Eva Rose, Ph.D.

10 Wayside Lane, Scarsdale, NY 10583 • 914-255-2180 • eva@rose.name

Research interests

Program analysis; formal semantics; functional programming; privacy, safety and security in programming; programming for embedded systems.

Skill set

Mobile platform security and privacy (bytecode verification). Programming (Python, Java, Haskell, C, Prolog, web services). Compilers (type checking, certifying compilers, proof carrying code). Theoretical computer science (program analysis, formal semantics, logic, complexity theory).

Employment

NEW YORK UNIVERSITY **New York, NY**
Adjunct Associate Pofessor in Computer Science (Fall 2014), teaching graduates in *Compiler Construction*. Visiting professor during spring 2014.

MARIST COLLEGE **Poughkeepsie, NY**
Assistant Professor in Computer Science (2005-2006), teaching graduates and undergraduates in *Programming Language Semantics*, *Service Oriented Architecture, Web Services*, and *Java*.

INTERNATIONAL BUSINESS MACHINES **Hawthorne, NY**
Post Doctoral Researcher with the IBM, T.J. Watson Research Center (2003 - 2004). Worked in the area of *Service Oriented Architecture, XSLT transformation, and Webservices* (senior manager Sharon Adler).

INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE **France**
Boursier de these with INRIA Rocquencourt (1997 - 2001). Worked with *Security Aspects of Java Cards*. Employed under a joint collaboration project (DYADE) between INRIA, The French National Computer Research Center, and the French computer industrial BULL.

Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA**
CRP Fellow enrolled in the MIT Professional Education Career Reengineering Program (2011-2012). Completed the course *Computer System Security* (C-6.585) and participated in various leadership and development workshops. Assisted in running the student sessions at POPL 12 (ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages) in January 2012. Internship with the Computer-Aided Programming group at CSAIL, MIT (http://projects.csail.mit.edu/pl/) resulting in an implementation of the privacy-enforcing Jeeves engine and report [15].

UNIVERSITÉ DE PARIS VII **France**
Ph.D. in Computer Science awarded in September 2002 [5]. The thesis focus was to solve the problem of *Java bytecode verification on a resource constrained, mobile device*. The solution, *Lightweight Bytecode Verification*, resulted in a personal collaboration with Sun Microsystems (Sheng Liang), which in turn lead to the CLDC (Connected Limited Device Configuration) specification [10,11], where the *stack map attribute* implements my *lightweight certificate* concept. Now also part of Java™ 7. Furthermore, it directly inspired the EU project MOBIUS [12] led by Gilles Barthes, as well as other research areas [13]. Entailed two publications in CORE ranked A journals [1,2], and two (refereed) workshops [7,8]. The work resulted in a direct collaboration with Sun, which led to the "StackMap" class attribute as well as the Prolog specification actually used by (and acknowledged in) the Java SE 7 virtual machine [14].

UNIVERSITY OF COPENHAGEN **Denmark**
M.Sc. in Computer Science awarded in October 1998 [6]. Graded the equivalent to "A" (supervised by Mads Tofte). Included publication in a CORE A ranked journal [3], a CORE A ranked conference [4], and one (refereed) workshop paper [9], all in the area of *Algorithmic Complexity* (supervised by Neil Jones). Research [9] was supported by NSF and the Torkil Holm foundation. B.Sc. in mathematics and computer science included one year at University of Paris VII, France, under the EU "Erasmus" programme where I followed classes in mathematical logic.

Leadership

PRINCIPAL CHAIR AND FUNDRAISER (Fall and winter 2012)
Elected head of annual music festival 2012 (hbms.org), raising 20,000 dollars net, primarily for financial aid programs. Responsible for the ultimate planning and decision making concerning hiring, coordination, and the development of a complete (new) software support side (www.holidaymusicfesival.org).

LEADERSHIP IN TECHNOLOGY WORKSHOP (Nov 2011)
A 2-day workshop (by SheerLine Associates) on how to become a better leader, colleague, and employee in a technological organization.

