

Ragib Hasan

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RESEARCH INTERESTS Computer Security, Storage Security, Secure Provenance, Regulatory Compliant Databases, Policy Management, Trust Management

EDUCATION **University of Illinois at Urbana Champaign**, Urbana, Illinois
PhD Candidate in Computer Science, Fall 2003-Current (Expected graduation: Fall 2009)

- Dissertation topic: Secure Provenance and Term Immutable Databases
- Advisor: Professor Marianne Winslett, UIUC
- Co-advisor: Professor Radu Sion, SUNY-Stony Brook
- Other committee members: Carl Gunter, Nikita Borisov, and Himashu Khurana
- GPA: 3.84/4.00

MS in Computer Science, UIUC, received December 2005

- Thesis: Synergy: A Trust-aware Policy-driven Information Dissemination Framework
- Advisor: Professor Marianne Winslett, UIUC
- GPA: 3.77/4.00

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

B.Sc Computer Science and Engineering, February 2003

Graduated **Summa Cum Laude** in a class of 45, GPA 3.99/4.00

Received Chancellor Award for highest GPA among students of all departments

RESEARCH EXPERIENCE **University of Illinois at Urbana-Champaign** **August 2005-Current**
Graduate Research Assistant

DAIS group: Trust and Compliance Storage subgroup

Working on Secure Provenance, Term-immutable Databases, Storage Security, and Trust Management under Prof. Marianne Winslett. Developed theoretical models and implemented prototype application layer libraries for Secure Provenance in Storage Systems and databases. Explored design of regulatory compliant term-immutable database architectures. This research has been published in USENIX FAST 2009 [CW16], CIDR 2009 [CW14], StorageSS 2007 [CW11], VLDB SDM 2007 [CW10], USENIX ;login: Magazine [MAG01], and in a book-chapter [BK02].

NCSA / TCIP Project

Summer Research Assistant

Summer 2008

Designed a NS-2 based simulator for NASPINet for the Power Grid, with capability to analyze the effect of different security schemes. This research has been published in IEEE PSCE 2009 [CW15].

Google Inc., Mountain View, CA

Software Engineering Intern

Summer 2007

Designed and implemented *Delegated Authorization using Permits* for Google's single sign-on system. The permit-based mechanism allows disjoint applications to be joined together using *Mash-ups* while providing appropriate access control and authorization capabilities. This research has been published in ACSAC 2008 [CW13].

NCSA Storage Security and Survivability group **May 2004-August 2006**
Developed a comprehensive *Threat Model* for secure storage. Performed detailed analysis of *Storage Breach Incidents* and created a database resource for further research. Worked on immutable and tamper-proof models of storage security. Work done in this area have been published in [CW01, 02, 03, 04, 05, 07, 08, 09].

NCSA Radio Astronomy Imaging group **January 2004-May 2005**
Graduate Research Assistant
Created an *Automated Code Translation Tool* that generates BABEL interface for legacy C/C++ and Fortran code, for use under the Common Component Architecture (CCA) model, allowing translation of 2 million lines of MYRIAD/AIPS++ code. This work has been published in SP&E Journal [JL01].

Pablo Research Group, Dept. of Computer Science, UIUC **August 2003-December 2003**
Graduate Research Assistant
Worked with **SvPablo Instrumentation Suite** for Parallel Computing, under the supervision of Prof. Dan Reed and analyzed Statistical Sampling Techniques for Performance Evaluation

TEACHING
EXPERIENCE

University of Illinois at Urbana-Champaign, Urbana, Illinois.
CS 591MW2, Guest Lecturer **Spring 2008**
Taught about Provenance in computing, and secure provenance techniques.

CS 563, Guest Lecturer **Spring 2006**
Talked about trusted hardware and different techniques for compromising such devices.

Bangladesh University of Engineering and Technology, Dhaka Bangladesh
Lecturer **March 2003-August 2003**
Taught 42 hours of undergraduate level course (CSE307 Microprocessors) at the Department of Computer Science and Engineering. Was responsible for lectures, exams, homework assignments, and grades. Total class size was 60.

