

HAAKON RINGBERG

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EDUCATION

Princeton University, Princeton, NJ

2004-

Ph.D. in Computer Science, *expected* June 2009

Advisors: Jennifer Rexford and Kai Li

Thesis: *A privacy-preserving collaboration scheme to mitigate unwanted traffic.*

Demonstrates that analyzing network traffic from multiple vantage points improves accuracy, and our privacy-preserving scheme will make enterprises more comfortable with collaboration.

Cornell University, Ithaca, NY

2001-2004

B.A. in Computer Science, *magna cum laude honors*

B.A. in Philosophy

INDUSTRY EXPERIENCE

Arbor Networks, Ann Arbor, MI – Research Assistant

Summer 2008

- Studied Internet traffic from 95 customer ISPs. Characterized traffic growth across geographic regions, changes in the popularity of Internet services, and the commodification of CDNs.

AT&T Labs Research, Florham Park, NJ – Research Assistant

Summer 2007

- Designed and implemented a software architecture that leverages machine learning algorithms to mimic Snort, the intrusion detection system, but analyzes summarized data for faster processing

Thomson, Paris, France – Research Assistant

Summer and fall 2006

- Demonstrated that PCA, when used as a network traffic anomaly detector, is very sensitive to the properties of the underlying traffic, and that tuning PCA can be challenging
- Designed and implemented a system to manually inspect and validate anomalies in traffic traces

Data Domain, Palo Alto, CA – Software Development Intern

Summers 2004, 2005

- Implemented a lossless data compression algorithm and an encryption subsystem using OpenSSL
- Convinced management to use a more standard synchronization primitive

GrammaTech Inc, Ithaca, NY – Software Development Intern

Summer 2003

- Designed and implemented a prototype refactoring-tool aimed to assist the military in maintaining legacy Ada software
- Designed and implemented a Scheme interface to AT&T Research's DynaDAG incremental graph layout tool

PUBLICATIONS

Refereed Publications

- **Haakon Ringberg**, Matthew Roughan, Jennifer Rexford. "The Need For Simulation In Evaluating Anomaly Detectors." *ACM SIGCOMM CCR Editorial*. January 2008.
- **Haakon Ringberg**, Augustin Soule, Jennifer Rexford. "WebClass: Adding Rigor To Manual Labeling of Traffic Anomalies." *ACM SIGCOMM CCR Editorial*. January 2008.

- Augustin Soule, **Haakon Ringberg**, Fernando Silveira, Christophe Diot. “Challenging the Supremacy of Traffic Matrices in Anomaly Detection.” *Proc. ACM Internet Measurement Conference*. San Diego, CA, October 2007.
- **Haakon Ringberg**, Augustin Soule, Jennifer Rexford, Christophe Diot. “Sensitivity of PCA for Traffic Anomaly Detection.” *Proc. ACM SIGMETRICS*. San Diego, CA, June 2007.
- Augustin Soule, **Haakon Ringberg**, Fernando Silveira, Jennifer Rexford, Christophe Diot. “Detectability of Traffic Anomalies in Two Adjacent Networks.” *Proc. Passive and Active Measurement Conference*. Louvain-la-neuve, Belgium, April 2007.
- Justin Koser, **Haakon Larsen**¹, Jeffrey A. Vaughan. “sml2java: A Source To Source Translator.” *DP-COOL (Declarative Programming in the Context of Object-Oriented Languages) Workshop at PLI (Principles, Logics, and Implementations of High-Level Languages) 2003*. Uppsala, Sweden, August 2003.

In Submission

- **Haakon Ringberg**, Augustin Soule, Matthew Caesar, “Evaluating the Potential of Collaborative Anomaly Detection.” *Proc. Passive and Active Measurement Conference*, April, 2009.
- Nicholas Duffield, Patrick Haffner, Balachander Krishnamurthy, **Haakon Ringberg**. “Rule-Based Anomaly Detection on IP Flows.” *IEEE INFOCOM*, April, 2009.

Additional Presentations

- “Tracking the IPv6 Migration.” *NANOG 44*, Los Angeles, CA, October 2008.
- “Sensitivity of PCA for Traffic Anomaly Detection.” *DIMACS/DyDAN Workshop on Internet Tomography*, Piscataway, NJ, May 2008
- “Behavior of Bots in Traffic Traces.” *Georgia Tech College of Computing*, Atlanta, GA, March 2008
- “The Challenges of Evaluating Traffic Anomaly Detectors.” *Intimate 2007: Workshop on Methods and Tools for Network Analysis*, Paris, France, July 2007
- “Data ~ Detectability.” *Intimate 2006: Network Anomaly Diagnosis Workshop*, Paris, France, July 2008

TEACHING ASSISTANTSHIPS

Data Structures and Functional Programming (COS 333), Princeton University *Spring 2006*

- A course designed by Professor Brian Kernighan that introduces the students to a wide array of programming languages and techniques (e.g., regular expressions, scripting languages, Ajax programming, database schemas, web services, yacc). The primary message of the course is that each of these languages/techniques are tools in a toolbox, and that a programmer’s primary task is to find the right tool to use given the task at hand.
- Supervised groups of students as they each created a three-tiered web service application

General Computer Science (COS 126), Princeton University *Fall 2005*

- COS 126 is the introductory computer science course at Princeton, and it is also required for all students seeking an engineering degree (BS). The course teaches students to program in Java, in addition to basic data structures and algorithms.
- Taught two sections per week with up to 25 students; held weekly office hours; graded students

Data Structures and Functional Programming (CS 312), Cornell University *2002-2004*

- The final required programming course at Cornell is taught in SML, which forces students to adapt to the functional programming paradigm while simultaneously learning a range of more

¹ I legally changed my name from “Haakon Andreas Ringberg Larsen” to “Haakon Andreas Ringberg” during my graduate studies

advanced programming techniques. Topics covered include software engineering (specifications, representation invariants, modularization, and testing), reasoning about code efficiency and correctness, data structures (*e.g.*, red-black trees, heaps, splay trees, B-trees) and locality.

- Taught two sections per week with up to 25 students; held weekly office hours; graded students
- Designed and implemented course assignments to convey concepts discussed above

COMMUNITY PARTICIPATION

- NSF-funded scholarship for a 1 month stay at UCLA's Institute for Pure & Applied Mathematics (IPAM), September-October 2008
- **TPC member**, CoNEXT 2008 Shadow PC
- **Reviewer**, IEICE Transactions on Information Systems, 2008
- Organized two-day training sessions for new Teaching Assistants at Princeton University Department of Computer Science, 2007 and 2008
- Organized presentation on how to be admitted to, and succeed in, graduate school; Cornell University 2005; Princeton University 2006 and 2007
- Held presentation on introductory computer science courses at Princeton and Cornell to the faculty of computer science at the University of Tromsø

ADDITIONAL INFORMATION

Citizenships

- United States of America
- Norwegian (full work-privileges in European Union)

Native fluency in English and Norwegian

REFERENCES

Professor Jennifer Rexford
Professor
Princeton University
jrex@cs.princeton.edu

Professor Kai Li
Charles Fitzmorris Professor
Princeton University
li@cs.princeton.edu

Dr. Christophe Diot
Lab Director
Thomson Paris Research Lab
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Dr. Nicholas Duffield
Distinguished Member of Technical Staff
AT&T Labs-Research
duffield@research.att.com

Dr. Craig Labovitz
Chief Scientist
Arbor Networks
labovit@arbor.net