Languages/Interests Fluent in 4 languages (English, French, Danish, German). Member of the Association for Computing Machinery (ACM). I greatly appreciate tutoring and mentoring in math and computer science. On a personal level, I enjoy running and playing tennis.

Publications

Journal publications

[1] Eva Rose. Lightweight bytecode verification. *Journal of Automated Reasoning* **31**(3-4):303-334 (2003), doi:10.1023/B:JARS.0000021015.15794.82.

[2] Eva Rose and Kristoffer H. Rose. Java access protection through typing. *Concurrency and Computation: Practice and Experience* **13**:1125-1132 (2001), doi:10.1002/cpe.599.

[3] Eva Rose. Linear-time hierarchies for a functional language machine model. *Science of Computer Programming* **32**(1-3):109-143 (1998), doi:10.1016/S0167-6423(97)00032-4.

Some influential publications

[4] Eva Rose. *Linear time hierarchies for a functional language machine model*. In Hanne Nielson, editor, Programming Languages and Systems- ESOP '96, volume 1058 of Lecture Notes in Computer Science, pages 311-325. Springer Berlin/Heidelberg, 1996, doi:10.1007/3-540-61055-345.

[5] Eva Rose. *Vérification de Code d Octet de la Machine Virtuelle Java: Formalisation et Implantation*. Ph.d. thesis, Université Denis Diderot (Paris VII), September 2002. In English. http://www.evarose.net/thesis-submitted.pdf.

[6] Eva Rose. *Towards Secure Bytecode Verification on a Java Card*. M.Sc. thesis, University of Copenhagen, October 1998. In English.

[7] Eva Rose and Kristoffer H. Rose. *Lightweight java bytecode checker in Prolog*. In T. Jensen, editor, Réunion de l'action coopérative Java Card, St. Malo, France, July 1999.

[8] Eva Rose and Kristoffer H. Rose. *Lightweight bytecode verification*. In FUJ '98 - Formal Underpinnings of Java (OOPSLA Workshop), Vancouver, British Columbia, 1998, http://www.cs.ru.nl/ftfjp/1998/cfp.html.

[9] Eva Rose. *Characterizing computation models with a constant factor time hierarchy*. In B. Kapron, editor, Workshop on Computational Complexity and Programming Languages. DIMACS, RUTCOR, Rutgers University, July 1996. http://dimacs.rutgers.edu/Workshops/Programming/.

Impacted projects and research

[10] F. Yellin and J. A. Gosling, *Bytecode program interpreter apparatus and method with pre-verification of data type restrictions and object initialization*, United States Patent 6,477,702, filed November 9, 2000, granted November 5, 2002.

[11] The *Stack map format*, Section 2.1 of CLDC–Connected Limited Device Configuration, JSR 030, JSR 139, and JSR 202. Published by SUN Microsystems. http://iguanadoc.googlecode.com/svn/trunk/Base%20documental/moviles/cldc-1_1-fr-spec/Appendix1-verifier.pdf.

[12] MOBIUS, a joint EU project on enabling Java on resource limited mobile devices. http://www-sop.inria.fr/marelle/Mobius. (See http://ti.arc.nasa.gov/m/events/pcc09/talk7.pdf presented at Workshop on Proof-Carrying Code and Software Certification (PCC'09), August 15, 2009, Los Angeles, California.)

[13] G. Klein and T. Nipkow. Verified Lightweight Bytecode Verification. *Concurrency and Computation: Practice and Experience* **13**:1125-1132 (2001), doi:10.1002/cpe.597.

[14] T. Lindholm, F. Yellin, G. Bracha, A. Buckley: The Java Virtual Machine Specification (Java SE 7 Edition). Addison-Wesley, 2013.

Technical Documentation and code releases

[15] Eva Rose. Constraint Generation for The Jeeves Privacy Language, MIT report, MIT-CSAIL-TR-2014-029, October, 2014.

[16] Eva Rose. Jeeves in Haskell, September, 2014. https://github.com/drevarose/jeeves-in-haskell/blob/master/jeeves-constraints.lhs

Peer reviewer for multiple academic conferences and journals, most recently: RTA 13—Rewriting Technology Applications (June 2013).