Institute of Information and Communication Technology, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
Instructor **May-June, 2002**
Taught Linux System Administration and Computer Programming courses on PHP and Java. Shared responsibility for lectures, exams, homework assignments, and grades.

Ahsanullah University of Science and Technology, Dhaka, Bangladesh
Lecturer **January-June, 2003**
Taught 42 hours of undergraduate level course at the department of Computer Science and Engineering. Was responsible for lectures, exams, homework assignments and grades.

Dhaka International University, Dhaka, Bangladesh
Lecturer **January-June, 2003**
Taught undergraduate level course on E-commerce. Was responsible for lectures, exams, homework assignments, and grades.

Manarat International University, Dhaka, Bangladesh
Lecturer **January-June, 2003**
Taught undergraduate level course on Management of Information Systems. Was responsible for lectures, exams, homework assignments, and grades.

Green University of Bangladesh, Dhaka, Bangladesh

Lecturer

January-June, 2003

Taught undergraduate level course on Real-time computing systems. Was responsible for lectures, exams, homework assignments, and grades.

PUBLICATIONS

Journal

[**JL01**] A. J. Kembal, R. M. Crutcher, and R. Hasan, “A Component-based Framework for Radio-astronomical Imaging Software Systems”, accepted for publication in *Software: Practice and Experience (SP&E)*, Wiley, 2007.

Book Chapters

[**BK02**] Ragib Hasan, Marianne Winslett, Soumyadeb Mitra, Windsor Hsu, and Radu Sion, “Trustworthy Record Retention”, in “The Handbook of Database Security: Applications and Trends”, M. Gertz and S. Jajodia (editors), Springer Verlag, 2007.

[**BK01**] Dongyi Li, Will Winsborough, Ragib Hasan, and Marianne Winslett, “Trust Management”, in “The Handbook of Database Security: Applications and Trends”, M. Gertz and S. Jajodia (editors), Springer Verlag, 2007.

Conference and Workshops

[**CW16**] Ragib Hasan, Radu Sion, and Marianne Winslett, “The Case of the Fake Picasso: Preventing History Forgery with Secure Provenance”, Proceedings of the 7th USENIX Conference on File and Storage Technologies (FAST), February 2009. (acceptance 23/102=22.5%)

[**CW15**] Ragib Hasan, Rakesh Bobba, and Himanshu Khurana, Analyzing NASPINet Dataflows, IEEE Power System Conference and Expo (PSCE), Seattle, Washington, March 15-19, 2009.

[**CW14**] Ragib Hasan, Radu Sion, and Marianne Winslett, “Remembrance: The Unbearable Sentience of Being Digital”, 4th Biennial Conference on Innovative Data Systems Research (CIDR), January 2009 (Perspectives Track).

[**CW13**] Ragib Hasan, Richard Conlan, Brian Slesinsky, Nandu Ramani, and Marianne Winslett, “Please Permit Me: Stateless Delegated Authorization in Mashups”, Annual Computer Security Applications Conference (ACSAC), Anaheim, CA, December 2008. (acceptance 42/173=24.2%)

[**CW12**] Jodie P. Boyer, Lars E. Olson, Ragib Hasan, Nikita Borisov, Carl A. Gunter, and David Raila, “Improving Multi-Tier Security Using Redundant Authentication”, in the First Computer Security Architecture Workshop (CSAW), in conjunction with ACM CCS, Alexandria, VA, November 2007.

[**CW11**] Ragib Hasan, Radu Sion, and Marianne Winslett, “Introducing Secure Provenance: Problems and Challenges”, in Workshop on Storage Security and Survivability (StorageSS 2007), in conjunction with ACM CCS 2007, Alexandria, VA, October 2007.

