

Mohan Dhawan

- CONTACT INFORMATION** Room 333, CoRE Bldg, Voice: 732-306-4296
96 Frelinghuysen Rd, E-mail: mdhawan@cs.rutgers.edu
Department of Computer Science, WWW: <http://paul.rutgers.edu/~mdhawan>
Rutgers, The State University of New Jersey,
Piscataway, NJ 08854 USA
- RESEARCH INTERESTS** Computer Security (with current focus on JavaScript and web browsers), Programming Languages, Computer Networks and Operating Systems.
- EDUCATION**
- Rutgers, The State University of New Jersey**, New Brunswick, New Jersey USA
- PhD. Candidate, Computer Science **August 2007 - (expected May 2013)**
- Dissertation Topic: “Securing untrusted JavaScript content in web browsers”
 - Advisors: Vinod Ganapathy and Liviu Iftode
 - Current GPA: 3.93
- MotiLal Nehru National Institute of Technology (MNNIT)**, Allahabad, India
- B.Tech., Computer Science and Engg. **August 2001 - May 2005**
- Dissertation Topic: “Object tracking using acoustic sensor networks”
 - Advisor: MM Gore
- HONORS AND AWARDS**
- Student travel grant for SOSP 2011, Cascais, Portugal.
 - Best Student Paper Award at ACSAC 2009, Honolulu, USA.
 - Student travel grant for CCS 2008, Alexandria, Virginia, USA.
 - Alpha Award (2005) for professional excellence at HUGHES Software Systems, Gurgaon, India.
 - Institute Academic Excellence Award (2001-05), MNNIT, Allahabad, India.
- PUBLICATIONS**
- *An Analysis of the Mozilla Jetpack Extension Framework*
Rezwana Karim, Mohan Dhawan, Chung-Chieh Shan and Vinod Ganapathy
26th European Conference on Object-Oriented Programming (ECOOP’12), Beijing, China, June 2012
 - *Enhancing JavaScript with Transactions*
Mohan Dhawan, Chung-Chieh Shan and Vinod Ganapathy
26th European Conference on Object-Oriented Programming (ECOOP’12), Beijing, China, June 2012
 - *Atlantis: Robust, Extensible Execution Environments for Web Applications*
James Mickens and Mohan Dhawan
23rd ACM Symposium on Operating Systems Principles (SOSP’11), Cascais, Portugal, October 2011
 - *The Case for JavaScript Transactions*
Mohan Dhawan, Chung-Chieh Shan and Vinod Ganapathy
5th ACM SIGPLAN Workshop on Programming Languages and Analysis for Security (PLAS’10), Toronto, Canada, June 2010.
 - *Analyzing Information Flow in JavaScript-based Browser Extensions (Best Student Paper)*

Mohan Dhawan and Vinod Ganapathy
25th Annual Computer Security Applications Conference (ACSAC'09), Honolulu, Hawaii, USA,
December 2009.

- *Enforcing Authorization Policies using Transactional Memory Introspection*
Arnar Birgisson, Mohan Dhawan, Úlfar Erlingsson, Vinod Ganapathy and Liviu Iftode
15th ACM Conference on Computer and Communications Security (CCS'08), Alexandria, Virginia, USA, October 2008.

SOFTWARE
ARTIFACTS

Priv3: Practical Third-Party Privacy for the Social Web

WWW: <http://priv3.icsi.berkeley.edu/>

WWW: <https://addons.mozilla.org/en-US/firefox/addon/priv3/>

The Priv3 Firefox extension lets users remain logged in to the social networking sites and still browse the web, knowing that third-party sites only learn about them when users want them to. All this happens transparently, without the need to maintain any filters. Priv3 has a user base of over 15,000.

