Avishay Traeger

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OBJECTIVE

To perform research in a challenging environment which would leverage my skills and experience in the fields of operating systems, file and storage systems, and performance analysis.

EDUCATION

◇ **Stony Brook University**, Stony Brook, NY, USA
Ph.D. in Computer Science (July 2008)
M.S. in Computer Science (May 2005)
Overall GPA: 3.75
Awards: IBM Ph.D. Fellowship, Presidential Fellowship
Relevant courses: Operating Systems, Computer Architecture, Network Programming

◇ **Queens College**, Flushing, NY, USA
B.S in Computer Science (May 2003)
Computer Science GPA: 4.0, Overall GPA: 3.89
Honors: Magna Cum Laude, Phi Beta Kappa Society, Golden Key National Honor Society, Upsilon Pi Epsilon International Computer Science Honor Society, Dean's List for all semesters attended
Relevant courses: Operating Systems, Internet Security

RESEARCH EXPERIENCE

◇ **Research Staff Member**, Storage Systems and Performance Management Group, IBM Haifa Research Lab, Tel Aviv, Israel (October 2008 – Present)
- IBM Confidential :-)

◇ **Research Assistant**, File systems and Storage Lab (FSL), Stony Brook University, Stony Brook, NY, USA (June 2004 – July 2008)
- Led research projects involving performance analysis on distributed systems and virtual machines.
- Researched and reported on proper file and storage system benchmarking techniques. Helped organize a workshop to discuss these issues with participants from academia and industry.
- Led research projects involving NFSv4 filter mechanisms for compression and encryption, as well of ways to take advantage of compound operations.
- Helped develop an innovative method for operating system performance analysis.
- Performed operating systems research, involving complex kernel programming, with an emphasis on performance profiling, NFS, and memory hierarchy optimization.
- Designed and developed a system to create cryptographically secure NFS file handles to prevent information leakage and file handle guessing.
- Wrote one journal article, three conference papers, three workshop papers, three technical papers, and three grant proposals (one of which got funded).

◇ **Intern**, IBM Haifa Research Lab, Tel Aviv, Israel (April 2006 – July 2006)
- Created proper and efficient benchmarking and profiling environments for evaluating the performance of IBM's object store.
- Benchmarked the object store, and analyzed the results.
- Investigated performance anomalies using OSprof, and fixed the problems (improved performance by over 12 times, surpassing goals).
- Helped design a sound and efficient failure recovery scheme for the object store.

◇ **Intern**, IBM Haifa Research Lab, Tel Aviv, Israel (May 2005 – August 2005)
- Designed and implemented a Linux file system, called `osdfs`, which utilizes an object store developed in IBM HRL as its storage device, while providing the user with normal file system semantics.

- Worked closely with the object store group to improve functionality and correctness of the object store.
- The file system has been released as open source, and an updated version called `exofs` has been included in the mainline Linux kernel (since version 2.6.30).

REFEREED PUBLICATIONS

◇ **DARC: Dynamic Analysis of Root Causes of Latency Distributions**
A. Traeger, I. Deras, and E. Zadok
Proceedings of the 2008 International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2008). June 2008.

◇ **A Nine Year Study of File System and Storage Benchmarking**
A. Traeger, N. Joukov, C. P. Wright, and E. Zadok
ACM Transactions on Storage. May 2008.

◇ **Round-Trip Privacy with NFSv4**
A. Traeger, K. Thangavelu, and E. Zadok
Proceedings of the 2007 ACM Workshop on Storage Security and Survivability (StorageSS 2007). October, 2007.

◇ **RAIF: Redundant Array of Independent Filesystems**
N. Joukov, A. Krishnakumar, C. Patti, A. Rai, S. Satnur, A. Traeger, and E. Zadok. Proceedings of the 24th IEEE Conference on Mass Storage Systems and Technologies (MSST 2007). September, 2007.

◇ **Operating System Profiling via Latency Analysis**
N. Joukov, A. Traeger, R. Iyer, C. P. Wright, and E. Zadok
Proceedings of the 7th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2006). November, 2006.

◇ **Using Free Web Storage for Data Backup**
A. Traeger, N. Joukov, J. Sipek, and E. Zadok
Proceedings of the 2006 ACM Workshop on Storage Security and Survivability (StorageSS 2006). October, 2006.