[**CW10**] Ragib Hasan, Marianne Winslett, and Radu Sion, “Requirements of Secure Storage Systems for Health-care Records”, in the 4th VLDB Workshop on Secure Data Management (SDM), in conjunction with 33rd International Conference on Very Large Data Bases (VLDB), University of Vienna, Austria, September 2007.

[**CW09**] Ragib Hasan and William Yurcik, “A Statistical Analysis of Disclosed Storage Security Breaches”, in International Workshop on Storage Security and Survivability (StorageSS) in conjunction with 12th ACM Conference on Computer and Communications Security (CCS 2006) , October 31, 2006.

[**CW08**] Ragib Hasan and William Yurcik, “Beyond Media Hype: Empirical Analysis of Disclosed Privacy Breaches 2005-2006 and a DataSet/Database Foundation for Future Work”, in Workshop on the Economics of Securing the Information Infrastructure (WESII), October, 2006

[**CW07**] William Yurcik and Ragib Hasan, “Toward One Strong National Breach Disclosure Law - Justification and Requirements”, in Workshop on the Economics of Securing the Information Infrastructure, October, 2006

[**CW06**] Ragib Hasan and Marianne Winslett, “Synergy: A Trust-aware, Policy-driven Information Dissemination Framework”, IEEE International Conference on Intelligence and Security Informatics (ISI 2006), San Diego, USA, May 23-24, 2006.

[**CW05**] Ragib Hasan, Suvda Myagmar, Adam J. Lee, and William Yurcik, “Toward a Threat Model for Storage Systems”, International Workshop on Storage Security and Survivability (StorageSS) in conjunction with 12th ACM Conference on Computer and Communications Security (CCS 2005) , November 11, 2005.

[**CW04**] Ragib Hasan, William Yurcik, and Suvda Myagmar, “The Evolution of Storage Service Providers: Techniques and Challenges to Outsourcing Storage”, International Workshop on Storage Security and Survivability (StorageSS) in conjunction with 12th ACM Conference on Computer and Communications Security (CCS 2005) , November 11, 2005.

[**CW03**] Ragib Hasan, Zahid Anwar, William Yurcik, Roy Campbell, “A Survey of Peer-to-Peer Storage Techniques for Distributed File Systems”, IEEE International Conference on Information Technology (ITCC), Las Vegas, NV, April 2005.

[**CW02**] Joseph Tucek, Paul Stanton, Elizabeth Haubert, Ragib Hasan, Larry Brumbaugh, and William Yurcik, “Trade-offs in Protecting Storage: A Meta-Data Comparison of Cryptographic, Backup/Versioning, Immutable/Tamper-Proof, and Redundant Storage Solutions ,” 22nd IEEE - 13th NASA Goddard Conference on Mass Storage Systems and Technologies (MSST) , Monterey CA USA, April 2005.

[**CW01**] Ragib Hasan, Joseph Tucek, Paul Stanton, William Yurcik, Larry Brumbaugh, Jeff Rosendale, and Roelof Boonstra, “The Techniques and Challenges of Immutable Storage for Applications in Multimedia”, IS&T/SPIE International Symposium Electronic Imaging / Storage and Retrieval Methods and Applications for Multimedia (EI121) , San Jose, CA, January 2005.

Tech Reports and Magazine Articles

[**MAG01**] Ragib Hasan, Radu Sion, and Marianne Winslett, “Secure Provenance: Protecting the Genealogy of Bits”, USENIX ;login: Magazine, June 2009 issue.

[**TR03**] Ragib Hasan, Marianne Winslett, and Soumyadeb Mitra, “Efficient Audit-based Compliance for Relational Data Retention”, UIUC Dept. of Computer Science Tech Report, UIUCDCS-R-2009-3044, March 2009.

[**TR02**] Ragib Hasan, Radu Sion, and Marianne Winslett, “Secure Provenance”, Stony Brook University Tech Report, TR-SB-NSAC-07-2007, November, 2007.