ACADEMIC &
RESEARCH
EXPERIENCE

Rutgers, The State University of New Jersey, New Brunswick, New Jersey USA

Research Assistant

August 2009 - present

Primary research focus is on development of tools and techniques to secure all forms of untrusted JavaScript execution in web browsers. I have been involved in the development of the following tools:

- **Beacon** is a static analysis tool for JavaScript to study and identify capability leaks in the Mozilla Jetpack framework. The tool is also used to identify over-privileged Jetpack modules and addons.
- **Transcript** is a system that enhances the JavaScript language with support for speculative execution. It provides hosting web applications with powerful mechanisms to mediate the actions of untrusted guests and cleanly recover from the effects of security-violating actions of guest code.
- **Sabre** uses in-browser JavaScript-level information flow tracking to analyze JavaScript-based browser extensions (JSEs). This tool was used to analyze several popular and a few malicious JSEs to detect confidentiality and integrity violations.

Teaching Assistant

August 2007 - May 2009

Duties included office hours, grading assignments and leading weekly recitations.

- Introduction to Software Security (CS 671), Spring 2009
- Computer Applications for Business (CS 170), Fall 2007, Spring 2008 and Fall 2008

International Computer Science Institute, Berkeley, USA

Research Intern

May 2011 - October 2011

Worked on a new network measurement platform to enable the capability for network measurements directly from the perspective of end systems. Leveraged the ubiquity of web browsers to demonstrate the possibilities of browsers themselves offering such a programmable environment for network measurement.

Microsoft Research, Redmond, USA

Research Intern

June 2010 - August 2010

Developed a new exo-kernel web browser architecture that provides a robust, secure and extensible execution environment for a web application. Web applications can selectively redefine components of the web stack to minimize their dependence on browser code.

Indian Institute of Technology, Kanpur, India

Research Assistant **August 2006 - May 2007**
Implemented the access control list (ACL) support for TransCrypt, an encrypted file system. Modified the Linux kernel and augmented the ACL entry to store per-file per-user cryptographic meta-data. Protecting a file's ACL now required the kernel to do ACL manipulation work (instead of using the standard ACL manipulation library 'libacl').

MotiLal Nehru National Institute of Technology (MNNIT), Allahabad, India

Undergraduate Researcher **August 2004 - May 2005**
Implemented an object tracking system using acoustic wireless sensors. Co-operating motes (arranged in a grid) analyzed data (from neighbors) to determine the position co-ordinates, instantaneous velocity and direction of the moving object.

Undergraduate Researcher **June 2004 - August 2004**
Developed the "Home Automation System", a device control system through which one can control all electronic and electrical appliances from a mobile / cell phone.

PROFESSIONAL
EXPERIENCE

HUGHES Software System, Gurgaon, India

Software Engineer **June 2005 - August 2006**
Designed and developed several features for the IMS Client Framework (ICF), which is a platform for mobile client devices that enables easy introduction of services in next generation IMS networks.

- Implemented the TCP support for network transmission, starting the servers and initiating the connections to the peer at the time of configuration.
- Provided additional support for two types of transport modes namely TCP_ONLY and BOTH (where if the TCP transmission fails, ICF reverts back to UDP for transmission).
- Added support for various types of UMTS Bearer Service Attributes and traffic classes for multiple streams in SDP that were handled by ICF.
- Worked on network QoS for supporting pre-condition alerting and multiple secondary PDP activations for media streams, apart from the primary PDP activation for the signaling stream.

National Informatics Center, Department of Justice, Allahabad, India

Summer Intern **June 2003 - August 2003**
Developed a web based File Monitoring System to track the intra-department movement of all correspondence and files, from their creation till completion of processing and final archival.

SERVICE

External reviewer for USENIX Security, CCS, NDSS, AsiaCCS.

RELEVANT
COURSEWORK

Software Security, Information Security, Cyber-physical Systems, Operating Systems, Distributed Systems, Programming Languages & Compilers and Computer Networks.

Additional light seminars on Mobile Security, Web Security and Information Security.

TECHNICAL SKILLS

Programming: C, C++, C#, JavaScript, Java, UNIX shell scripting and Scheme.

Applications: SpiderMonkey, L^AT_EX and other common productivity packages.

Operating Systems: Linux, Microsoft Windows and Solaris.

VISA STATUS

F1 Student Visa

REFERENCES

Available on request.