Publications:

1. Ana Milanova and Yin Liu, "Static Analysis for Understanding the Structure of Shared Objects in Open Concurrent Java Programs", *Proceedings of the IEEE Working Conference on Reverse Engineering (WCRE 2010)*, October 2010.
2. Yin Liu and Ana Milanova, "Static Information Flow Analysis with Handling of Implicit Flows and A Study on Effects of Implicit vs. Explicit Flows", *14th European Conference on Software Maintenance and Reengineering (CSMR 2010)*, March 2010.
3. Yin Liu and Ana Milanova, "Practical Static Analysis for Inference of Security-Related Program Properties", *17th IEEE International Conference on Program Comprehension (ICPC 2009)*, Pages 50-59, May 2009.
4. Ana Milanova and Yin Liu, "Static Ownership Inference for Reasoning against Concurrency Errors", *ACM SIGSOFT/IEEE International Conference on Software Engineering (ICSE 2009)*, Track on New Ideas and Emerging Results, Pages 279-282, May 2009.
5. Yin Liu and Ana Milanova, "Static Analysis for Inference of Explicit Information Flow", *ACM SIGPLAN/SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 2008)*, Pages 50-56, November 2008.
6. Yin Liu and Ana Milanova, "Ownership and Immutability Inference for UML-Based Object Access Control", *ACM SIGSOFT/IEEE International Conference on Software Engineering (ICSE 2007)*, Pages 323-332, May 2007.
7. Yin Liu and Ana Milanova, "Static Analysis for Dynamic Coupling Measures", *16th IBM Center for Advanced Studies Annual International Conference on Computer Science and Software Engineering (CASCON 2006)*, Pages 119-130, October 2006.
8. Wei Zhao, Lu Zhang, Yin Liu, Jiasu Sun and Fuqing Yang, "SNIAFL: Towards a Static Non-Interactive Approach to Feature Location", *ACM Transactions on Software Engineering and Methodology (TOSEM)*, April 2006, Volume 15, Issue 2, Pages 195 - 226.
Invited from ICSE 2004 as one of the best papers.
9. Wei Zhao, Lu Zhang, Yin Liu, Jiasu Sun and Fuqing Yang, "SNIAFL: Towards a Static Non-Interactive Approach to Feature Location", *26th International Conference on Software Engineering (ICSE 2004)*, Pages 293-303, May 2004. **ACM Distinguished Paper Award.**
10. Wei Zhao, Lu Zhang, Yin Liu, Jing Luo and Jiasu Sun, "Understanding How the Requirements Are Implemented in Source Code", *10th Asia-Pacific Software Engineering Conference (APSEC 2003)*, Pages 68-77, Dec 2003.

* Underlined name shows the paper presenter.

In Submission & Final Preparation:

1. Ana Milanova and Yin Liu, "Practical Static Ownership Inference", *submitted to 24th European Conference on Object Oriented Programming (ECOOP 2010)*.
2. Yin Liu, "Practical Static Analysis for Inferences of Security-related Program Properties", Ph.D Thesis, Department of Computer Science, Rensselaer Polytechnic Institute, expected May 2010.
3. Ana Milanova and Yin Liu, "On the Structure of Sharing in Open Concurrent Java Programs", *in preparation*.
4. Yin Liu and Ana Milanova, "Information Flow in Distributed Systems", *in preparation*.
5. Yin Liu and Ana Milanova, "Object Race Detection via Ownership Inference", *in preparation*.

Posters:

1. Yin Liu and Ana Milanova, "Static Information Flow Analysis for Java", *Mid-Atlantic Student Workshop on Programming Languages and Systems, Princeton University, Princeton, NJ, April 2008.*
2. Yin Liu and Ana Milanova, "Ownership and Immutability Inference for UML-Based Object Access Control", *CRA-W/CDC Programming Languages Summer School, University of Texas at Austin, Austin, TX, May 2007.*
3. Yin Liu and Ana Milanova, "Static Analysis for Dynamic Coupling Metrics", *Mid-Atlantic Student Workshop on Programming Languages and Systems, Rutgers University, Piscataway, NJ, April 2006.*

Honors and Awards:

- SigSoft CAPS student travel fund: ICSE 2007.
- ACM Distinguished Paper Award at ICSE 2004.
- Taiyuan 2002 Scholarship Honor, Excellent Student 2002 Award.
- GuangHua 2001 Scholarship Honor, Excellent Student 2001 Award.

References:

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