[**TR01**] William Yurcik, Cristina Abad, Ragib Hasan, Moazzam Saleem and Shyama Sridharan, "UCLog+ : A Security Data Management System for Correlating Alerts, Incidents, and Raw Data From Remote Logs", ACM Computing Research Repository (CoRR) Tech report cs.CR/0607111, July 2006.

Undergraduate Research

[**UR03**] Ragib Hasan, Meetesh Barua, Pradipta P. Mitra , Jalal Uddin Mahmud and Saidur Rahman, "Design of a Graph Drawing and Visualization System", Proceedings of the 5th International Conference on Computer and Information Technology (ICCIT), Dec 27-28 2002.

[**UR02**] Pradipta P. Mitra, Ragib Hasan, M. Kaykobad, "On Linear Time Algorithm for Single Source Shortest Path Problem", Proc. of the International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, 2001.

[**UR01**] Pradipta P. Mitra, Ragib Hasan, M. Kaykobad, "A Linear Time Algorithm for Single Source Shortest Path Problem", Proc. of the International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, December 2000.

Internet Publications

[**IP01**] Ragib Hasan, "*History of Linux*" available at <http://netfiles.uiuc.edu/rhasan/linux>. This comprehensive article has been translated to Hebrew, Bulgarian, Japanese, Chinese, Romanian, and Portuguese language. The website for the article has received 250,000 unique visitors since 2002.

Presentations and Conference Talks

[**PR11**] Preventing History Forgery with Secure Provenance, USENIX FAST, February 25, 2009

[**PR11**] Preventing History Forgery with Secure Provenance, Trust and Security Seminar, ITI, UIUC, February, 2009

[**PR10**] Remembrance: The Unbearable Sentience of Being Digital, CIDR, January 2009

[**PR09**] Please Permit Me: Stateless Delegated Authorization in MashUps, ACSAC, December 2008

[**PR08**] Provenance: Documenting the History of Digital Objects, CS 591MW2/SB 690 guest lecture, Spring 2008

[**PR07**] Introducing Secure Provenance: Problems and Challenges, ACM StorageSS, October 2007

[**PR06**] A Statistical Analysis of Disclosed Storage Security Breaches, ACM StorageSS, October 2006

[**PR05**] Context Based Automated Attribute Generation in Ubiquitous Systems, Midwest Security Workshop, September 2006

[**PR04**] Synergy: A Trust-aware, Policy-driven Information Dissemination Framework, IEEE ISI, May 2006

[**PR03**] Breaking the Chip: Vulnerabilities of Cryptographic Processors and Smart Cards, CS 563 guest lecture, Spring 2006

[**PR02**] The Evolution of Storage Service Providers: Techniques and Challenges to Outsourcing Storage, ACM StorageSS, October 2005

[**PR01**] The Techniques and Challenges of Immutable Storage with Applications in Multimedia, SPIE Electronic Imaging, January 2005

Posters

[**PS04**] Secure Provenance for Digital Objects, Midwest Database Workshop, October 2008

[**PS03**] Context Based Automated Attribute Generation in Ubiquitous Systems, ITI Dependability Workshop, December 2006

[**PS02**] The Ra Anonymizer: A Messaging System for Anonymous Communication, CS Department Affiliates Conference, April 2006

[**PS01**] Synergy: A Policy-driven Information Sharing Infrastructure, ResCUE Project All Hands Meeting, Irvine, California, January, 2006.

RECENT PROJECTS

- **Regulatory Compliant Databases:** A term-immutable, tamper-evident database for regulatory compliance.
- **Secure Provenance:** A prototype application layer library for secure provenance (i.e. documented, verifiable, tamper-evident, non-repudiable history of digital objects).
- **DelAuth:** A delegated authorization system using permits for providing stateless authorization in a distributed environment. (Intern project at Google)
- **FlexPolicies:** Enabling security policies to handle flexibility and uncertainty of real life.
- **BreachDB:** Analysis of storage security breach incidents.
- **Storage Threat:** A threat model for storage system security.
- **Synergy:** A framework for trust-aware, policy driven interchange of information in open systems.
- **VisiResCUE:** A situational-awareness and disaster management system built on top of synergy.
- **Prohori:** A trust-based intrusion detection and access delegation system for smart buildings.