◇ **Efficient and Safe Execution of User-Level Code in the Kernel**
E. Zadok, S. Callanan, A. Rai, G. Sivathanu, and A. Traeger
Proceedings of the 2005 NSF Next Generation Software Workshop, in conjunction with the 2005 International Parallel and Distributed Processing Symposium (IPDPS 2005). April 2005.

POSTERS

◇ **Securing Data at Rest with NFSv4**
A. Traeger and E. Zadok
Security and Privacy Day @ Stony Brook. May 2008.

◇ **Visualizing Performance Problems on HEC Systems**
E. L. Miller, K. Mueller, A. Traeger, and E. Zadok
HECIWG FSIO Workshop. August 2007.

◇ **Versatile, Portable, and Efficient OS Profiling via Latency Analysis**
N. Joukov, R. Iyer, A. Traeger, C. P. Wright, and E. Zadok
Poster Abstracts of the 20th ACM Symposium on Operating Systems Principles (SOSP 2005). October 2005.

TECHNICAL REPORTS

◇ **Benchmarking File System Benchmarks**
N. Joukov, A. Traeger, C. P. Wright, and E. Zadok
Computer Science Department, Stony Brook University. December 2005.

◇ **NFS File Handle Security**
A. Traeger, A. Rai, C. P. Wright, and E. Zadok
Computer Science Department, Stony Brook University. May 2004.

◇ **An Embedded Database as a Reusable Operating System Component**
C. P. Wright, A. Kashyap, M. Zubair, J. Dave, H. Krishnan, D. Kulkarni, A. Rai, G. Sivathanu, A. Traeger, and E. Zadok
Computer Science Department, Stony Brook University. May 2004.

OTHER PUBLICATIONS

- **Notes on a Nine Year Study of File System and Storage Benchmarking**
  A. Traeger, and E. Zadok
  Byte and Switch (`www.byteandswitch.com`). July 2009.
- **Findings from the First Annual File and Storage Systems Benchmarking Workshop**
  A. Traeger, E. Zadok, E. L. Miller, and D. D. E. Long
  USENIX *;login:* magazine. October 2008.
- **Conference reports for USENIX *;login:* magazine**
  - Reported on 5 presentations in FAST 2007 (appears in Jun. 2007 edition)
  - Reported on 3 presentations in HotDep 2006 (appears in Feb. 2007 edition)

TEACHING EXPERIENCE

- **Teaching Assistant**, Stony Brook University, Stony Brook, NY, USA (November 2006 – December 2006)
  - Assisted the graduate-level operating systems course.
  - Designed the class's final project, and described it in an extensive document.
  - Helped students with their projects, graded the final exam and project.
- **Teaching Assistant**, Stony Brook University, Stony Brook, NY, USA (September 2003 – May 2004)
  - Course work included data structures and algorithms in Java and C.
  - Conducted recitations, held office hours, graded exams and projects.
- **Lecturer**, ACM JETT Program, Stony Brook University, Stony Brook, NY, USA (May 2004)
  - Taught data structures in Java to high school teachers as part of the ACM JETT (Java Engagement for Teacher Training) Program.
  - Helped prepare teachers to instruct students taking the advanced placement exam in computer science.
  - Made material relevant to teachers whose computer science backgrounds varied greatly.
- **Queens College Staff Tutor**, Queens College, Flushing, NY, USA (September 2002 – May 2003)
  - Taught and assisted university students in algorithms and data structures.
  - Prepared students for exams, taught programming skills and logical thought processes.
- **Private Tutor** (February 2002 – May 2003)
  - Taught high school level mathematics and chemistry.
  - Prepared students for classroom exams, New York State Regents exams, as well as the national S.A.T. exam. Motivated students to improve grades, taught problem-solving skills and applying theory to real problems.

SKILLS

- **Programming Languages**
  C, Perl, Python, Bash, Java, C++, some MIPS/x86 assembly
- **Operating Systems**
  Linux (including kernel programming), FreeBSD, Solaris, MS Windows 95/98/Me/2000/XP, MS-DOS

PERSONAL

- **Citizenship**: US and Israel
- **Natural Languages**: Fluent in English and Hebrew reading, writing, and speech.

REFERENCES

- **Available upon request.**