HONORS AND AWARDS

Academic Awards

- USENIX FAST student grant, 2009
- CIDR Graduate student scholarship, 2009
- Inducted into **Tau Beta Pi** Engineering Honor Society, 2007.

Bangladesh University of Engineering and Technology

- Chancellor award for graduating Summa Cum Laude, 2003
- Sharfuddin Gold Medal for graduating Summa Cum Laude, 2003
- Dean's List Award, 1998-2002
- Best Student Award 2000

Programming Contests

- Runner-up, ACM International Collegiate Programming Contest, Asia Regional, 2001
- Runner-up, National Computer Programming Contest, 2000

Others

- Invited Speaker, 3rd Johurul Hoque-Abdullah Al Muti Shorfuddin Memorial Lecture, January, 2007.

COMPUTER SKILLS	<ul style="list-style-type: none"> • Languages: C, C++, Java, Perl, Python, Pascal, PHP, Unix shell scripting, • Applications: ArcGIS, Apache, L^AT_EX, • Tools: P4, Subversion, CVS • Unit Testing: JUnit, Check. • Operating Systems: Unix/Linux, Windows.
RELATED COURSEWORK	CS498 Computer Security, CS598cag Advanced Computer Security, ECE598NB Privacy Enhancing Technologies, CS598yyz Information Storage Systems, CS523 Advanced Operating Systems, CS598ig Scattered and Distributed Systems, CS421 Programming Languages, CS433 Computer Architecture
PROFESSIONAL SERVICE	<ul style="list-style-type: none"> • Program Committee: IEEE IDCS 2008, ACM StorageSS 2005. • Web and Proceedings Chair: ACM WPES 2008. • External Reviewer: SIGMOD, VLDB, CCS, IEEE S&P, Policy, IFIP-TM, SSDBM, WWW, SACMAT, ESORICS, PET Symposium, MSW, ICICT, iTrust, Reactivity on the Web, EDBT, WIA
PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none"> • Honor Society: Tau Beta Pi • Student Member, ACM, IEEE, SIAM
VOLUNTEER ACTIVITIES	<ul style="list-style-type: none"> • Core Member, Bangladesh Open Source Network, 2006-current • Emergency translator/interpreter, Office of International Student and Scholar Services, University of Illinois at Urbana-Champaign. 2006-current • Mentor, UIUC CS Department Women in Computer Science Undergraduate Mentor program, 2009-current • Mentor for International Students, International Student Office, UIUC. 2007-current • New graduate student mentor, Department of Computer Science, University of Illinois at Urbana-Champaign. 2007-current • Director, BUET Dept. of Computer Science and Engineering Alumni Association of North America. 2007-current. • Webmaster, BUET Dept. of Computer Science and Engineering Alumni, www.csebuet.org, 2005-current
EXTRA-CURRICULAR ACTIVITIES	<ul style="list-style-type: none"> • Administrator, English Wikipedia, 2005-present • Bureaucrat and Administrator, Bengali Wikipedia, 2006-present • Media Appearances: Interviewed by BBC World Bengali Service (2006), Deutsche-Welle World Service (2008).
REFERENCES	<ul style="list-style-type: none"> • Prof. Marianne Winslett Dept. of Computer Science, University of Illinois at Urbana-Champaign. Email: winslett@cs.uiuc.edu • Prof. Radu Sion Dept. of Computer Science, Stony Brook University, Email:sion@cs.sunysb.edu • Prof. Carl Gunter Dept. of Computer Science, University of Illinois at Urbana-Champaign, Email:cgunter@cs.uiuc.edu • Prof. Nikita Borisov Dept. of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Email:nikita@uiuc.edu

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